The Continued Creation of Communities of Practice – Finding Variation in the Western Zhou Expansion (1046-771 BCE)

The Continued Creation of Communities of Practice – Finding Variation in the Western Zhou Expansion (1046-771 BCE)

A dissertation presented
by

Yitzchak Yonah Jaffe

to

The Department of Anthropology

in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy
in the subject of

Anthropology

Harvard University
Cambridge, Massachusetts
April 2016

Dissertation Advisor: Professor Rowan K. Flad | Yitzchak Yonah Jaffe

The Continued Creation of Communities of Practice – Finding Variation in the Western Zhou Expansion (1046-771 BCE)

Abstract

This work explores the question of when and how China became Chinese by studying state sponsored colonial expansion and intercultural interactions during the Western Zhou period (1046-771 BCE). Because Confucius and his followers considered this period the golden age of civilization, scholars have traditionally paid little attention to existing ethnic and cultural diversity and created the illusion that Chinese culture, in Han style, already existed at this early date. However, my investigation of everyday activities, food preparation and ritual events surrounding mortuary customs, highlights the complex relationship between the Zhou the people they encountered.

Following their conquest of the Shang polity in the middle of the 11th century BCE, the Zhou began a swift campaign of colonization during which members of the royal family were sent to defend and expand strategic zones around the new realm. The traditional narrative – one that focuses on the formation of the later unified Chinese Empire and civilization – sees the Zhou as those who, through military expansion and conquest, successfully Sinicized and acculturated the peoples that would make up the Chinese world. In fact the Qin state would draw heavily on this notion of a unified Zhou culture to unite all under heaven and create the first Chinese empire in 221 BCE. Yet this narrative, the product of later political discourse, overemphasizes the homogeneity of Zhou identity and fails to account for the multifaceted nature of Chinese culture and origins.

These interpretations have relied heavily on later historical texts and information gleaned from inscriptions of bronze ritual vessels, themselves biased towards the Zhou elite world view, while archaeology has mainly played a second fiddle to historical reconstructions. My dissertation compared separate regions of the Zhou expansion: Gansu in the west, Shandong peninsula in the East and the

Shanxi plains to the north of the Central Plains, which each represent different types of interactions between the local populations and the Zhou newcomers.

Cemeteries are examined to investigate the mortuary customs of local people and ceramic vessels to study culinary traditions, in an effort to show how everyday practices and ritual culture were influenced by the Zhou. Culinary research involved the detailed study and usewear analysis of freshly excavated ceramic assemblages to understand community specific cooking and serving practices. Ceramic assemblages from four pre-Zhou and Zhou sites in Shandong province were compared to sites in the core zone of the Zhou polity to assess the impact of the Zhou arrival. My analysis shows that each of the four sites observed its own community specific culinary traditions: An increase in cooking vessel size at some – indicating a shift from to larger eating parties – while others the way food was cooked: from a mix of roasting and braising cooking modes to a focus on boiling and stewing. In Gansu the Zhou had little impact on the multitude of existing community-specific mortuary practices and remained separate from the local population, while in the Beijing area the Zhou invaders played down their military identity and allowed local groups to participate in their mortuary practices.

Consequently my study finds that the Zhou expansion did not result in the homogenization of the ancient cultural landscape, but instead that the Zhou influence had unequal results: from acceptance to rejection and mostly to its reorganization to suit local needs and agendas. In effect these interactions created various new forms of localized social identities across North China that differ profoundly from the homogeneous Zhou elite culture depicted in the canonical histories, whic have traditionally been used to understand the period. The Zhou influence was regional in scope but local in outcome. Social identities were constantly in flux, and intensified interaction created new forms of localized social identities.

Contents

To my father, who first introduced me to the wonder of archaeology and its importance for understanding the world around us and our place in it.

Acknowledgments

"We shall not cease from exploration,
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time"
- T. S. Eliot

"No one really knows what they're talking about"
- John Cleese

Writing a dissertation is a lot of work. While it is the product of a single person laboring away for many years, it is best thought of as a central node of sorts, one which connects, in a new way, a wealth of information, ideas and the work of others. Written during the final stages of the PhD program, the dissertation is a culmination of many years of work, training, trials, errors and long moments of reflection and contemplation. And through it all the dissertation, the final product, is only possible thanks to the support and assistance of many people; aid which takes on various forms: Collaboration, exposure to new ideas, access to materials and a lot of encouragement.

Show me a woman or man who declare that not once, during their long PhD years, had they thought to themselves: why am I doing this? And I will show you a liar. For the road is long and the task daunting. Changes to original 'perfect' plans will have to be made and with them years of work, supposedly lost. It is only through the help of others that it can be done and, more importantly, worth doing at all. This here is my attempt to humbly pay my thanks to all those who helped along the way.

I am continually amazed at the ability of my advisor and mentor, the Great Rowan Flad, to never fail to provide the most astute feedback possible. Far too often I would burst into his office with an idea, thought or problem I had been thinking of for a week or so and quickly blurt it out, doing my best to be brief, while still presenting the issue in all of its complexity. And every time Rowan would calmly lift his head up from his computer (I have a tendency of disturbing him when he is trying to catch up on his emails) and provide impeccable advice on how to change, reformulate or best present these ideas. While he has asked me to cultivate strong working relationships with other colleagues so that *they* could provide commentaries for my work, I would greatly lament not being able to send my work in the future to one of the most observant minds I have had the privilege to have known.

To my committee, Matt Liebmann and Michael Puett, who provided invaluable input on everything archaeology and China. Their insights and ideas truly helped makes this work better. Both Richard Meadow and CCLK have been unofficial committee members and have provided guidance from my very first days in the program. Richard has been a wonderful external advisor and supporter. Karl has been a mentor (despite himself perhaps) to me and through more hours than I can count, we have discussed everything from archaeological theory to current political climates. Many thanks are given to the members of the faculty: Christian Tryon, Gary Urton, Ofer Bar-Yosef, Davíd Carrasco, Jeff Quilter and Jason Ur, who through their classes (both the ones I took and the ones I taught) and occasional conversations waiting in line for the bathroom, have all provided invaluable advice and feedback on how to be a better scholar, writer, thinker and academic. I have asked them all for their time and energy and have yet to be turned away.

And to my Alma Mater: the Archaeology and East Asian Departments of the Hebrew University. The wonderful faculty there provided the solid foundation on which to develop my archaeological methodologies and inquires and who with I began this long journey over a decade ago. Few archaeological worlds are as alike as those of Biblical Archaeology and China' Bronze Age. Both have been molded and shaped by later historical texts and three millennia of remembering and continues retelling. The ideas presented in this work, their very assumptions and critiques, would not have occurred to me if I had studied only one and not the other (perhaps biblical archaeological should be made part of the Harvard Archaeology wing Gradate student's Generals exam?). Ilan Sharon, Sharon Zuckerman (ז"ל), Ami Mazar and Yossi Garfunkel were the ones who taught me the basics as well as fostered my archaeological development. The East Asian department was my home and my advisors there are still important teachers to me. Yuri Pines was the first to expose me to the writings of the ancient Chinese statesmen and historians and it is his brand of Early China I (mostly) subscribe to. It is also still his voice I hear when I misspell pinyin or mess up a map.

To Gidi Shelach a very special thanks is made here; Thanks that hardly begins to make up for all of his support. It is at his projects and through his publications that I began this path and through his teachings and guidance, ever patiently, that I picked up the tools of the trade. He has always been my closest ally and has never failed to provide professional advice on scholarly work and career. He is and will always be my mentor.

This work would not have been possible without the aid, assistance and collaboration of the amazing Chinese colleagues I met and studied with over the years. Li Shuicheng spent many an hour with me answering questions about the Bronze Age cultures in the west. Liu Xu was particularly generous with his time and made the trip with me to Shanxi to visit the Tianma-Qucun site. A special thanks is given to all the wonderful people of the Archaeological field team who hosted me there with such sincere delight. Wang Hui provided access to archaeological materials and support without which the west would have remained unopen to me. I have never met a man who can say so much with so few words. Chen Pochan is sorely missed. His sense of humor and energy were the best reasons to go to the field in Gansu. his advice on how to make my arguments stronger were benefits I only started to enjoy and is something I will have to somehow learn to live without. To Cao Bin who spent my final year and a half talking about all things Western Zhou and who worked with me on the Tianma-Qucun cemetery, I offer a big thank you. This is surely the beginning of a beautiful collaborative friendship.

To all the good people at the Linzi archaeology station who seem to be willing to keep putting up with me every time I come back. Zhao Yichao worked effortlessly with me on the analysis of the Shandong materials and his smile provided the support needed on hot days to keep going; just a little more.

To the Wei family, who were my home away from home for the better part of my seasons spent in China. A very special thanks is owed to Wei Chengming who so patiently found the materials I needed and provided crash courses on the Bronze Age Archaeology of Shandong. To Wei Qiaowei, my close friend and collaborator who makes working in China a labor of good scholarship as well as good fun. Your help is too great to be able to give it the proper dues it deserves. I look forward to many more years of joint adventures and exploration of China's past and present.

To all my friends who provided the everyday nourishment without which these past years would have been no fun at all: Andrew Womack, Bridget Alex, Josh Walton, Bastien Varoutsikos, Janling Fu, Philip Johnston, Max Price, Noa Corcoran-Tadd, Ari Caramanica, Adam Stack, Ilaria Patina, Chris Foster, Billy French, Du Hong, Brian Lander and Rita Dal Martello. To all of you who read and commented on my work, provided excellent feedback and offered your advice. Friends provide that much needed outlet for complaining about the Grad program and our lowly existence in it, but going to a good school also means having the privilege of engaging with all the wonderful minds who come to study there; indeed, it is from my peers and colleagues that I have come to learn so much.

To my parents David and Bracha Jaffe who have always provided their intellectual and nurturing support for this, less than common, choice of a carrier. My Father has read everything I have ever written to comment and offer his support and ideas. My mother, has always been there and never stopped believing in me. And to my extended family, Yael, Miki and the rest of the Mero (Miro?) clan who have helped me through these long years in so many different ways.

Lastly to my partner and beacon of light in this tumultuous world, Daphna, She who put up with all of this. This could never have been accomplished without you. It is truly an act of selfless love and affection when support is given even though nothing is expected in return, only the wellbeing and self-fulfillment of the person pursing it. I do hope you read this someday.

Page intentionally left blank

Chapter 1 - Introduction

When does Chinese civilization begin?

'China is the oldest civilization in the world' is a sentence that has opened many a book and article (e.g., Chang 1986; Chang et al 2005; Solomon and Museo 1998; Xu 2009; Zhang 2007). This statement immediately begs the question of whether there a single, specific, point in time to which we can point and say: here, it is at this point that China begins, before it is just a place that will one day be China.

To do so we would first need to establish the components that make up Chinese culture and its civilization (Which ones? Its religion, food, costume, script?). Then we would have to ask whether or not the single earliest appearance of that component would constitute the point of inception of Chinese civilization. Or, in contrast, is it only when it is found, ubiquitously, in what we would consider the modern geographical area of China that we can argue: its civilization has in fact been fully formed. Perhaps, somewhat like an inverted Sorites paradox, we require a tipping point to establish when we have added enough grains of sand to the pile so that we can confidently declare: here, it is China now!

For many it is the Zhou.

In traditional Chinese historiography, the Zhou 周 (1046-221 BCE) were the third royal dynasty in the ancient dynastic sequence, preceded by the Shang 商 and Xia 夏 dynasties (2100-1046 BCE). While some would extended the beginnings of Chinese civilization back in time and point to the Xia, as the first major state, or the Shang, as the developers of Chinese script and religious outlooks, others would argue that not enough had been accumulated to say without a doubt that China had become Chinese. But not so with the Zhou, no one has ever questioned its 'Chineseness'.

To be sure the Zhou built on earlier achievements of the Xia and the Shang dynasties and continued to develop the unique flavor of what would become Chinese civilization. These include such fields as art, religion, language and politics. In fact the Zhou period is often considered the genesis of Chinese civilization and its rulers are credited with establishing the ideal norms of social and political behavior, as well as with creating many aspects that we now associate with Chinese culture. It were the Zhou who ruled a larger territory with a higher degree of central integration and administrative control, and in it they achieved, for the first time, a common cultural identity in a single unified geopolitical entity.

This dissertation is about the earliest part of Zhou period, the time in which Chinese civilization is understood to have crystalized: the Western Zhou. It is a study of the ways in which archaeologists have reconstructed this period and focuses on the territorial expansion – a central part of the Western Zhou political agenda and cultural enterprise. This military expansion, the actual movement of people to establish footholds and expand the Zhou realm, is thought to have created the unified territorial domain and the cultural identity that would provide the foundations of Chinese civilization (e.g., Chao 1996; Lin 1986; Tian 1980; Xie 1995; Xu 1994; Yang 2003; Zhang 2007).

Building on a decades of archaeological and historical work my aim is to examine the archaeological evidence, empirically, and with it to understand what this process entailed and what were its various local outcomes. While a growing number of studies have reevaluated the traditional narratives of the Zhou put forward by later generations (e.g., Falkenhausen 2006) and sought to reconstruct the period on the merit of evidence from the Western Zhou period itself (e.g., Li 2006;2008), the scholarly consensus has been to view the expansion as one of Sinicization. Indeed understanding how the Zhou came to hold this position in the common historical memory of Chinses civilization is where we begin.

This introduction starts by laying out for the reader the foundations of the Western Zhou dynasty, its history and main avenues of research and scholarship. A more detailed overview is provided in subsequent chapters of this work, but first let us turn to Sima Qian 司馬遷, The great Han 汉 dynasty historian, to set the mood with his account of the rise and fall of the Western Zhou court.

A Short (traditional) History of the Western Zhou

The Western Zhou dynasty begins with the defeat of the Shang at the battle of Muye 牧野, understood to be in modern day Henan, in the year 1046 BCE[1]. But the Zhou, as an independent political entity, and potentially self-identified ethnic group, is believed to have existed for several decades prior to this period. The Shiji[2] mentions 15 generations between the mythological founder Duke Ji 后稷, also known as the duke of millet, and the important King Wen 文 (r. 1099-1050 BCE). It was king Wen's son, king Wu 武 (r. 1049/45-1043 BCE), who would go on to conquer the Shang, but King Wen would be heralded in Chinese historiography as the individual who transformed the Zhou into a powerful political player and founder of much of the Zhou culture. He established the calendar systems, religious rituals, court antiquate and proper moral behavior of the Zhou as well as much of elaborate system of government with hierarchal offices of an administrative service. He greatly expanded the Zhou territories by conquering and incorporating a number of neighboring states, yet he mostly refrained from entering into direct conflict with the Shang and chose to appease them through various means instead. It was also king Wen who was credited with claiming that the Zhou had received the mandate of heaven, 天命, an assertion that allowed him to assume the title of king, *wang* 王, presiding over an elevated Zhou polity[3].

Not ten years after his father's death, king Wu marched his forces from the Wei 渭 river plains to the Yellow river valley, the center of Shang political power. At Muye the Zhou forces, a confederacy of

[1] A debate still unresolved with some scholars still viewing 1045 BC as the year of the conquest. Here I follow the convention of 1046 (for a discussion see Nivison 1983; Shaughnessy 1991: 217–287)

[2] Much of the accounts of the pre-dynastic Zhou have been compiled in the *Shiji,* which this section is based on. Readers interested in a reconstruction based on a combination with other, later, historical texts would do well to look at Li 2006, 2008; Shaughnessy 1999; Yang 2003). Unless otherwise noted, dates are from Shaughnessy (1991;1999) and Li (2008: XV)

[3] Though Wen bestowed the title *wang* on both his grandfather and father in an attempt to establish a deeper foundation for this move (see in Marshall 2001).

allies and subjected peoples, ousted the Shang, killed their king, Xin 辛, and took their capital city of Yin 殷. There, at the temple of the Shang high god Di 帝, King Wu prayed to both appease and inform the god that the Shang dynasty ended and the Zhou dynasty had begun. As their new King, Wu also assumed control over the Shang territories and their subordinate states and peoples. After the conquest, King Wu returned to the Zhou central court and appointed his brothers to oversee the vanquished Shang capital city that was left to the semi-autonomous rule by Wu Geng 武庚 the son of the defeated Shang king. King Wu died only two years after the conquest leaving his under-aged son as the heir, but his reign was disputed. The brothers Guanshu Xian 官叔鲜 and Caishu Du 蔡叔度 joined forces with Wu Geng and rebelled against the Zhou throne. The "rebellion of the three overseers" *sanjian zhi luan* 三监之乱, as it was later called, was quashed by the Duke of Zhou, Zhou Gong Dan 周公旦 (r. 1042–1036 BCE), who proclaimed himself as the ruling regent in the young king's stead. Following the rebellion, Duke Zhou Dan and his half-brother Duke Shao, Zhao Gong Shi 召公奭, realized that they could not effectively administer and rule the new Zhou world from the Zhou homeland in the Wei river valley region. The city of Chengzhou 成周 or Luoyi 洛邑 was established near modern day Luoyang, to act as a stronghold of the east. To more firmly control the new land they had conquered and succeeded from the Shang, the project that had started under King Wu of rewarding his subjects with land, was continued. Members of the royal family were sent to set up a Zhou presence in the new territories, to rule them and expand them to their best efforts. The *fengjian* 封建 system was established and the enfeoffment of these lands was conducted with great ceremony in the central court. More than 70 fiefs were given to both members of the royal family (*ji* 姬 clan), allies and potential enemies[4]. Cleverly, the royal court would gain a firmer hold on its own realm as

[4] These fiefs include Guo 虢, Guan, Cai 蔡, Cheng 郕, Huo 霍, Wei 衛, Mao 毛, Dan 聃, Gao 郜, Yong 雍, Cao 曹, Teng 滕, Bi 畢, Yuan 原, Feng 酆, Xun 郇, Yu 邘, Jin 晉, Ying 應, Han 韓, Lu 魯, Fan 凡, Jiang 蔣, Xing 邢, Mao 茅,

well as mitigate potential rebellions and succession crises by distrusting lands and titles to aspiring aristocrats (and removing them from the central court itself). The regional lords ruled their polities as agents of the Zhou kings; they were ritually subordinate to his power and were linked to the Zhou kings through elaborate kin relations (*zongfa* 宗法 – also known as the system of blood relations). As such they were expected to provide revenue to the Zhou court and military aid when required to.
After seven years, the Duke of Zhou finally stepped down and King Cheng 成 (r. 1042/35-1006 BCE), the son of King Wu, ruled for 30 years with his two uncles the Dukes of Zhou and Shao as his advisors[5]. While King Cheng led a number of campaigns against enemies of the realm, his reign was considered a peaceful one where the courtly ceremonies and music where expanded on and the people lived in harmony. His son, King Kang 康 (r. 1005/03—978 BCE), saw a long and peaceful reign as well, where corporal punishment was seldom used. During the reign of King Zhao 昭 (r. 977/75-957 BCE), the son of King Kang, a disastrous campaign to extend the Zhou influence to the South resulted in the loss of Zhou armies and the death of the king. Thus came to an end the Early Western Zhou period.

The Middle Western Zhou was considered a period of decline. Early on, the Zhou kings maintained a larger degree of power and could relocate established rulers to other territories and even remove them completely from office. Over time, regional rulers become increasingly independent of the central court. The original strong ties between brothers and first cousins naturally weakened. Family connections shifted to local levels to create lines of rulership that allowed for the hereditary passage of titles and authority to the offspring of Zhou noblemen. Following the Zhou army defeat, the court

Zuo 胙, Ji (Zhai) 祭, Yan 燕); Jiang 姜 clan in Qi 齊 and Zi clan 子(descendants of the Shang) in Song 宋 (see in Li 2006 discussions on attempting to correlate archaeological finds to these states).

[5] Turning over the rulership is no simple matter and Confucius would in fact view this as one of the greatest political and moral acts to have even been made by a Chinese ruler. As the mandate of heaven was to pass through the sons of the main royal genealogical branch, stepping in to aid his nephew at his time of need and returning power to him when the time was right again, was the precisely the political selflessness Confucius would teach (Shaughnessy 1993)

attempted to strengthen its hold on the vassal states and reclaim the glory of the past with other military campaigns. King Mu 穆 (r. 956-918 BCE) lead a number of military campaigns, but it was during his time that those who lay beyond the Zhou kingdom stopped paying tribute to the Zhou throne. Despite King Mu's best efforts to reconfigure state affairs and the structure of government, internal conflict was common as were cases of insubordination to the Zhou king himself. His son, King Gong 共 (r. 917/15-900 BCE), exterminated the fief of Mi 密 after a local lord, Duke Kang 康, refused to supply him with courtly ladies. Little else is known about this king, as well as the three who followed him, except that it was a time of decline: of the reign of King Gong's son, King Yi 懿 (r. 899/97—873 BCE), it was said that poets wrote critical poems. In fact when he died it was King Gong's brother, King Xiao 孝 (r. 872-866 B.C.), who assumed the throne, but after his death the dukes and lords of the other states restored to the throne King Yi's son – King Yi 夷 (r. 865-858 BCE). Internal conflicts between the feudal lords and the royal court would continue to the point where King Yi invaded the state of Qi 齐, one of the Zhou polities established in Shandong. There he boiled its ruler, Duke Ai 哀, alive in a large bronze cauldron. During this time, the state of Chu 楚 even attacked the Zhou court from the south, a first assault on the royal territories of its kind.

After the death of King Yi his young son King Li 厲 (r. 857/53—842 BCE), ascended the throne, and his time in power marks the beginning of the Late Western Zhou period. His rule was considered so awful and unjust that a number of feudal lords joined forces in rebellion and even succeeded in deposing him. Li fled to the state of Qi and until his death the kingdom again was ruled by stewards. Nevertheless, when King Li died his son, King Xuan 宣 (r. 827/25-782 BCE), was reinstated by the regents. Unlike his father, King Xuan initially listened to his advisors, but in his later years failed to heed the advice of the other lords. His armies lost a battle to the barbarian Rong 戎 tribes in the south over a traditional royal farm, partly due to the reluctance of the regional lords to come to the king's aid. Calamity persisted, and during the second year of the reign of his son's, King You 幽 (r. 781—771 BCE), an earthquake struck the capital. This was taken as a bad omen and when the king named the son of his favorite concubine as his heir he also made a move to depose the living queen with the son she bore him. In the world's first recorded instance of a 'boy crying wolf', King You lit the beacons that were reserved for alerting the lords of an advancing barbarian army, merely to entertain his beloved concubine. The lords did not find this amusing and when the Duke of Shen, the father of the deposed queen, joined forces with the Rong against him, the lords did come to the king's aid.

The Zhou armies were defeated and the capital sacked. The king was executed and his concubine and son taken prisoner. The great lords convened in the eastern capital of Chengzhou and enthroned King Ping 平 (r. 770-720 BCE), the former heir to the Zhou throne. But the Western Zhou world was over. The Eastern Zhou period began and the states the Western Zhou kings established proceeded to quarrel among themselves, until the state of Qin and their King in 221 BC would unite all under heaven once more to establish the first Chinese empire.

The Legacy of the Western Zhou - Part I

The Western Zhou (1046-771 BCE) lasted for just under 300 years, but its legacy and importance in Chinese historiography and political philosophy cannot be overstated. The reasons for these views, as we will see, are numerous and would develop over time, but it can be said with some degree of certainty that the man who did the most to establish the prominence of the Western Zhou was Confucius (551-479 BCE). Confucius, or Kongzi 孔子, lived in the time after the Western Zhou state collapsed. Following the dynasty's demise the aristocratic lords become entrenched in battles between one another and Confucius, like many of his contemporaries, longed for a more peaceful world and turned to the former Zhou kings for inspiration.

The reverence for history and the actions of past kings was not limited to the Zhou. The legendary kings that had ruled in the past were all believed to have achieved harmonious societies through moral conduct and just rulership, but the Zhou kings, Confucius maintained, were those who had truly achieved the proper system of government. They had established the rituals (*li* 禮) and the rules and regulations through which political leaders could achieve proper moral etiquette (*yi* 義) to successfully administer a prosperous state. The powerful yet stable state they presided over (as well the very mandate from heaven to rule over their vast territories) was obtained and preserved through it. In fact it was precisely because the Zhou rulers abandoned their own rituals, the very moral code that was the source of their legitimacy, that their rule came to an end and the world had plunged into chaos.

Confucius argued that only by reclaiming the rituals of old could the fighting end. The rulers of the feuding Chinese states – originally subjects of the Zhou kings who had been instated as rulers of regional domains – had drifted away from their ancestral obligations. They had forgotten their place in the Zhou aristocratic order and had ceased to practice the purifying rituals of the Zhou court. Their ministers and state officials too were corrupt because their rulers set bad examples, favoring personal gain over proper moral conduct. Thus Confucius set about reviving and disseminating the knowledge that had been lost. The Western Zhou courtly rituals were in a sense manuals of moral conduct and virtuous leadership and the classics he and his disciplines put to writing were claimed to have been faithfully reconstructed and complied from the teachings of the great Western Zhou political figures.

Confucius was a self-professed transmitter of knowledge not an innovator. He preached that it was the duty of the petty nobles to instruct the rulers of the states in the ways of the Zhou kings, for through them they would better themselves and the love of their subjects (and perhaps one among them would even become worthy enough to rule the land once more).

In his teachings Confucius provided a framework of political conduct that was tied into proper moral behavior, but also firmly established the connection to the past as a legitimate source of authority. Thus the right to rule stemmed from the links kings held to the past. The notion of continuity was at the basis of the Zhou political authority itself and these attitudes would continue to be foundational in the development of political and ideological thought of later generations (Schwartz 1985)[6]. In fact imperial court officials often looked to the past to evaluate the actions of the present and would seek wisdom and guidance in the Confucian texts (making it rather astounding to see the many interpretations they could find in similar passages Olberding 2012; Pines 2012).

The writings of Sima Qian, which provide the basis for the above account presented of Western Zhou royal history (and found with greater detail in Shaughnessy 1999), would also establish Confucius as the man he is remembered as to this day. In his work Sima Qian presented not only history but a narrative: One that ordered the world by bringing order to chaos (Hardy 1999). When calamity erupted it was because the king, and at times the dynasty as a whole, had lost the mandate to rule as the result of their own wrong doing. For example King Xin, the last to rule the Shang dynasty was considered morally corrupt. He cared little for his people, levying heavy taxes on them to support construction of elaborate architectural projects. His court was described to be particularly fond of indulging in great drinking feasts and orgies. Similar to some of the accounts given for the last Western Zhou king, King Xin was more eager to please his concubine than the subjects he ruled (Shaughnessy 1999: 310). Similarly, whether the duke of Zhou was reacting against the unlawful rebellion of the Shang kings and their Zhou allies or was their rebellion a response to him unlawfully usurping the throne, remains

[6] One can hardly see this to be a unique facet of Chinese thought. The Halakha, or Jewish code of laws the Rabbinic school formulated during the final years of the second temple period, sought to similarly display a cumulative past where one may introduce something new only if it conforms and does not deviate from (and certainly does not contradict) the laws already set in place (Koppel 1997; Roth 1986). Thus, for example, to understand whether or not turning on an electric light, a modern 20th century concern, constituted a violation of the Sabbath, was to be settled by returning to the scriptures and understanding if it conformed or defied earlier teachings (Goldenberg 1991; Katz 1998).

speculative. Still, Confucius would come to see the duke of Zhou as a paragon of political behavior and attributed the composition of a number of classic text to him (a treatise called the admonition of wine, was one such text). The Duke of Zhou was a man the students Confucius taught could look up to: quick to assume leadership responsibilities when needed and quick to relinquish them when the king had come of age and the kingdom pacified. The ultimate act of a political service was knowing one's place (Shaughnessy 1993).

We should note that Confucianism, as a coherent body of scholarship, was only fully formulated in the later Han Dynasty, due in part to the efforts of Sima Qian the Han court historian (but see Cai 2014). Nonetheless Confucius remains the person most widely regarded as responsible for the canonization of the Western Zhou rituals and its moral teachings as well as making them the philosophical foundations of Chinese political systems. Thus, whether or not Confucius had faithfully transmitted or invented, de novo, the Zhou principles, with the establishment of Confucianism as the official and main state ideology in the Han period, the Zhou would forever be remembered as a time of political zenith (Hardy 1999: 4)[7].

What this understanding of the Western Zhou would further achieve was to minimize the differences between the many states and highlight instead their common origin where the similarities outweigh the differences. Pines (2000) has made the compelling argument that that the notion of unity was in fact pervasive among all the many schools of thought during the pre-imperial period to the extent that when the Qin state defeated the other Chinese states in battle their ruler would claim not to have conquered them, but to have unified all under heaven once more. The Qin Dynasty would create

[7] Li Feng (2013: 112) notes that the Zhou, in the collective historical memory of China, were so prestigious that their name was used to name five other dynasties that vied for political control during turbulent times of the later imperial era.

something new to be sure, yet could do so precisely because they had acquired the political mandate that had been passed down from the Zhou.

Pronounced transformations in economy, technology, and politics had taken place during the history of China in the first millennium BCE to and indeed a large number of studies have looked at archaeology and text to understand the changes from the Western to Eastern Zhou periods. Hsu Chouyun (1999) traced the developed of high volume trade and commercialization that had developed via the multi-state system of the Eastern Zhou. Mark Edward Lewis (2006) has fleshed out the process by which the cities of the Eastern Zhou period developed into state capitals out of the military garrisons they had been during the Western Zhou period. Bronze became increasingly ubiquities during this period and iron would become widely used in agriculture and warfare among the many states of the period (Li 1985). Intellectually, China witnessed one of its most developed periods (Graham 1989) and higher levels of social mobility that challenged the ancient Zhou aristocratic system (Hsu 1965). Yet despite incessant fighting (some of these developments actually fueling the endless wars), the states that inhabited China in the second half of the first millennium are still seen to have shared enough of the original Zhou cultural milieu to prevent it from dissolving into entirely separate units, as well as maintaining the foundation for its eventual reunification under the Qin (Li 1985: 477-478).

The Legacy of Western Zhou - Part II

Naturally the Western Zhou period has been a period of immense interest to scholars of ancient China. Historical documents attributed to the Western Zhou period as well as later texts that deal with it have been revisited for nearly 3000 years by Chinese literati. With the proliferation of new data sources and methods of study, new frontiers in our understanding have been opened. Studies of the Shang oracle bone inscriptions, used by the Shang kings to divine and communicate with their ancestors and gods, have also looked at the pre-conquest Zhou reltionships. The Zhou are mentioned in the Shang oracle bone inscriptions, beginning with the reign of the Shang king Wu Ding, first as enemies of the Shang, then as allies and finally as enemies again, before they disappear from the later oracle bone inscriptions; in fact scholars have debated the nature of this interaction and have attributed the fluctuation to the movement of the Zhou capital and with it its political center to just outside the reach of the Shang polity (see Shaughnessy 1999: 305). The ethnicity of the proto-Zhou, or the people who later conquered the Shang and established the Zhou dynasty, is a controversial matter among archaeologists in China, where the debate revolves around the connections that can be made between early ceramic vessel types in various regions and how they relate to the later Zhou culture of the Central Plains region – the homeland, and center, of the Zhou dynasty (Rawson 1999: 378-381 and see chapter 6).

Other studies have looked at the transitional periods between the Zhou and the Shang. The Zhou too practiced oracle bone divination and like the Shang appealed to the high gods through ancestral sacrifice to speak on their behalf. Oracle bones were not a Shang invention (Flad 2008), but the adoption of Shang script and divination structure suggests Shang-specific influence (Shaughnessy 1985). In fact some scholars suggest that a number of Zhou government positions and perhaps even its structure was borrowed, in part, from the Shang dynasty's incipient bureaucracy (Keightley 1978, 2004 c.f. Li 2008: 24-30). A number of archaeological studies have argued that a clear ritual change can be observed between Shang and Early Western Zhou rites: from a prominence of *jue* and *gu* vessels used for the consumption of wine to a predominance of *ding* and *gui* vessels used for food, thus proving the historical accounts that linked drunkenness and Shang moral decrepitude (Poo 1999).

For the Western Zhou period itself a good deal of the archaeological work has concentrated in the Wei River valley in the modern day province of Shaanxi, in an effort to reveal the Zhou center of political power also known as the Zhouyuan 周原[8].

A number of large sites have been found in this region, including those identified as the twin capital cities of Feng 灃 and Hao 鎬 near the modern day city of Xian. A second cluster of sites to the West of them were found in modern day Qishan and Fufeng. Yet it is quite astonishing how little research has been done on residential and other non-mortuary loci of Western Zhou sites. A number of rammed earth foundations near the Feng River as well as in Qishan represent the bulk of the published corpus of Western Zhou structures and urban remains (Li 2006: 40-44). In modern day Beiyao, where the Eastern capital of Chengzhou was identified, some of the only ceramic and bronze workshops of the Western Zhou period have been excavated and reported on (Ye and Yu 1985).

The vast majority of archaeological efforts have been focused on the excavations of Western Zhou cemeteries. The Zhangjiapo cemetery, the royal cemetery outside the capital of Feng and Hao, is what has been used as the guiding ceramic record for the chronology of the Western Zhou period (Zhongguo 1999). Indeed, most of the work done on the Western Zhou period revolves around the excavation of large aristocratic lineage cemeteries. The internal burial system and its relationship to political power are described in the *liji,* among other texts, and is believed to have been the common sociopolitical structure of the Western Zhou world. The complex kinship relations of the Western Zhou political system was comprised of a series of lineages, each forming a separate familial group

[8] It is important to note that 'Zhouyuan' is employed by scholars to mean both a large geographic region and a specific agglomeration of sites in it. The broader area of Zhou cultural and political center is understood to have roughly spanned the area between of Wei River valley in Shaanxi and its immediate southern tributaries up to the Qishan mountain range in the north. The Zhouyuan is also more specifically referred to the sites found in the Fufeng and Qishan counties including the Pre-Zhou Feng site, the remains of a supposed Western Zhou center of Fengchu 凤雏, the Zhuangbai 庄白 no 1 bronze hoard and the historically mentioned Qiyi 岐邑 capital remains are believed to have existed, of which the recent Qijia workshops have been published (Shaanxi et al 2010; for an overview see Li 2006: 30-41; Rawson 1999: 390-397).

with an individual family member as its head. All lineage members, regardless of their rank, traced their descent through a common ancestor, both elite and commoner. Clans were agglomerations of various lineages, useful in maintaining healthy exogamous marrying functions: As lineage descent was patrilineal women were required to marry outside their clan and provided for a system that would allow for the establishment of inter-lineage and clan ties (Chang 1983; Falkenhausen 2013 and see chapter 5)

This understanding has almost single handedly shaped the nature of archaeological work for this period. The noble families of the Zhou world, who were bequeathed with land and administrative titles by the kings, each held their own separate designated burial ground where its members were interred. Numerous seasons of careful excavations have produced massive volumes that document excavated data from the many graves that comprised these cemeteries, their exquisite artifacts, elaborate furnishings and the labor that went into their construction (Falkenhausen 2006; Rawson 1999; Yu and Yan 2005: 149). As such most archaeologists view the observed differences between the graves as reflecting internal stratification among a given lineage, and many reports cluster the excavated graves into groups that represented the social strata among them (Shaughnessy 2004; Shelach 2015: 285–290; Yu and Yan 2005: 188–197).

During the early days of Chinese archaeological work Western Zhou artifacts had been discovered outside of this central region demonstrating the Western Zhou expansion, but the revived work of 1980s and 90s would also finally reveal the centers of many of the Zhou states that were set up by the central court. As they had before, excavations would almost exclusively target lineage cemeteries where the aristocrats and nobles of these states were laid to rest. The lineage cemeteries of many of the great Zhou families from across the Zhou periphery were excavated and published, but what was to be examined was how Zhou aristocrats were be buried there in comparison to the Zhou center (and see chapter 3&4). A superficial analysis reveals similar mortuary customs were observed at these sites, reflecting large hegemonic Zhou religious and ideological rules (Rawson 1999; Thote 2009).

Outside of the Zhou center the situation is similar, but the study of the early expansion that had enlarged the kingdom and brought about the supposed 'Zhouification' process is still poorly understood. The proliferation of the new excavations in the 1970s and 80s had the added benefit of enlarging the known corpus of the only contemporary Zhou manuscripts: bronze ritual vessels inscribed with ceremonial text. Inscribed bronze vessels have long been an important part of Western Zhou studies and for many years were the primary data sources from this period. Newly excavated bronzes have been extremely important in reconstructing the Zhou period. They have advanced our understandings of changes in ritual customs and artistic tastes (Rawson 1990; Falkenhausen 1999), highlighted historical events over the dynasties' almost 300 year reign (Shaughnessy 1991), and presented the sophistication of Western Zhou administrative system (Li 2008). These studies, however, have not led to a renewed study of the Western Zhou expansion or developed nuanced perspectives of region-specific histories. Because Confucius and his followers considered this period the golden age of civilization, scholars have traditionally paid little attention to existing ethnic and cultural diversity and created the illusion that "Chinese culture" already existed at this early date and instead have emphasized the achievements of the Zhou in conquest by viewing this process as an assimilation of the local peoples (Hsu and Linduff 1988; Sun 2001 and see chapter 2&3).

Most scholars do not question the supremacy of the Zhou central power and court rule and proceed to provide an elite-centric reconstruction of the Western Zhou period. For example, the Yan state, residing far to the north of the traditional Zhou center, is credited with expanding the Zhou realm and ultimately acculturating the local populations into Chinese Civilization. Burials containing a combination of artifact styles, both Zhou and native, are taken to reflect the assimilation of indigenous groups into the Yan state (e.g., Jiang and Gang 2010 :475; Sun 2006: 169–170), and bronze vessel hoards as symbolizing the power of the state and the extent of its military expansion (Chen 2006: 83-86; Li 2006: 338-340; Sun 2003; cf Jaffe 2016).

In this top down approach 'Zhouification' is simply assumed to be the outcome of this expansion. The setup of these states was taken to be a strategic move by the Zhou court to control their new polity. Lu's (1993) classic study of the Western Zhou settlement patterns found the physical placement of the Western Zhou states as a defensive strategy to protect the capital in the heart of the Central Plains. Some states, like Qufu and Yan, are taken to be military garrisons used to control the local populace. Li's (2006) work is a tour de force that combines a large amount of archaeological inscriptional and later textual sources to understand the nature of the Zhou state. Yet Li's work, monumental as it is, presupposes a dominant Western Zhou state as well (see chapter 2).

Finding Variation in the Western Zhou Expansion – The Making of Communities of Practice.

Lothar von Falkenhausen's 2006 book *Chinese Society in the Age of Confucius*, was a milestone in understanding the complexity of the Western Zhou world. By meticulously studying and comparing the many excavated lineage graveyards, Falkenhausen argued that the ritual propriety and moral conduct Confucius had described was in truth not a central or common component of this world. Instead, many of the nobleman entombed in these cemeteries exercised a wide range of practices and rituals, a finding that questioned the great ideological unity of this period and with it political unity as well.

The study here proposes to continue this investigation and study the variation of the Zhou world to ask: Why is the expansion viewed as a process of Sinicization and acculturation? What was the process by which unity and uniformity was established in the ancient Chinese landscape? What was the outcome and tempo of this process and was it the same in all places the Zhou arrived at?

Falkenhuasen's study joins many other contributions that have sought to reassess the past by realizing first its complexity: these include the problems with taking an overly confident stance on the ability of later historical texts to explain earlier periods as well as what it is that archaeological data can be used for. Indeed understanding how scholars came to view and reconstruct this period of the Western Zhou, mainly as a powerful political entity ruling a vast state, is a primary concern of this work. Thus the first part of this work is aimed at showing both how the study of the ritual bronzes together with the practice of a special blend of Chinese archaeology, have led to the continued concentration of the powerful Western Zhou state theme and with it the inadequate study of the Western Zhou expansion.

Chapter 2 presents a historical overview of the research on the ritual bronzes of the Zhou period and the textual information they held. It traces shifting approaches towards the way in which this artifact category has been studied and provides a discussion on the limitations of relying so heavily on the bronzes to reconstruct the Zhou world. While these works have contributed greatly to the understanding of royal genealogies and history of the Zhou court, they have also entrenched the notion of a powerful Zhou state controlling a periphery[9]. Chapter 3 reviews the archaeological models and theoretical attitudes that have continued to reinforce the traditional way in which the Western Zhou period is studied. Nationalist and Marxist agendas inculcated with historical narratives, the nread and butter of Zhou archaeology, are not limited to the archaeological study of the Zhou dynasty, but its unique place in the minds of later generations has created a distinctive approach to the reconstruction of its past. Zhou archaeology is greatly influenced by culture history approcuhes and equations of ceramic assemblages with historical groups that are used in turn to reconstruct a system

[9] Non-China or Western Zhou specialist can skip to chapter 3, but should note that through the presentation of these studies I also provide an overview of the prominent approaches to the nature of the Western Zhou polity and its government as well.

of uneven interaction between powerful Chinese centers and inferior 'others'. These attitudes have all provided for the reconstruction of a powerful Zhou polity controlling its periphery.

Following this discussion I present an anthropologically inspired approach that combines advances in ethnicity and culture contact studies to study the archaeology of the Western Zhou expansion. Here, Zhou style artifacts are not taken to reflect the actual presence of Zhou people, but only their influence, thus allowing for a method of analysis that seeks to definite local-specific practices. Unlike previous studies which have focused primarily on texts and mortuary contexts, mostly of elite levels of society, this work presents a new study of the Western Zhou expansion by looking at communities as a whole and examining their everyday practices. To do so I develop a theoretical model with which to approach the archaeological data of this period in order to provide regionally specific historical reconstructions. The project will compare two separate regions in the Zhou expansion: the Northwest or Gansu province and the Shandong peninsula and surrounding region. These areas represent different socio-political and cultural situations into which the Zhou enter and their study will highlight the different types of interactions between the local populations and the Zhou power.

As I aim to question simple Western Zhou reconstructions though a presentation of more nuanced case studies of the dynasty's expansion, I will not present the archaeology of the Central Plains in a separate chapter, but will discuss and review relevant elements and data from this important region at the end of each segment. This approach is followed here as I do not wish to view the Central Plains as the pristine Western Zhou material culture or as providing a litmus test for the delineation of other Zhou or non-Zhou peoples in the periphery. Rather, I aim to create a large data base of contemporary case studies, from the large area of the Western Zhou world, with which to compare and contrast social practices in order to present a more organic reconstruction of this period.

Part II is a presentation of the methods used in this work. They have been selected as appropriate tools with which to reevaluate the Western Zhou in order to provide more region-specific histories of the impact and process of the Western Zhou expansion. The methods I suggest – multivariate statistical exploration of burial data and ceramic analysis of residential assemblages – will provide results that allow comparison between different regions and sites of the Zhou world. In this model the finding of Western Zhou materials, while reflecting the movements of goods, does not directly reflect Zhou domination or the arrival of a homogenous well-defined group. Instead, artifacts and the manner in which they were utilized are contextually studied to reveal the regional- specific process of the Western Zhou expansion and the communities of practice they created. The presentation of daily activates on the one hand, culinary preferences, alongside those that encapsulate specific ritualized events – mortuary customs – will allow for an in depth and wide investigation of social identities in flux as products of intensified interaction and contact. Chapter 4 presents the mortuary analysis pursued in this approach. Rather than view the existence of single artifacts or styles as direct evidence for Zhou domination or presence, this chapter develops a multi-scalar statistical investigation for the ways in which the Zhou arrival and their influence resulted in new mortuary practices. I begin by reviewing the main cemeteries of the Western Zhou elite lineages and the reconstructions scholars have presented for the Western Zhou society through them. Following this survey I present my multivariate statistical approach and illustrate it with an example from the Jin Lineage at Tianma-Qucun in Shanxi province in Chapter 5. This is then followed by a comparative study of modern day Gansu, the region to the West and Northwest of the Central Plains in chapter 6, which saw an independent trajectory of development as compared to that observed in central and northern China (Li 2005; Wang 2012). Archaeologically, remains dated to the Western Zhou period in this region are mainly ascribed to the Siwa 寺洼 culture. The interactions between the Gansu region and the Zhou core, located not far from it, are mostly viewed as having involved frequent violent outbreaks. Siwa sites, distributed directly to the West of the Zhou political center are seen as culturally underdeveloped and technologically inferior communities relative to their Zhou counterparts (e.g., Hu 1980). Chapter 7 compares a number of cemeteries from this region to that of the Jin state to reconstruct local specific burial customs these communities held and with it better assess the impact the Zhou had on this region.

Part III presents the ceramic analysis methods utilized in this study. Chapter 8 begins with an overview of anthropological and archaeological approaches to the study of food as well as the work done on food and cooking practices in the Western Zhou period. I adopt a multi-faceted approach focusing on culinary preferences and the analysis of ceramic assemblages followed by usewear inspection and material composition recording. Here too my method will be illustrated by a case study form the residential units at the sites of Tianma-Qucun in Shanxi province, the focus of chapter 9.

Shandong, or the Far East, will be explored in chapter 10, a region understood to have been heavily influenced (if not directly conquered) as a result of earlier Shang dynasty campaigns (Fang 2013). The Earlier Shang expansion, however, was cut short by the Zhou conquest and the Shang rebellion they quelled a few years later (Li 2006: 306). The traditional narrative many Chinese archaeologists have followed has been to see the local peoples inhabiting the Shandong peninsula as first joining the Western Zhou forces in their war against the Shang, both in the Central Plains and in Shandong (Guo et al. 2013 Jin et al 2013). Following the expansion into the region a number of states were quickly established, several by the royal family or Ji 姬 clan members and others by local peoples (Shaughnessy 1999: 311-313; Li 2006: 309). Chapter 11 presents the analysis of ceramic assemblages unearthed from four different residential sites is Shandong to present the regional variability that was maintained throughout the Zhou expansion by highlighting the variation in the ways these communities cooked and ate their food. The Conclusion, chapter 12, will bring together the results of this study to cautiously propose a new understanding of the Western Zhou expansion. Rather than view it as a military territorial expansion, I understand this period as one of an expanding Western Zhou influence that created a new global realty for all the societies and communities it came in contact with. I find the Western Zhou endeavor, even if stemming from a desire for domination and control, to have been quite diverse in its outcome. In fact whatever power the Zhou maintained it did not translate into control of all wakes of social existence or the predominance and proliferation of Zhou practices. Instead Zhou influence seeped into the social fabric of the many communities they came in contact with, but with varying results. Rather than a top down model where the Zhou system is discerned and the power they held over the territories they expanded to is presumed, I integrate the mortuary and culinary data from the examined territories to understand the measure of impact they achived and with it provide a new understanding of the Western Zhou expansion.

Chapter 2 - Western Zhou Bronze Inscriptions - Their Study and Role in the Reconstruction of the Western Zhou Expansion

Bronze ritual vessels are spectacular artistic and technological accomplishments of the Zhou dynasty. Exclusive artifacts used only by the Zhou nobility, the bronze vessels were an integral part of cult ritual offerings performed at aristocratic lineage temples; the inscribed words they contained, along with the food and wine that were placed in them, all aided in the communication with the ancestors who were the foci of these ceremonies (Falkenhausen 1993a). The vessels themselves are regarded as symbols of political power that reflected the level and status of the nobleman who owned them within the larger Zhou political system. Many of the vessels were inscribed to commemorate important events such as court appointments, military victories and legal suits in the life of the person who commissioned them (Shaughnessy 1999: 286–287). To date, hundreds of bronze vessels have been unearthed from graves and hordes. In fact inscribed bronzes of the Western Zhou dynasty were known to scholars as early as the Han period, and later, during the Song and Qing periods, they were studied and catalogued as ancient artifacts in their own right and out of interest in ancient script (Shaughnessy 1991: 5–34).

A number of known historical texts are considered by scholars to be of the Western Zhou period - including the *Shangshu* 尚书*, Shijing* 诗经 *and Zhouyi* 周易 (Creel 1970), but to date none have been found in a secure Western Zhou context. In contrast, bronze ritual vessels are pristine artifacts of the Western Zhou period and the inscriptions they hold provide the only primary textual sources for its study. Chinese scholars in the earlier parts of 20th century, such as Guo Moruo 郭沫若, Tang Lan 唐兰 and Chen Mengjia 陈梦家, produced classifications of the bronzes on the basis of their calligraphy, vessel type and ornamentation style. By comparing them to the inscriptions themselves, scholars were able to corroborate key events known from the historical narratives, such as the vanquishing of the Shang, the establishment of the eastern capital cities and the expansion into new foreign territories.

Names, specific lineage developments and, most importantly, the chronological framework for the entire Western Zhou period have been reconstructed (Li 2008: 11–13)

Indeed much work has been done on the history of Chinese characters: their etymology, origins and changes over time (an excellent overview on the history and study of Western Zhou bronzes can be found in Shaughnessy 1991: 13-34) as well as on the bronzes themselves, notably as artistic and technological achievements (e.g., Peng 2003; Zhu 2009). The information in these bronzes have been used to reconstruct the Western Zhou polity and its history with great fervor, especially when connections can be made to the later historical documents and the events depicted in them (some newer syntheses include Yang 2003; Zhang 2007; Zhou 2000). However, as they are found on what are understood to be primarily ritual vessels, the historical veracity of the inscriptions has been a topic of heated debates. Herrlee Creel (1936), one of the first Western scholars to incorporate the study of bronze inscriptions in his work on the Western Zhou, did so at a time when disagreement regarding the inscriptions authenticity and legitimacy was still questioned (some of the most forceful critiques were made by Barnard 1959; 1968).

The bronze vessels and their inscriptions play a special role in the discussion on the nature of the Zhou polity and the area it ruled, and the way in which the inscriptions are read provide for very different reconstructions of the Zhou world. Below I present an overview of the main contributions in the scholarship of the Western Zhou by those studying the bronzes and their inscriptions. I focus here on scholarship from the 1970s onwards in Western literature, as this body of research provides new insights into questions of the actual historicity and the place the inscriptions hold in ritual ceremonies – issues that are seldom discussed elsewhere (and see Shaughnessy 1991: 5-34; Li 2008: 11-16). Careful attention is given here to the manner in which political reconstruction of the Zhou polity, the nature of its political administration and the relationship with its regional states in these studies. To reevaluate these works I review some of the new scholarship that has engaged other aspects of the bronze inscriptions in order to highlight the limitations of relying on the bronze inscriptions alone for the study of the Western Zhou expansion.

Herrlee Creel - Inscriptions of Empire

When Herrlee Creel published his important *The origins of statecraft in Ancient China vol I* in 1970, the political capabilities of the Western Zhou polity were far from clear or agreed uupon. The actual power the Zhou court held, its extent and the form of government it presided over were all vigorously debated. Maspero's (1978), still the leading influential Western authority on ancient China, had even argued that any state operating at this early time would have been impossible to govern with any efficiency, and thus the accounts of the powerful Western Zhou state were suspect, to say the least. The states the Zhou were believed to have ruled over could only have been nominally administered through tenuous connections between ruler and vassal (in Creel 1970: 53). In contrast Creel (1970) maintained that the Western Zhou kings ruled an empire. What brought about this realization (he too disputed the power of the Zhou polity before; in Creel 1949), was a massive engagement with the great corpus of bronze inscriptions, both new and old.

In doing so Creel was one of the first Western scholars to incorporate the study of bronze inscriptions in his work. Acknowledging the possibility of forgery and the difficulty of reading these archaic texts correctly, Creel regarded the inscriptions as invaluable sources for the construction of the Western Zhou state (Creel 1936: 339-340; 1970: 464-475). He viewed the inscriptions as being based on, and reflecting, official commands given at the Zhou court (Creel 1936: 342). Creel's study utilized those sources he deemed appropriate for this research (Creel 1970: 444-486) and disregarded latter narratives and ideas unless they could be verified by the inscriptions (Creel 1970: 59). Creel selected 183 inscriptions he understood to be the most important and those he considered least likely to be forgeries (Creel 1970: 55; 86), and mined the inscriptions for important information relating to pertinent historical issues as well as information on government offices and finical and judiciary systems of the Western Zhou Empire.

Scholars had recognized that the inscriptions had plenty to say about the character of the kings (mostly as a posthumous assessment of their respective reigns), but little on the actual procedures through which they ruled their kingdom. Creel, however, viewed the inscriptions much like the poems in the *Shijing*, as reflecting a great deal of interest in administration (Creel 1970: 423). Most importantly, it was clear to him that the Zhou kings were personally involved with the administration of their polities. What lay at the basis of this involvement was that the actual right to rule was by the right of *tianming* 天命, which espoused that the heavens themselves granted a political mandate to the Zhou kings. This political construct in fact lay at the basis not only of the Zhou dynasty's legitimization (those who constructed it), but also all subsequent imperial dynasties (Schwartz 1985). The Shang held heaven's mandate, but it was taken from them and given to the Zhou once their later kings fell into moral decrepitude and practiced debauchery instead of righteous political governance. Thus the Zhou kings were seen to be involved with maintaining the moral upkeep of their subordinates and would dispense punishment to those failing in their responsibilities – to their state and worse, to heaven (even while a legal procedure did exist to deal with crimes; Creel 1970: 186). Government offices, while mentioned quite often in the texts, were not clearly defined or described to a 20th century reader and consequently led Creel to deem them unhelpful for the task of understanding the Zhou government. Kingly personal involvement aside, the exact form of government the Western Zhou presided over or how they ran their empire was hard for Creel to define, but he could identify the seeds of bureaucracy that would come to represent Chinese government in later generations. The very fact that the Zhou loosely played with the titles of various officials in their governments reflected the experimentation phase of bureaucracy in the making (Creel 1970: 105-108; 116-117).

What was clear to Creel was that the Zhou state was powerful. And Zhou power was military power. The kings commanded a great military force and had their armies patrol the imperial roads and occupy garrisons along the sprawling state borders. The Zhou realm was initially expanded through military conquests and the 'barbarians' they encountered had to be held at bay to protect the Zhou borders (Creel 1970: 204-208). That said, the kings rarely exercised their power and authority by brute military force, but rather through carful political insight (Creel 1970: 54-56). While military power was necessary at times it was regarded as rather distasteful when exercised without cause (Creel 1970: 256-257). Instead the Zhou achieved their great accomplishments through personal relationships with their vassals and supporters. The relationship between the king and the regional state rulers was akin to that which is found between a monarch and his vassals, leading Creel to view the political system of the Western Zhou world as what could best be described as feudal in nature, where fiefs were bequeathed to Zhou aristocrats, mostly members of the royal family. State administrations managed local affairs, but their rulers served at the king's behest; all land, and dominion over it, belonged to the Zhou king (Creel 1970: 122-127). While Creel (1970: 315), viewed the setup of the many states during the initial Western Zhou expansion as essential in securing the safety of the empire, they were, above all, a political necessity. The kings needed to share the spoils of war with their allies and lands were given to members of the royal family as rewards for their services (Creel 1970: 342-6).

While the Zhou kings presided over an empire, the actual control their courts had over their territories is less clear, though providing revenue for the central court was expected (Creel 1970: 342-355). The original gifts the Zhou kings had distributed to their supporters become the hereditary rights to be inherited down the aristocratic bloodline. During the later generations of the Zhou dynasty, bronze inscriptions commemorated the Zhou kings repeatedly reinstating the sons of previous rulers. Even the royal inspections of vassal states might have been little more than a formality, and the intervention in local affairs by the central court became a rare event (Creel 1970: 385-7). Yet for Creel this situation was not to be seen as a limitation of the Zhou system, nor did it reflect the inevitable decline of the Zhou court over time. Rather, the balance between the power of the central court and the autonomy of the feudal states was precisely the desired result in the unique system the Zhou kings designed to successfully control their empire (Creel 1970: 436).

Edward Shaughnessy - Structure and Chronology of Bronze Inscriptions

The proliferation of new archaeological data from the renewed excavation of the 1970s and 80s (discussed in chapter 1) provided a torrent of new inscriptional evidence. When Creel published his work the bronze inscriptional corpus he studies was comprised mostly of artifacts collected during the early Song Dynasty. The newly excavated bronzes added inscriptional evidence to an already large corpus and the bronze vessels they were cast in provided equally valuable information on changing styles and vessels types during the Zhou period.

In the early 1980s Edward Shaughnessy published a series of groundbreaking works conducted on these new inscriptions. Most importantly, he was able to uncover and show an underlying recurring structure that was shared by most all the Western Zhou inscriptions:

1) The 'date and place notation' - where and when the investiture ceremony took place, often time referring to a specific day in the Zhou calendar or a great event that had occurred that year.

2) The 'event notation' - would record the event the person who commissioned the vessel was commemorating. Most often vessels were cast in honor of appointments made in the royal government or other memorable events such as favorable outcomes of battles.

3) The 'gift list' - described gifts given by the king or the person commissioning the vessel, in honor of the casting event.

4) The inscriptions ended with a dedication the caster made to his ancestors with the benevolent blessing of the king (overview in Shaughnessy 1991: 76-85).

At the time some scholars were still divided on the topic of the bronze vessels' authenticity. Some had pointed out that even when inscriptions seemed to share form, style and language, what was common was an affinity to write in ways reminiscent of later and better known texts. Therefore the inscriptions were believed to have been probably cast by later generations who had loosely integrated classical texts into the inscriptions, thus making their earliest possible date the Eastern Zhou period, when the classical texts were believed to have been composed (Barnard 1974). In contrast, the structure Shaughnessy revealed showed that a systematic inscription style existed that could only have been followed if a strong rule and tradition governed the casting of these bronze vessels. The fact that the same structure appeared in both the newly excavated bronzes and those of the Song Dynasty corpus meant that they could have only been the product of the Western Zhou period itself (Shaughnessy 1991).

Even while Shaughnessy established the bronze inscriptions as a primary sources for the Western Zhou period, he also cautioned against seeing them as the one key to unlocking the door of the Western Zhou history (Shaughnessy 1991: 297). The Western Zhou bronzes were intended for use in family rituals and as such the information they contained must first be understood in this respect. They did not contain: the "truth of how it was" (Shaughnessy 1991: 187). Thus in his studies and reconstruction of the Western Zhou history, Shaughnessy focuses on key issues and events that took place during the Zhou dynasty and carefully lays out as many sources as possible for the reconstruction of a given event, followed by carful comparisons between the data contained in each source. The origin of the Zhou (or Proto Zhou, see chapter 6), for example, the conquest of the Shang and even the early ideological foundation of the Zhou court are not reconstructed solely on the basis of bronze inscriptions, but approached instead from the carful examinations of oracle bone inscriptions, later historical texts, even legends and archaeological data (Shaughnessy 1981; 1985; 1993 and more fully in 1999: 299-317). One of the greatest contribution made by his studies was the presentation of a detailed discussion on the issue of the Western Zhou chronology starting with the Shang conquest and ending with the fall of the dynasty (1991: 217-287)

In fact Shaughnessy was somewhat reticent to discuss the exact nature and structure of the Western Zhou government and, unlike Creel, preferred to debate the influence the Western Zhou polity might have held, rather than the level of actual political control they wielded (Shaughnessy 1989: 3; 1999: 319). Shaughnessy also pointed out that while, quite understandably, the Zhou rarely commemorated their military defeats and losses, the fact that so many inscriptions deal with battles between the Zhou and their enemies (who Creel referred to collectively as the barbarians) had to reflect a state of continuous peril the Zhou polity found itself in (Shaughnessy 1991: 176-7).

Ito Michiharu (1975) had made a similar point by showing that most all of the Middle and Late Western Zhou inscribed bronzes were found in the Wei river valley – the ancestral home of the Zhou and the seat of their royal court and power – while in the Early period they were distributed among a much larger geographical area. Following Michiharu and others like Shizuka Shirakawa, Shaughnessy argued that the bronze inscriptions did contain important information on the Zhou initial expansions, but that they were mostly confined to the immediate surroundings of the Zhou royal domain. He acknowledged that the Early Zhou expansion involved dispatching members of the royal family to defend and govern strategic points and approaches to the Zhou capital area: The establishment of the stronghold at Chengzhou, for example, was quite important as it controlled both the fords across the Yellow River and the pathway into the Wei river valley (Shaughnessy 1999: 311-312). While the kings possessed a certain degree of power over their subjects, mainly exemplified in the fact that they could be ordered to move and command different regions from those that they were originally sent to, it is doubtful that this could have been executed in the most distant lands the Zhou claimed as their own. In addition the actual power the Zhou kings had could not have lasted long either. As early as the late

Early Western Zhou period, following the disastrous military campaign of king Zhao, the areas under direct control of the Zhou court had begun to contract (Shaughnessy 1989: 21-22).

What the inscriptions clearly reflected, Shaughnessy argued, was the fact that great changes took place during the Middle Western Zhou period. During this time the bronze inscription took on the form of investiture inscriptions where appointments in the army and royal government were given to select Zhou aristocrats by the king, a move that might reflect, for the first time, the development of a professional class of officials (Shaughnessy 1991: 169). Indeed the reorganization of government started with the reorganization of the military (Shaughnessy 1999: 323-4). These attempts to regroup the Zhou aristocrats and consolidate power in the hands of the kings created a scenario where over time an increasing amount of tasks and responsibilities were placed in the hands of the Zhou noble families. This new royal bureaucracy was, contra to Creel, a product of political weakness: A desperate move to mediate the dynasty's loss of power. The gambit would fail, unfortunately, and the power the kings relinquished was precisely what allowed noble lineages to become increasingly more independent in its final years (Shaughnessy 1999: 326). The kings and their courts would gradually lost power over time, forced to deal with enemy invasions from the northwest and diminished support from their subjects. When the Barbarian hoards attacked the capital in 771 BC no one rallied to the king's aid; the city was sacked, the king killed and the polity came to its end (Shaughnessy 1999: 350-351).

Hsu Chouyun and Katheryn Linduff - Combining Archaeology with Inscriptional Evidence

In their important volume *Western Chou Civilization,* Hsu Chouyun and Kathrin Linduff (1988) proposed a multi-disciplinary approach that would critically incorporate literary sources and later historical narratives with anthropologically oriented archaeology theory. Paying careful attention to the material culture of the Zhou world, Hsu and Linduff sought to provide grounded evidence for important topics in the study of the Western Zhou including: the origin place (Proto-Zhou culture), the Shang conquest, the Zhou expansion, its government and the ultimate decline of the Zhou polity. Hsu and Linduff accepted much of Shaughnessy's research on bronze inscriptions, but also paid special attention to the political strategies the Western Zhou employed. They argued that while the power of the Shang state resided in its large and well equipped army, the inferior Zhou military created a system where their power lay in their ability to mobilize the many groups the Shang ruled and quarreled with (Hsu and Linduff 1988: 152). In fact both the conquest of the Shang lands in the Anyang 安阳 area and the later expansion of the Zhou further east, created a scenario where it would be nearly impossible to impose a vast restructuring of the local populace and their local political constellations. As this expansion overextended the Zhou powers, the royal court sought to incorporate many local peoples and their customs to create a common identity and hopeful alliances (or at least sympathy) with the Zhou court (Hsu and Linduff 1988: 145-6).

As their power resided in their ability to successfully foster and maintain political ties, the Zhou needed to create a sympathetic elite class that would be invested in their cause as well as provide the basis of their political authority. In doing so they would instate Zhou authority while remaining tolerant and even accepting of local traditions. This began with the movement of large populations from the sacked Shang capital to the new eastern capital of Chengzhou – a city that was established in an attempt to encourage the Zhou aristocracy and Shang nobles to integrate and coalesce (Hsu and Linduff 1988: 123-126). The expansion of the Western Zhou polity and the states they set up were no different, and the new states were expected to garner support from local peoples (Hsu and Linduff 1988: 148-153). Even when initial circumstances brought the Zhou to an area with military force, this was later played down to accommodate local needs (Hsu and Linduff 1988: 203). The Zhou did this by instituting a unique form of feudalism: a reorganization of the cultural sphere that created new political and social structures, which would allow them to effectively rule. The distribution of lands were also an attempt to properly reward supporters of the Zhou, both their family members and new allies (Hsu and Linduff 1988: 186-226), and the feudal states were expected to manage people and as well as their lands (Hsu and Linduff 1988: 158-163). This 'Institution of delegated authority', as Hsu and Linduff (1988: 152-158) dubbed it, was further bound together by the *zongfa* 宗法 system or the blood/ kinship relations that tied the local rulers, and subsequently their families and relatives, with the royal lineage that ruled from the central court (Hsu and Linduff 1988: 224-226).

The bronze ritual vessels played a crucial role in this system. The kings sought to reinforce legitimacy by adopting the many rites and rituals of the Shang before them in order to solidify alliances with remnant Shang supporters. They adopted the Shang script and religious system and even merged the Shang god Di 帝 with their god Tian 天 (Hsu and Linduff 1988: 108). Following the conquest, the Zhou acquired the knowledge of bronze smelting and casting from the Shang and utilized their vessels as symbols of power and political authority. They also added something new: where the Shang had been content to place clan insignias on the bronzes, the Zhou began inscribing the vessels with words and sentences. Contractual bonds between king and subject were commemorated by the casting of bronze vessels and inscribing the contract in it (Hsu and Linduff 1988: 178-179). The Zhou ruled a confederacy of allies but in their administrative system kinship ties dominated political action and government offices were assigned to important kin members (Hsu and Linduff 1988: 178-185).
Over time, however, the Zhou government changed from an oligarchy of sorts, where power was held in the hands of the few noble families, to one that respected merit as well. Here Hsu and Linduff relied more heavily on the book of documents and poetry in their review of the many offices and positions of the Western Zhou administration (law, military and economic overseers and ministers), but the bronze inscriptions did point to several developments that had begun in the Middle Western Zhou period. The bureaucratization that began in this period would lead to the increased size of

government offices coupled with a restructuring of the division of labor that shifted kingly power from ritual control to institutional authority (Hsu and Linduff 1988: 240-257). That said, government departments did not exist in their modern sense of the term. Positions were still distributed by the kings to descendants of previous officials and the responsibilities they held were personalized, that is to say they changed and were expanded or contracted with each new official that assumed the position (Hsu and Linduff 1988:255).

The administrative system of the royal court was quite different from those of the vassal states (Hsu and Linduff 1988: 229). A Zhou vassal would migrate to a new area with his assigned forces to establish an enclosed fortified area from which to rule local cities and settlements. The newly arrived Zhou peoples would form the upper stratum of the new social order, which was imposed upon the indigenous peoples (Hsu and Linduff 1988: 269). How well the Zhou were able to incorporate local populations into this system is less clear. The inscriptions describe early successful military expansions, but also a subsequent state of almost constant open conflict among feuding elites and hostile subordinates (Hsu and Linduff 1988: 266-267). These relatively fruitful conquests to the east made the eastern capital of Chengzhou quite important, while the position of the capital in the Zhou homeland diminished as a result of the prolonged defensive burden of warding off attacks from the east (Hsu and Linduff 1988: 268). Even with the extreme regulations set to minimize internal conflicts between the lords of the Western Zhou states, as well as attempts to foster enhanced stability and solidarity between the noble families, the system the Zhou kings established was crumbling around them. Numerous cases where the newly established ritual systems were no longer closely followed reflected the decline of the Western Zhou court's ritual and political power (Hsu and Linduff 1988: 176-177 and see chapter 4). Overextended and isolated in their territories to the west, the Zhou eventually lost control over their feudal states. New lands were harder to acquire and set up with supportive vassals, and the older states gradually shirked their financial and military responsibilities to the central court (Hsu and Linduff 1988: 278-279). The eventual fall of the Western Zhou was the collapse of a system that had worked so well at its start.

Jessica Rawson - Artistic Styles and Ritual Revolutions

The new wealth of Western Zhou bronze vessels that allowed scholars like Shaughnessy to reevaluate the inscriptional evidence, also allowed art historians to make new discoveries by examining the artifacts themselves. Looking at surface style and décor, Max Loehr (1968) had previously identified several phases in the development and casting of earlier Shang rituals vessels. In a similar study by Jessica Rawson, the careful examination of the bronze vessels in the Arthur Sackler collection, lead to the presentation of the following aesthetic and stylistic sequence of change spanning the Early to Late Western Zhou period:

1) The Shang style and vessel type were wholly adopted by the conquering Zhou and new and more flamboyant vessel ornamentation and types slowly appeared.

2) Later, in the late 10^{th} century (Middle Western Zhou), the vessels become more angular and flanged vessels disappear almost entirely. Vessel types remain similar to the earlier period and over time a lesser degree of variation is seen.

3) During the late Western Zhou the variation drops further, early vessel types are abandoned and new types are introduced hinting at new ritual functions. Style and design of bronzes change as well and more schematic and less elaborate surface decoration were further developed (Rawson 1990: 144–154; 1999a: 359–364)

In a series of groundbreaking publications, Jessica Rawson argued that based on the style, shape and context of the bronze vessels, a ritual reform took place during the Late Western Zhou period. Scholars had already noted the many changes the Western Zhou bronze vessels underwent, but Rawson highlighted the regularity in the number, style and size of the bronze vessels in Late Western Zhou tombs, along with a uniform inscription format found in them, which appeared, suddenly, during the Late Western Zhou period (Rawson 1988; 1989; 1990; 1996). This reform, or revolution as it is also called, was undocumented in any of the transmitted Western Zhou texts or those that followed this period, but several archaeologists had previously described the development of a *lieding* 列鼎 system during the late Middle Western Zhou. In this system the number of bronze vessels noblemen were allowed directly corresponded the rank that individual held in the Zhou aristocratic order (Guo 1956; Yu and Gao 1978; Zou and Xu 1981 and see more in chapter 5). Indeed the fact that this practice was followed closely by so many of the Zhou nobility suggested to Rawson that this reform must have been implemented by a strong centralized force (Rawson, 1999a: 436–440). Moreover, it was very likely that these changes were taken as measures in response to special political pressures and needs during the Middle Western Zhou period that had already been discussed by Shaughnessy and others. That said, for Rawson all the changes that had taken place, from the Early to Late Western Zhou periods, were first and foremost ritualistic in nature (Rawson 1990: 96-97). In fact, Rawson argued that the bronze inscriptions, while containing important information on the socio-political elements of the Zhou world, including historical events, where ultimately ritualistic i.e. made and used in ritual contexts. The Zhou noblemen employed inscribed bronzes to record in words and preserve in physical form the achievements of their family members (Rawson 1993: 811–815). Bronze vessels belonging to multiple generations of a single family (usually found together in hoards) exemplified how the rites recorded in the bronzes reflected a concern with individual status. Lineage cemeteries of the Zhou were organized along family lines and individuals were laid to rest in their respective family plots (Rawson 1999a: 368-371 and further discussed in chapter 3&4).

Thus in her reconstruction of the Western Zhou polity, Rawson focused on the archaeological record first and in doing so is constantly is mindful of vessel assemblages and their context. Inscriptions are consulted to corroborate the defeat of the Shang (Rawson 1993: 818), for example, but little in respect to specific historical events or important individuals of the Western Zhou world is provided. Even less has been said on the exact nature and flavor of the Zhou government or its administration. In contrast, ritual and the ideological underpinnings of Zhou political legitimacy have been discussed in depth. Like Hsu and Linduff, Rawson (1999a: 384-385) found that the Zhou's initial greatest strength was their ability to command a large coalition of support, including loyal allies of the Shang. This was achieved by successfully appropriating divine access to political authority and expressing it in material form i.e. ritual bronze vessels. The casting techniques were probably adopted from or created by Shang artisans (Rawson 1989) and the continuation of many of the Shang ritual practices in the Zhou repertoire might even point to the fact that the Zhou held similar beliefs to those of the Shang (Rawson 1987: 38; 1996: 217–219). For Rawson then the bronzes were a tool of political solidification employed by a central court and were used to cleverly keep in check aspirations for power from the Zhou nobility. Indeed, bronze vessels were bestowed by the Zhou kings to placate aspiring families, an act that created in turn a system of status and rank, while at the same time requiring the nobility to be further invested in the Zhou socio-political hierarchy. This system would produce a Zhou aristocratic world that was linked through a network of familial ties, but bounded by a similar ritual practice and ideology that necessitated the Zhou kings at its apex (Rawson 1996: 217-219)[10].

The reduction in size of many of the bronze vessels during the Middle Western Zhou period reflects economic difficulties, possibility as a result of prolonged military campaigns (Rawson 1999a: 418-419). At the same time, new vessel type and ornamentation styles were introduced as well as artifacts made of new materials, such as jade, that had significant ritual implications (and see discussion on the Jin lords' graves in chapter 5). The Ritual Reform of the Later Western Zhou period was an attempt by the central court to reaffirm ritual control and order among its vassals (Rawson 1999a: 438–440; 1999b: 46–47). It was adhered to at first and would also greatly influence bronze industries of

[10] One could argue that in this system the content of the inscriptions themselves did not play quite as large of a role as they did for other scholars.

surrounding regions as well (Rawson1988), yet it was not enough to keep the nobles of the many Zhou states from growing apart. Their fealty to the Zhou kings and their courts eventually became nothing more than a formality.

Lothar von Falkenhausen - Vessels of Ritual and Music

In a massive review of both the inscriptional works of Edward Shaughnessy and the art-historical analysis of Jessica Rawson, Lothar von Falkenhausen (1993a) presented a forceful critique of what the bronzes vessels actually reflected. The approach Shaughnessy advocated was for Falkenhausen commendable, but ultimately did not seem "to do justice to the complexities of the situation" (Falkenhausen, 1993a: 145). As Rawson and Hsu and Linduff had done before, Falkenhausen too viewed the bronze inscriptions as essentially religious documents; consequently they could not be regarded as unproblematic historical sources in the reconstruction of the Western Zhou period. This could be readily understood by realizing that the vessels predominately were found in tombs of Western Zhou aristocrats and used in the rituals connected to burial ceremonies. Falkenhausen even doubted whether the inscriptions were intended to be read by the living at all. The inscriptions were placed in less than visible locations: the inside of vessels or on the bottom part of the back side of bronze bells (Falkenhausen, 1993a: 146-7).

Shaughnessy had acknowledged the ritualistic nature of the bronzes, but what Falkenhausen aimed to show was just how little they had to do with anything other than ritual. To begin with, the division Shaughnessy suggested for the reading of the bronze inscriptions could only be applied to a very small number of long inscriptions he argued. In fact the vast majority of the inscriptions were quite short and were abbreviated to conform to their main function, namely ritual communication with the ancestors. Some inscriptions did contain information on legal matters, land disputes and official commissions, but they still were only commemorated in an abbreviated form – edited for a religious purpose. Not surprisingly events the bronzes commemorated were accounted for in the most positive of manners to successfully accomplish communication with the ancestors (Falkenhausen 1993a: 167-170). This was no different than what the Shang had done before them and furthermore, Falkenhausen argued, inscriptions could never be detached from the bronze vessels they were inscribed on. In doing so, Falkenhausen took Rawson's art historical approach a step further to make the study of morphological and stylistic ornamentation of bronze vessels crucial for scholars who were interested in deciphering the message the bronze artifacts were meant to convey (Falkenhausen 1993a: 147).

Not surprisingly, Falkenhausen was more receptive of Rawson's work and accepted the ritual reform she proposed (Falkenhausen 1993a: 212; 1999a; 2006: 43–56). In contrast, however, Falkenhausen argued that the greatest change the Late Western Zhou rituals underwent was in the way they elevated musical instruments and introduced new sound aesthetics into their rituals (Falkenhausen 1993b). Bells were reserved for only the highest levels of aristocracy (Falkenhausen 1993b:32-51), but the *guce* or rhymed prayers found in the inscriptions, signified for Falkenhausen the increasingly poetic character the rituals undertook and that inscriptions were meant to be read with accompanying musical scores (Falkenhausen 1999b:175). Late Western Zhou rituals became extraordinary multimedia events of music, food, dance and the reading of poetry (for a reconstruction of these rituals see Falkenhausen, 1993a: 147-151 and 1999a).

In fact for Falkenhausen this was just one in a series of reforms that took place in the ritual systems of the Shang through the Han periods. Archaism or the ritual innovation expressed in terms of a return to hallowed antiquity, was a strategy employed by many a concerned ruler throughout early Chinese history (Falkenhausen 1996; 1999b; 2001; 2004; 2008a). As a student of K.C. Chang, Falkenhausen finds shamanistic elements in early Chinese religion and art as well as a central concern for maintaining harmony between nature and humanity. In the kinship-based societies of the Shang and Western Zhou, this was achieved by proper rituals to the ancestors that were petitioned by the living to maintain this sacred link. The kings and heads of the various lineages were charged with leading the spiritual communication with the ancestors and to conduct them properly (1999a: 145-62; 2004: 476-477; 2006: 47-9 and note 21).

Indeed, in his analysis Falkenhausen pays careful attention to the ornamentation of the bronze ritual vessels, noting that animalistic styles were adopted from the Shang and survived even as decorative patterns became increasingly geometric and abstract. Hence the change that took place in the Late Western Zhou reform was essentially a religious one. The abandonment of representational art and zoomorphic imagery was actually a change from a heavy emphasis on animals as spiritual guides to an emphasis on abstract form:

> "In religious terms, the stylistic shift brings out an anonymizing, rationalizing tendency that seems to have pervaded the Late Western Zhou Ritual Reform. When animals are represented as appendages to Late Western Zhou bronzes, they no longer have their former awe-inspiring aura; humans, as well, are always shown as stock figures fulfilling certain tasks in subordinate, subservient roles" (Falkenhausen 1999a: 160).

While securing the ancestors' blessings remained the reason rituals were performed with bronze vessels, the focus of the ceremony itself shifted from the spirits to the community that gathered to see them performed (Falkenhausen 1999b: 166). This change was coupled with the accompanied emphasis on archaism as a way to connect the present with the past and give legitimacy to the changes that had been introduced into the sacred rituals. Thus, the bronze vessels were embodiments of relationships of power between king and vassal, ancestor and descendant (Falkenhausen 2006: 50-52 and see more in chapter 4).

Taking this religious view of the bronze vessels (in a sense fleshing out the ritual aspect Rawson had previously highlighted), Falkenhausen seldom uses information from the inscriptions in his discussions of Western Zhou history and relies instead on the ever-increasing archaeological data. In his celebrated book *Chinese Society in the Age of Confucius,* Falkenhausen (2006: 1-10) argues that the Western Zhou was not the grand age the scholars of the Eastern Zhou period envisioned. Instead, the Zhou was a fledgling dynasty that had ascended to the level of supreme power in a foreign region. Falkenhausen's aim is to show that taking many of the traditional accounts of this period at face value, mainly the reconstruction of a fully developed and powerful Western Zhou state, has conditioned the way scholars have reconstructed the past. Iconoclastically, Falkenhausen proposed that it was the memory of the orthopraxy of Zhou royal rituals (and not the rituals themselves), which had created the foundation of a common Chinese or Huaxia identity that linked the many Eastern Zhou states and polities together. Yet archaeology had shown that the rituals had developed only in the Late Western Zhou and could not be attributed to the earliest time of the Zhou dynasty (Falkenhausen 2006: 401-404).

Rather than delineate the nature of the dynasty's power, Falkenhausen's work focuses on the regional variations, particularly the discrepancies in mortuary practices and burial rites. The kinship network of the Western Zhou aristocrats is studied in great detail and differences in terms of expressions of wealth, cemetery organization and religious attitudes on the afterlife are discussed (Falkenhausen 2001; 2003; 2004; 2013). The initial Zhou expansion might have been less political in nature and more of a social necessity, where the reorganization of local populations under principles of Zhou lineage order was a consequence of earlier population migrations (Falkenhausen 2006: 244). This reorganization was achieved less by military force (most all of the Western Zhou cities and sites were not walled – an exception being the Liulihe capital of the Yan state) than by intermarriage. Leading Zhou lineages would be united and clans would be able to form political alliances (Falkenhausen 20006: 164-167). Ultimately the Zhou ruled securely only form their very immediate surroundings and were forced to constantly negotiate political links in an ever expanding and changing kinship network. The Zhou kings and the royal court are believed to have moved frequently between different capitals leading

Falkenhausen to argue that political power came from internal organization of lineage systems and not authoritative central places or capital (Falkenhausen 2008b: 223).

Li Feng - Bureaucracy and the State

An experienced field archaeologist who studied bronze inscriptions with Matsumaru Michio and Edward Shaughnessy, Li Feng presented a strong critique of Falkenhausen's minimalist approach to the study of bronze inscriptions. Falkenhausen's work had greatly impacted Western Zhou scholarship, even as most scholars in China continued to regard the bronze inscriptions as primary historical sources. As a trained field archaeologist Li worked for many years in the Central Plains region excavating Western Zhou period sites. He presented important studies on the proto-Zhou culture and fine-tuned the chronology of the Western Zhou dynasty as it was reflected in the bronze ritual vessels (Li 1986; 1988; 1991). Li investigated idiosyncratic calligraphic variations and showed that a single text could be inscribed by a number of different peoples (e.g., Li 1997)

Li acknowledged the many issues Falkenhausen and others had raised, but like Shaughnessy, he believed the inscriptions contained more than just religious information. Following Wu Hung (Wu 1995: 63), Li postulated that if the events described in the bronze vessels had never taken place they would not have been commemorated at all[11]. Thus, even though the bronzes were used in religious ceremonies, they were commissioned to commemorate important occasions in the lives of those who ordered them. Consequently, the texts hold invaluable information on the social and political life of the western Zhou elites (Li 2006: 9-10).

Li argued that a closer reading of these inscriptions showed that the social context in which the bronze vessels were created was fluid and could not be placed in religious ritual context alone. He pointed

[11] Li Feng also follows Wu's model where religious ceremonies can be seen to have changed from the Shang to Zhou periods, as the latter were less concerned with communicating with the ancestors and more with the glorification of individual achievements.

out that many of the bronze inscriptions Falkenhausen studied were in fact inscribed on bronze bells, which comprise only a small percentage of all inscribed vessels, and, furthermore, that a large number of longer inscription were cast without any ancestral dedications at all (Li 2006: 18-19). Examples of non-ritual context include the celebration of marriages and the dedication of vessels for living kin members (Li 2011). Instead of presupposing religious frameworks, scholars, Li argued, needed to investigate the specific motivations behind each individual bronze vessel and uncover why it was commissioned and inscribed (Li 2006: 16–17; Li 2008: 12–20).

Confident in the historical data held in inscriptions, Li (2006) set out to reconstruct the Western Zhou polity and its history by way of integrating textual sources (including later historical texts) with available archaeological data. He tackled a wide range of issues from the location of the primordial Zhou homeland (aka Proto-Zhou), the archaeological correlates of the Zhou's enemies to the north and west as well as the decline and eventual fall of the Western Zhou polity. Where Falkenhausen's work centered on social issues, mobility and local differentiation, an important consequence of Li's reading was a return to the idea that important administrative information could be gleaned from the texts and with it the reconstruction of the central and strong government the Western Zhou presided over. Li (2003) pointed out that notions of a 'feudal' Western Zhou political and social organization were inappropriate, as they did not conform to any understanding of feudalism known from the European example they was borrowed from. Lands given to loyal subjects as the basis for the establishment of regional states were in fact salaries for bureaucrats who held offices in the Zhou central government. The aristocrats who held them could even sell theem to other nobles – a right the nobles of European feudalism could not claim (Li 2003: 130-131). Similarly, the five ranks mentioned in the inscriptions– *gong* 公, *hou* 侯, *bo* 伯, *zi* 子 and *nan* 男 traditionally translated as "duke," "marquis," "count" or "earl," "viscount," and "baron – should be seen not as ranks, but as titles of the positions noblemen held in the Western Zhou government (Li 2003: 134-5)[12].

What these positions reflected instead was a certain degree of specialization that signified for Li the fact that the Western Zhou administration was very much an ordered form of government with a clear organization. In fact, Li (2001) argued that the bronze inscriptions described an advanced administrative system complete with specialized bureaus where officials worked out of specific functional government buildings. Li (2004) also argued that even while the position of king was a hereditary right to be passed from father to son, the bronze inscriptions reflected a system where only a small portion of government positions were inherited. Hereditary positions did exist, but were an uncommon practice and mostly limited to the Middle Western Zhou period. In the late Western Zhou period this practice was abandoned in favor of seeking qualified professionals to man positions in the Zhou government. A solid family background was still an important quality for job seekers to have, but in later periods it no longer guaranteed one (Li 2004: 10-11). These ideas were more fully developed in a latter monograph that proposed to view the Zhou government as a well-organized bureaucracy, even satisfying many of the points that were described by Weber in his study of administrative systems (Li 2008). Like Creel and others before him, Li saw many of the military campaigns and conquests of the Zhou as necessary for the defense of the realm and the seat of power located in the Central Plains. Geography was a key consideration in the political realization of the Western Zhou state. Li (2006: 63-6) viewed the establishment of the Eastern capital in Luoyi (Chengzhou) as a direct lesson of the Zhou's second conquest of the Shang. Chengzhou became the eastern center in the dual capital government system of the Zhou: Not only did the city provide a

[12] This idea was later described by Li to be a product of the Confucian understanding of the five ranks prevalent in Eastern Zhou times and its anachronistic projection back on the Western Zhou system (Li 2008: 128-129)

firmer hold on the former Shang territories, it also oversaw the administration of the colonial states the Zhou set up as the expanded eastward.

In fact Li (2003; 2006; 2008) exclaimed that in order to fully comprehend the political structure and organization of the Western Zhou state, one must look at the nature and function of the regional states and their relationship to the central court. This relationship was complex; to begin with the regional states maintained governments that seemed to mirror that of the central Zhou court. They oversaw its people, resources and military forces, but their rulers did not hold sovereignty over the land; Rather they ruled only at the behest of the Zhou king (2008: 245-246). The rulers were expected to provide military assistance when requested as well as taxes and the king could, hypothetically at least, transpose a ruler from one state to the other (Li 2008: 247-8). Inspectors were placed in the regional states by the Zhou king to oversee the local ruler and ensure they were governing their lands with the Zhou central courts' best interest in mind. Bronze vessels commemorate visits made by the local rulers to the capital where they paid their respects to the Zhou kings, with great ceremony and ritual (though the little data that does exist is limited to the Early Western Zhou period (Li 2008: 258-264).

The expansion of the Early Western Zhou period placed members of the royal family along important routes and strategic locations and charged them with establishing garrisons to control and govern the local populations. The establishment of a Zhou regional states also created a new social system with the Zhou nobles, the conquerors, as the elites of the new society, leaving the natives to become the commoners and subjects of the regional states (Li 2008: 243-245). The integration of the newly conquered lands into the Zhou world was an important project of the regional states, but was by no means a straightforward or smooth process: The archaeological material, most notably bronzes found in the territories attributed to these states, shows that while the elites enjoyed the use of similar vessels to those their contemporaries enjoyed in the Central Plains, the ceramic traditions remained different until the Late Western Zhou when the traditions were finally merged (Li 2006: 76-82; 300). Ultimately, however, the Western Zhou project, the common culture and unity of the state they aspired to, was to become the common elite culture they created (Li 2013).

Reevaluating What the Bronzes Can Tell Us

Advances in the scholarship of Western Zhou bronzes and their inscriptions have provided important new information on the Western Zhou and the nature of its polity. Yet like a pendulum moving between one approach to the other, scholars have oscillated in their views towards the historicity of the bronze inscriptions: from total mistrust to authentic sources, to ritual paraphernalia and back to historical documents.

Herrlee Creel (1970) argued that the Zhou ruled a vast empire through a well-established feudal system of authority. The regional states they established were actually fiefdoms that were bequeathed by the Zhou kings to their kin in order to maintain a healthy relationship with members of the royal family (Creel 1970: 419-424). Hsu and Linduff (1988) similarly pointed out that feudalization and the endowment of land facilitated the Zhou expansion, as it allowed the central court to dispatch family members to govern distant lands (a process which also had the added benefit of appeasing aspiring family members and removing them from the court at the same time). The bronze vessels were cast to commemorate the contractual bonds between king and subject (Hsu and Linduff 1988: 178-179). Shaughnessy (1991; 1999) argued that bronze inscriptions provided invaluable information on great political and administrative changes that transpired in the Western Zhou government. The bronzes contained investiture inscriptions that signaled the development of a professional class of officials as well as military and bureaucratic appointments of Zhou aristocrats (Shaughnessy 1991: 169). Li Feng (2008) took this a step further and read the bronze inscriptions as reflecting a bureaucratic system complete with specialized positions and offices. For Li, while members of the royal family were indeed charged with the expansion of the Western Zhou polity and the creation of new frontier states, they were all organized by a central authority bent on regional domination that incisively placed its regional polities in strategic locations (Li 2006: 70-76). In contrast, both Jessica Rawson and Lothar von Falkenhausen are more cautious in their approaches and view the bronzes and the inscriptions they contain to reflect religious attitudes of those who created and used them. For Rawson (1999a) Changes in ritual ceremonies and the vessels that comprised, them reflected a dynasty in a constant peril of collapse whereas for Falkenhausen (2006: 401-404) the many flavors of Zhou material culture assemblages and practices, mostly burials, the regional states boasted, made accepting an all-powerful and controlling Western Zhou state a later Eastern Zhou and Han idealization.

It is important to state that I agree with Li Feng that the bronze inscriptions contain more than just religious information (also accepted by Falkenhausen 2011) and that it is possible that the Western Zhou developed a complex administration system that governed the Central Plains and the immediate royal domain. I am, however, reticent to accept his argument in full, particularly when dealing with the regional states and the reconstruction of their histories. First, the vast majority of the bronzes Li Feng has studied are concerned with the Central Plains (but see Li 1997). Furthermore, the methodology that calls for a 'no one context' reading of the bronzes does not result in a carful case specific study of the inscriptions, but in a 'no context' scenario. This allows Li, erroneously I believe, to move freely between periods and, more problematically, between places as if all the bronzes were found in a well-organized archive[13].

Other studies have in fact explored the manufacture and use contexts of these bronzes, but have done so more carefully. Bronzes found in hoards are studied separately from those unearthed in cemeteries (e.g., Shaughnessy 2004), vessels that served in temples and ancestral shrines (e.g., Falkenhausen

[13] For a more in depth and sterner review of Li's 2008 work see Falkenhausen 2014: 259 who finds, among other things, that "Li tends to make the Western Zhou government look more modern than it really was"

1999a), or in the royal courts (Falkenhausen 2011). Others have uncovered additional information contained in the inscriptions that relate to other facets of the Western Zhou world: Comparing the inscriptional styles to contemporary textual sources in order to point to principal ideological constructs that were advanced during turbulent political atmospheres (e.g., Kern 2009). Uncovering elite lineages history and social roles as well as their relationship to royal power (Sena 2005) reconstructing economic systems of trade, barter and markets (Cook 1997); delineation of the Western Zhou Legal system (Skosey 1996); and even the recreation of the life of a Zhou noblemen (Khayutina 2002).

Nonetheless, as noted by Rawson (1999a) and Falkenhausen (2006), the Zhou bronzes were primarily paraphernalia of ritual performances used to secure the ancestors' blessing and with it the reaffirmation of the social hierarchy of the Zhou kinship order. In this work I follow Michael Puett (2001; 2002; 2008) who has shown that the Zhou rulers were concerned, above all, with maintaining and demonstrating the validity of their rule to their subordinates and the powers above. 'Ancestorizing' – the continuation of the main stem of the lineage – was an important enterprise of the Western Zhou royal court in their effort to secure political legitimacy for their rule (Puett 2001: 33-34). By reconfirming the direct descent to their predecessors, the Zhou rulers hoped to solidify their claims to political authority and ensure their rule on earth (Puett 2008). Bronze ritual vessels were cast to guarantee that earthly actions would not be undone by capricious ancestors. Since the Zhou kings were more than aware of the importance of legitimacy of their rule in the eyes of the gods, they needed to present their rule as a continuation of the mandate of heaven they had originally been awarded. Accordingly, new appointments were presented to the ancestors as 'business as usual': a nobleman assuming a position that his father (and his father before him) had assumed to serve the reigning Zhou king, in a similar manner his forbearers had served the king's father (and his father before him). This framework of continued service the inscriptions were comprised in, not only secured the approval of the Zhou royal ancestors, but ensured that Zhou nobility would continue to sacrifice to their own lineage ancestors on behalf of the Zhou dynasty's ancestors as well: The bronzes, mostly dedicated to specific ancestors of the noblemen who commissioned them, would be used in the aristocratic temple and thus would forever preserve the inscribed words that locked the service of the aristocratic houses to the Zhou kings (reviewed in Jaffe 2015).

Ultimately, bronze ritual vessels and their inscriptions were sophisticated political tools used by Zhou rulers in their efforts to remain in power. As Falkenhausen notes, from these ritual vessels, at best, we can derive a shadow-like understanding of the affairs the bronzes recorded, their actual light is lost to us[14]. When read in this manner the Zhou emerge, contra Li, as anything but satisfying proto-Weberian criteria of a meritocratic bureaucratic order, which formulized in the Early Western Zhou period. Rather, the Zhou government was endlessly preoccupied with persuading the ancestral spirts in their efforts to garner support for their fledgling polity (Puett 2001: 30-34; 2002: 61-68).

Note that agency and power can be easily reversed when a different tone of voice is used to read the dedication inscriptions of Zhou officials in later periods. With an ever-growing situation where power and control was being usurped from the Zhou kings, bronze inscriptions might have been an attempt to retroactively ratify events that had already transpired. The kings, we can theorize, were quickly becoming a rubber stamp of political events that had already transpired, their bronzes awarded to local rulers for lands and titles that may very well had been taken by force – much to the dismay of the central court. In fact awarding offices or titles might have been a final appeal to the lords to have

[14] In fact most everyone agrees that the bronze ritual vessels were used to communicate with the ancestors. What scholars disagree on is whether or not the ancestors where passive nodal points in a system of worship, receiving the words of the living and passing them on to the powers above, or where they capricious spirts that required endless pacification and appeasement. Li Feng, and others, I believe, subscribe more to the former than the latter. That is to say that for those contexts in which the caster identifies the ancestor he is dedicating the vessel to (and they are great in number), the ancestors are being informed i.e. reported to. Consequently, power, authority and government, in this approach, were the affairs of the living.

political power reconvened under the auspices of the Zhou royal court (Puett personal communication).

This discussion highlights the caution we must exercise when using these documents as sources for the historical study of this period. Consequently in the realm of the living the bronze ritual vessels were used, predominantly, to maintain kinship links in an ever expanding society. Nicholas Vogt's (2012) work on ancestral ritual meticulously documents changes in ritual practice from the late Shang to the Late Western Zhou period. Vogt convincingly shows ritual to be a royal strategy of control and influence employed by the Zhou royal court in diverse ways[15]. In fact Khayutina's (2002: 91) review is a good example of how ritual bronzes were concealed from the public sphere and required the authorization of both the dead and living members of a given clan. Thus they should be seen not as the private property of any individual aristocrat, but of the clan he belonged to[16].

It is also important to remember that the actual reconstruction of the Zhou government is a complex task, which is influenced by both later notions of what the Western Zhou should be – as understood in Chinese historiographical narrative – as well as how to conceptualize and relate its uniqueness in contemporary scholarship (and see chapter 3). Thus, I view Li Feng's critique of those who find the Western Zhou polity as likened to European feudalism – mainly Creel and Hsu and Linduff – as simplistic and unfair. Li is puzzled, for example, by Creel's assertion that the Zhou successfully ruled a large empire via a feudal system of government (Li 2008: 10). While the simplistic use of a loaded term does indeed have the potential of conditioning the reader to preconceptions of what the Western Zhou polity should be, one could easily argue that by viewing Western Zhou administration as

[15] Vogt's work is quite exceptional in its scope and extent yet I remain puzzled as to why he did not provide any thoughts on how it builds upon earlier scholarship. This chapter is written in part to pay respect to the giants whose shoulders I look to.

[16] Khayutina uses the term clan to signify what others have referred to as lineage. See Khayutina (2002: 86) for her definition following (Murdock 1949) and Falkenhausen (2006: 64-70) for a different discussion of clan and lineage, and the one followed in this work

bureaucratic, Li Feng is guilty of the same reconditioning of his own readers. These scholars, much like Li (2008), struggle to find an appropriate political construct that best represents the Western Zhou polity. In fact, both explicitly note that European feudalism is simply the closest form of government the reader would be able to relate to: Creel argued for a hybrid government that understood the inherent problem of ruling such a large state by delineating large expanses of land to kin members without having it dissolving into smaller autonomous units. While perhaps doomed from the very beginning, the flexibility of the Zhou administration was precisely what allowed them to survive for so long. Unique and prone to rapid changes, the Western Zhou government in fact "defies simple theoretical models" (Creel 1970: 424)! Similarly Hsu and Linduff merely draw inspiration from the feudal systems of Europe to find a unique Zhou feudal system that was "an institution of delegated authority" (Hsu and Linduff 1988: 184). Similarities to the European feudal system are to be found in a system where the king delegated authority to the aristocracy, assigned them missions during times of war and peace and honored them in the contractual relationships between king and vassal. While these allegiances were in fact reminiscent of the European feudal system, the commemoration of these charges in bronze vessels demonstrated that these ceremonies were conducted in accordance to strict ritual codes that were unique to ancient China (Hsu and Linduff 1988: 185).

It is important to note that Li's studies can be seen as continuing the tradition of 'arguing with Weber' that is common to all scholars of Ancient China: can the early Chinese civilization and government be understood along Webern lines of rationality, bureaucracy and correlative forms of thought or does it diverge from these Western ideals in a unique Chinese flavor? Scholars have disagreed with Weber on either his refusal to extended Western criteria to Ancient China (such as Keightley 1987; Schwartz 1985 and in this case Li Feng 2008) and those who argued for the inappropriateness of Weber's definitions to begin with (such as Yan Wenming 1987; A.C. Graham 1986 and most famously K.C. Chang 1989 and See Puett 2001; 2002 for an excellent overview on these topics).

Nevertheless, there is no simple way to study China 'on its own terms'. For the Western Zhou, Balazas (1964) preferred the term of "officialdom". Schwartz (1985: 43-46) pointed out that unlike the legacy of Western thought were bureaucracy and feudalism are taken as antithetical, in China it would be more accurate to view each as co-evolving and reinforcing one another. In a similar vein using later Chinese texts to understand the past has its own set of problems. Maria Khayutina (2008) provides a fascinating study on later conceptualization of the Western Zhou government and capitals as seats of power, ranging from the periods of Eastern Zhou into the Han, to argue for the potential hazards of uncritically using later texts in the reconstruction of this period. In fact in a series of recent studies that approach the study of the Western Zhou, Khayutina has argued for a very unique political reality and governmental setup. The Zhou are believed to have maintained a number different capitals in later historical sources: Bin 豳, Qi 岐, Zongzhou 宗周 often seen as the twin cities of Feng 豐 and Hao 鎬 and the eastern capital of Chengzhou 成周. Not all these sites were established at the same time, but they are still understood by most scholars to have remained important and central throughout most of the Western Zhou period. In contrast, Khayutina (2008) preferred to view them as royal residencies, a term she feels is less loaded with pre-conceived notions of rulership and power, especially when factoring in the actual archaeological evidence for these sites. Instead these places created a network of courtly power where the Zhou kings engaged in various political, administrative and religious activities. Consequently one could speak of a royal domain, but not of a central capital that constituted the epicenter of the Zhou state. The Zhou political and administrative system focused on the personage of the king and not a geographical space. At these residences he would offer reception and royal hospitality (Khayutina 2008: 27). For Khayutina then, this situation reflects a level of powerlessness (as Puett has argued) in a polity where the Zhou kings could not summon rulers of the regional states at will, but were relegated instead to having to hold court in an ambulatory manner as they circulated between different residences (Khayutina 2008: 28).

When the kings held court with foreign non-Zhou rulers, as an alternative to war or to demand tribute, they in were in effect transposing their royal hospitality from the central court to the periphery (Khayutina 2010: 38). In fact the kings' royal tours to the regional states themselves might have been a response to the diminishing power of the central administration, which was no longer able to summon regional lords and rulers to court (Khayutina 2010: 25-26). What little power centralization that has been argued to have taken place during the Middle Western Zhou period, happened, for Khayutina, in a smaller and much less powerful Zhou kingdom (Khayutina 2010: 47-48). The physical offices Li argued the Zhou administrators worked out of should actually be regarded as general elite residences where administrative functions were carried out as well (Khayutina 2010: 40). In fact Chengzhou, the eastern capital and locus of control of the Eastern territories, became almost obsolete as a center of royal administrate control. While the kings may not have had power to command their vassals, they attempted to display their power: "through the right and ability to host all kinds of people anywhere within the reach of their authority, Zhou kings manifested themselves as sovereigns and suzerains" (Khayutina 2010: 63). For Khayutina, then, the roles were reversed: It was not the aristocrat who would commission a bronze vessel to commemorate an honor bestowed by the Zhou king. It was the king, desperate to stay relevant, who presented gifts to would be allies – the vessels a material artifact to be preserved, hopefully, in the aristocratic temples as the memory of a cherished meeting.

The only conclusion from this presentation and discussion is the difficulty in using bronze inscriptions to understand the nature of the Western Zhou government, its political strategies and, subsequently, how the peripheral states and regions were ruled, if at all. Even for those who would ascribe great power to the Western Zhou polity, the vessels, ritual or not, were elite paraphernalia and the history they tell present can be seen to ultimately provide only a limited perspective. This is not a unique problem for the study of the Western Zhou and is indeed a common issue for all those relying on textual evidence for their reconstruction of the past. What is gained from this overview is compelling evidence, however, to question the level of power they Zhou court held; Indeed I would argue that we cannot assume the Zhou controlled their great territory to an extent where they would have naturally forced a process of 'Zhouification' in the peripheries[17]. We must turn to other sources of evidence to do so: namely the archaeological record.

[17] Anthropologically inclined readers have surely been cringing at the way the words 'power', 'control' and 'force' have been used up until now. This is done so purposefully in a desire to highlight the lack of discourse they have received in the scholarship of the Western Zhou. They, and other terms, will be promptly addressed when the Zhou polity and its sources of power will be revisited in the final chapter

Chapter 3 - Chinese Archaeology Method and Theory

Introduction

Developments in the study of the Western Zhou bronzes and their inscriptions have certainly advanced the field of Western Zhou research. They have in fact corroborated a great deal of the traditional historical narrative, yet their predominance has also patterned the way archaeologists have approached the study of Western Zhou material culture, as a large amount of publications deal with the presentation of unearthed bronze ritual vessels and their interpretation. Although early excavations targeted domestic contexts and production areas, archaeologists have focused their attention on cemeteries and elite material artifacts. These archaeological loci not only have a higher probability of containing bronze vessels (and more importantly inscriptions), their remains can also be better connected to historical texts. Many archaeologists turn to later texts such as the Zhouli 周禮 and Yili 儀禮 for insight into Western Zhou burial rituals. Consequently strong standardized patterns and strict burial rules are understood to be indicative of social and cultural identities among these burials, mostly of elite status, as well as of ethnic identity of their holders – especially in those regions of the Zhou expansion (e.g., Li 2006; Ren 2004; Zhang and Liu 1991 and see further discussed in chapter 4).

The priority of historical sources is not unique, however, to the study of the Western Zhou period. Archaeology in China is firmly rooted in an historical paradigm and perceptions of the past are a product of "how a later Chinese civilization envisions its history to have been" (Keightley 1990: 16). In his seminal paper *On the historiographical orientation of Chinese archaeology* Falkenhausen noted that: "...Nowhere else in the world is archaeology as closely enmeshed in a millennia-old living tradition of national history" (Falkenhausen 1993: 893). Indeed Falkenhausen showed how the written word has always been considered factual – to be taken at face value – and how Chinese archaeologists have mostly focused on presenting historical continuity between the deeper past and the historical past.

That said, the Zhou play a unique role in the archaeology of ancient China, not only as the progenitors of many of the institutions that would fully develop in the later imperial periods, but owing to their place as the third dynasty, following the Shang and Xia, they are also a crucial node linking the deeper past to the historical narrative of later periods (e.g., Chao 1996; Lin 1998; Tian1996; Xie 1995; Xu 1994; Yang 2003; Zhang and Liu 1991). Indeed Chinese archaeologists have been keen to present continuity in the development of Chinese civilization. Somewhat similar to Hawks' (1954) ladder of inference, scholars contend that understanding of the distant past can only been done by extrapolating the unknown from the known, starting from the solid foundations of later historical grounding. The Zhou dynasty had always been considered to be historical and factual, due mainly to its many bronze inscriptions. Accordingly the dating of Western Zhou events could be used to link the received historical texts of the later periods to the more distant past. Secondly, as the Central Plains or Yellow river valley would eventually become of great importance, the cultures and societies that inhabited these regions, even before the Bronze Age, have been considered to have been more influential than their contemporaries in the areas surrounding it. In what has become a self-perpetuating feedback mechanism, the understanding that later historical China would be centered in the Yellow river valley has fostered a pronounced scholarly focus on the development of this region and in turn perpetuated its importance for the development of Chinese civilization in the deeper past (Shelach and Jaffe 2014).

This historical narrative has also shaped the way in which Chinese scholars have integrated Western archaeological methods and theory to develop their unique flavor of archaeology. Pertinent to our discussion here is the way in which it has predisposed the study on the relationship between material culture and ethnic groups, and in doing so, also cases of culture contact. The association between pots and people is not a unique attribute of Chinese archaeological culture history, but Chinese archaeologists focus on connecting the groups material cultures represent to people and ethnic groups mentioned in historical texts (Cohen 2001; Di Cosmo 2002; Shelach 2009: 16). Consequently when

Xia, Shang or Western Zhou materials are found, they are taken to reflect the existence of said culture's presence and political control over that area and even domination over its local populace.

In this chapter I trace the theoretical foundations of Chinese archaeology in order to comprehend how its practice has shaped the unique archaeological study of the Western Zhou period[18]. This chapter, will attempt to understand how the Western Zhou came to be studied archaeologically and how together with the study of the bronze inscriptions has reinforced the traditional narrative of a powerful Western Zhou state[19]. As such, it is important first to investigate how models that reconstruct the development of Chinese civilization have influenced the archaeology of the Western Zhou. Accordingly, the discussion here focuses on a presentation of Chinese archaeological theories and interpretations of material culture, as well as culture contact and political power. As Rodrick Campbell (2014b: 14) notes, in Chinese archaeology: 'culture-historical, traditional historiographical and central-plains centric biases' … supply both a direction and place for history". Campbell's comment was made in reference to 2nd millennium China (the Early Bronze Age), but the argument made in this chapter is that these ideas have equally reinforced the notion of a powerful Zhou state. For many, if political developments are seen to have emerged prior to the Zhou, then they must have further developed (or at the very least have been present) during the Western Zhou period. Indeed control i.e. "the ability or power to decide or strongly influence the particular way in which something will happen or someone will behave, or the condition of having such ability or power", is the implied implication of Zhou political power.

[18] For those interested in more detailed overviews of the history of Chinese archaeology see Liu and Chen (2012: ch. 1) Flad and Chen (2013: ch. 3) Shelach (2009: ch. 1); Chen (2009).

[19] Excellent reviews and discussions exist in English: Falkenhausen (2006); Li (2006); Rawson (1999); Yu and Yan (2005); and Chinese Zhongguo (2004) ; Jun (2004) and other volumes mentioned above . Instead, surveys will be provided for each of the relevant case studies in Shanxi Gansu and Shandong in the following chapters. An overview of mortuary archaeology of the Western Zhou as well as the evidence that exists for their culinary practices will be presented in subsequent chapters as well.

Following this presentation I lay out the theoretical standpoint I will adopt in this work. I draw inspiration from advances in anthropologically informed archaeological theories that reconsider connections between material culture and ethnic identity as well as processes of ancient culture contact. An overview of changing attitudes towards ethnicity and its relationship to material remains is provided first, in order to get away from conceptualizations that conflate pots with people, and investigate instead localized ways in which artifacts were used. In doing so I shift my attention from the binary existence of artifact types and styles as denoting social categories and ethnic identities, to investigate instead the local ways in which communities used artifacts differently in their social practices. Together this allows a presentation of the complexity of the Western Zhou expansion and highlights the non-uniform elements and negotiations this process involved, as well as how it in turn created new forms of localized social identities.

Part 1 - The Roots of Chinese Archaeology - Merging Marxism and Culture-History with History

Chinese archaeology is often presented as a state enterprise seeking to promote nationalistic propaganda (e.g., Kohl 1998; Olsen 1987; Trigger 1984), yet its actual development cannot be understood without acknowledging the influence of Western archaeology on it. Western-initiated excavations, most notably those led by Johan Gunnar Andersson at Yangshao 仰韶 and Davidson Black at Zhoukoudian 周口店, had set the methodological and, more importantly, the chronological framework for Chinese archaeology (Tong 1995). Andersson's study of the early Yangshao culture, centered in the Yellow river valley, laid the foundations for the origins of Chinese civilization as he considered it to be the earliest agriculture society in China and as such also the inception point for what would later develop into Chinese civilization (Fiskesjö and Chen 2004). Indeed it was Andersson's sequence of prehistoric cultures which Xia Nai (1910-1985), one of China's first Western trained archaeologists, chose to refine upon his return to China in the late 1930s. While a chronological framework was set, the relationship between these prehistoric farming communities and the important dynasties of the historical periods was still not well understood. Earlier in the 20th century, the very historicity of the traditional dynasties was questioned, but Li Ji's (1896-1979) excavations in Anyang firmly established the Shang as a factual dynasty (Li 1977 and see below). After Li fled to Taipei in 1949 is was Xia Nai who would go on to establish archaeology in mainland China as an academic discipline of rigorous methods and techniques. He emphasized stratigraphic excavation and the production of concise and informative reports, albeit not exhaustive, which he felt would only encumber the researcher.

Xia Nai contended that archaeology was a science of past human behaviors, but also a branch of the historical sciences (Tong 1995: 178) and the missing connection between the early Neolithic communities Andersson found and the later Shang, was a problem for Chinese archaeologists who stressed the independent development of Chinese civilization. The 1940s excavations at Chengziya 城子崖 in Shandong, dated to the 3rd millennium BC Longshan 龙山 culture, had finally made that connection. The dig had yielded a layer of black pottery that could be correlated to ceramic styles from Anyang found in a layer directly under the Shang materials (Liu 2004: 6–8). Other finds equally questioned Andersson's model, which viewed the Yangshao painted pottery as having diffused form the West (and with it the suggestion that Chinese civilization might not have been an entirely endemic development). In the 1950s the Erligang 二里岗 site, under the modern day city of Zhengzhou, was discovered with material culture elements of both bronze and ceramics that stylistically were clear precursors of the Anyang site, which was thus identified as the capital of the early Shang period. Galvanized by these finds, many Chinese scholars hoped archaeology would be able to reconstruct more of the traditional narrative recorded in known historical texts and present material evidence to prove the existence of the Xia 夏 dynasty as well. Then, in the 1960s, excavations at the Erlitou 二里

头 village in Henan revealed a massive site, which predated both the Shang remains of Yinxu and Zhengzhou. It was hastily identified as the center of power of the Xia dynasty[20].

After the revolution and the founding of the People's Republic of China in 1949, the state support of archaeology and its guiding theoretical model, Marxism, were patterned around the Soviet model (Tong 1995). Guo Morou was perhaps one the first to integrate Marxist models of cultural evolution in Chinese archaeology – a model that has been extremely influential since (Liu and Chen 2012: 10). These early models neglected, for the most part, socio-political issues and as a result social developments were explained instead along Marxist models of cultural evolution and labor divisions. The Soviet model also favored diffusionist models of cultural spread as well as other tenets of the cultural-historical approach (An 1989)[21]. Nevertheless, the cultural evolutionary process Marx constructed (and further developed under Lewis Morgan), was taken to reflect intensified cultural formations that were not only stages in Neolithic developments, but were further realized during the periods of the historical dynasties as well (Tong 1989). Accordingly early Yangshao and other Neolithic villages were seen as typifying the 'primitive community' social stage where what little social hierarchy that did exist, was reconstructed along matriarchal lines (Shelach 2004: 14).

Later archaeological cultures, beginning with those identified as the Xia and Shang, were taken to be advancements into the 'slave society' form, the second stage of cultural evolution, where classes

[20] This has been hotly contested, primarily by scholars from the west who see little evidence linking the site of Erlitou and the Xia dynasty. Unlike the Shang and Zhou many from the West still view the Xia as more myth than reality (Allan 1984, 1991; Keightley 1983; Linduff 1998; Liu and Xu 2007b; Thorp 1991).

[21] This unequivocal acceptance of the Marxist cultural evolution model and its uses for the exploration of identity, gender roles and relations of ceramic cultures in the archaeological record, have been widely criticized by Western archaeologists as not addressing socio-political and economic issues (Tong 1989, 1995), simplifying the sexual division of labor (Nelson 2006; Shelach 2004) and blindly following models of cultural development (Falkenhausen 2006; Shelach 2009).

emerged. The Zhou could be considered a third stage, a feudal society where nation states and market economies developed (Shu 1959)[22].

Indeed Xia Nai was quite vocal in respect to the accuracy of the Marxist models in China, models he believed not only validated the stages of evolutionary social development Marx and his supporters had proposed, but also that they perfectly fit the Chinese traditional historical narratives as well (Tong 1995: 178-183). What further helped solidify these models was the acceptance of culture-historical understandings of archaeological materials. In them, archaeological data is taken to reflect actual peoples or delimited groups correlated to demarcated material culture distributions. Thus manifestations of ethnic groups and supra identities can be seen through them as well (and see in Chang 1983, 1986; Liu 2004, 2009). Su Bingqi (1909-1997), who had been trained in China and worked on a number of archaeological projects, including the Anyang excavation, with Li Chi, argued that cultural origins, change and social identity were all best discerned from *li* 鬲 vessels (cooking tripods with pouch- shaped legs). In fact through their typological study one could confidently distinguish separate ethnic groups and cultures (Falkenhausen 1999)[23]. Thus the materials found at Erlitou, Erligang and Yinxu could be taken to reflect actual Xia and Shang people, respectively, and allowed scholars to account for the prominence of their political enterprises by tracing their geographic distribution (Campbell 2014b: 33-46).

The Center Still Remains the Same – Asymmetrical Connections between the Yellow River Valley and its Periphery

Cultural material approaches would become the foundation of Chinese archaeology since the 1940s (Chang 1977). Culture history linked pots to historical peoples and Marxist cultural evolution

[22] These models are still employed, though scholars are more keen on explaining the unique Chinese flavor of these Marxist stages (e.g., Chao 2003)

[23] Most active archaeologists in China today still follow Su and entire cultures are defined on the basis of *li* vessel typologies (e.g., Guo 1996).

provided the model by which Chinese society steadily developed, uninterrupted, into the historical periods. Since all these cultures and their sites were found in the Central Plains, the Yellow River Valley was seen as the cradle of Chinese civilization – a strong center in which Chinese society developed and from which it spread to engulf its surroundings.

As Chinese archaeology grew in the 1970s the discipline saw the establishment of new programs in universities around the country and with it a proliferation of excavations in regions all over China. These discoveries, made outside of the Yellow River valley, presented developed Neolithic cultures with independent regional sequences of chronological development. While these findings seriously challenged the view of a single center of Chinese culture, most early theoretical efforts were made to reconcile their discrepancies and understand their connection to the cultures of the Central Plains (Liu and Chen 2012: 12-13). In the early 1980s both Su Bingqi of Peking and K.C. Chang of Harvard Universities, called for a reexamination of the 'central core and periphery' model that saw Chinese civilization to have developed in the Central Plains and then spread out to engulf its surroundings[24]. Su proposed three independent models of state formation in prehistoric China, which were separate from those that had developed in the Central Plains, each following their own development stages and patterns (for an overview of Su Bingqi's ideas in English see Su 1999; Wang 1997). K.C. Chang further emphasized the independent development of Neolithic cultures, but also the interactions between them (Chang 1986: 234-42). In fact, for Chang, it was also crucial that social evolutionary trajectories in China be understood as fundamentally different than those in the West (Chang 1989).

These ideas have greatly influenced Chinese archaeological thought from the 1980s onward (Xia Nai himself called for a reconsideration of the single origin of Chinese development model), yet scholars

[24] Who of these great scholars made the argument first, and whether or not one was made independently of the other, is still a matter of debate. Rowan Flad once mentioned to me that he suspected it was C.C. Lamberg-Karlovsky who might have initially introduced K.C. Chang to the concept of interaction spheres and in doing so had set the idea in motion.

maintained their focus on the Central Plain cultures and continued to view them as an important node in an ancient interaction sphere that resulted in the creation of the Chinese civilization (see in Shelach and Jaffe 2014; Flad and Chen 2013). Part of the reason for this predominance of a center in the development of Chinese civilization, was that even while the Neolithic cultures displayed independent growths and advances, the Bronze Age cultures of the 2nd millennium in the Central Plains were still viewed as far more developed and thus more influential in comparison to regions beyond it (Campbell 2014b: 57-58). Scholars, such as An Zhimin and Tong Enzhang, had acknowledged that in prehistoric times the situation might have been different, but the Central Plains was still the center of Chinese civilization from the time of the three dynasties period (An 1989:12–14; Tong 1995:188). Indeed eminent Chinese scholars engaged in discussions on the origins of Chinese civilization and development, including Xu Hong, Yan Wenming, Zuo Heng, and Shao Wenping, differ in their reconstruction of the processes, stages and delineations of these trajectories; yet they all still focus their studies on the how the Neolithic Yangshao and Longshan cultures of the Central Plain would develop into the three dynasties of the Bronze Age that came after them. Similarly, a strong unbroken and continuous evolutionary framework of increased development can be seen in their work; each period a stage of development in the process that would ultimately result (or culminate) in the creation of the Chinese civilization (Shao 2000; Xu 2000; Yan 1987; Zou 1987)

These studies continue, albeit in a different way, to prioritize the historical narrative[25]. Even while they recognized the multi-regional origins of Chinese civilization, the development of archaeological cultures of ancient China were still being presented along the framework of an elevated traditional center – the Yellow river core – which was more developed and politically complex. Indeed many scholars still prioritize the Central Plains or at least ascribe predominance to the cultures in it: "the

[25] I had the privilege of attending a conference on the development of the earliest states in China held in Shanghai in November of 2015, where notable scholars Xu Hong and others called for a reexamination of these paradigms.

core still matters most" as Flad and Chen note (2012: 8). Regional cultures are still understood by archaeologists through traditional historiographies and ultimately many reconstructions show only how each region contributed to the later crystallization of Chinese civilization (Falkenhausen 1995: 211-212). the Late Bronze Age societies in China are understood through simple center and periphery relationship models, which view the traditional core of the central plains area as more powerful and advanced and the less developed periphery shadowed by these centers (Flad and Chen 2013: 1-15; Shelach 2009: 142-143).

In fact in 1996 the Xia-Shang-Zhou Chronology Project was commissioned by the Chinese government to systematically reconstruct a reliable chronology of early Chinese pre-dynastic history. The project brought together archaeologists, historians, astronomers and radiocarbon experts from over 30 universities and institutes to establish the relationships between the many ancient cultures that inhabited the territory of what is now the modern day PRC. The anchors of this chronological framework were the three dynasties: the Xia the Shang and the Zhou, not the archaeological materials, and the dates and sequences of other cultures in different regions were to be related to them. Relying on a combination of historical sources and archaeological data the team dated the Xia Dynasty to 2070-1600 BCE, the Shang to 1600-1046 BCE and the Zhou to 1046-221 BCE (Li 2002)[26].

Thus the site of Erlitou, even when not considered the seat of power of the mythological Xia dynasty, is identified as the capital of a powerful state exerting great influence and control over its surrounding hinterland (Liu 1996, 2004, 2009; Liu and Chen 2006; Liu and Xu 2007). Erlitou is seen as a large urban complex at the head of a four tier settlement hierarchy, which required vast amounts of resources for its stately enterprise. Among the most important resources were salt, copper and tin, all

[26] Many, from both China and abroad, have criticized the project as being overly concerned with reaffirming the historic method of understanding the past and even of refitting the archaeological data into the traditional model of sequential dynastic development. Some have more overtly accused the project as being a nationalistic tool bent on formulating an ideology that assures national pride and justifies the existing ethnic, racial, linguistic, religious, and cultural biases still prevalent in modern-day China (Lee 2002: 18–19).

critical for the creation of prestigious bronze items, which also fueled the extraction of raw resources from peripheral zones. These materials were supposedly obtained in a combination of military expansion and the control of exchange networks (Lee 2004; Liu and Chen 2001; Liu 2006: 179-181). Xu Hong (2009) has added that the Erlitou state must have also exerted centripetal force, attracting commodities ideas and peoples to it and exerting its influence on its surroundings. In so doing the Erlitou site becomes China's earliest cosmopolitan city, luring with its wealth, technological innovations, ideological advances and economic opportunities immigrants from all over China (Xu 2009: 136-138)[27].

The Erligang culture (1600-1300 BCE) – the successor of the Erlitou state (according to the traditional narrative the Shang received the heavenly mandate to rule from the Xia) – is seen to have headed an even larger state. Its seat of power was the massive walled site of Zhengzhou in Henan province and larger in size than the earlier Erlitou site. Evidence of bronze production on a massive scale has been found at the site and the finding of many other sites with similar material culture are taken reflect their subordination to the political power of Zhengzhou (overview in Li 2003). Similar to the Erlitou site, large amounts of raw materials and resources are considered to have been vital to this political endeavor. Thus the expansion of the Erligang polity and the creation of colonies and outposts are proposed as state run enterprises for resource procurement and transportation (Chang 1980; Liu and Chen 2003). It is precisely the ability to control resources that has been highlighted as the political foundation of political power (Liu and Chen 2001). Similarly, bronze vessels were found by the hundreds and in areas outside of the core of the Central Plains, in contrast to the small amounts exclusively found entirely in the Erlitou site during the previous period (Shelach and Jaffe 2014: 52-55) . It is not uncommon to see this as an indication of the both the actual spread of the Erligang's

[27] Xu's work is quite remarkable and unique in the Chines language scholarship on early state formation and his study of the state as a social entity is a rare contribution. In his more recent volume (Xu 2013) he has discussed the need to look into the deeper past and to areas outside of China to understand how state formation came about in it.

state boundaries and as a material manifestation of ideological hegemony of the state by its subordinates (Allan 2007; Bagley 1999; Chang 2005). Recently Wang Haicheng (2014) has even described the Erligang culture as presiding pver a vast empire ruling from its center in Zhengzhou.

Stuck in the middle with Zhou (Western) - The Beginning of History and the Last Mann

The above models for the development of Chinese civilization all clearly prescribe dominant roles for the polities of the Central Plains during the 2nd millennium BCE. From a strictly archaeologically sense, however, there is indefinite evidence to support Central Plains domination of its neighboring regions throughout much of the 3rd and 2nd millenniums BCE. In fact, these assertions are more commonly deduced simply by noting an existence of ceramic assemblages of the Erlitou and Erligang culture styles when found outside the areas of their main distribution centers. What was the actual political setup of these entities is still debated. Thorp (1991, 2006) has proposed to see the large structures of Erlitou not as palaces but as communal buildings. Elsewhere, Shelach and Jaffe (2014) have questioned reconstructions of an Erlitou state ruling a large territory, exacting tribute from its hinterland and as controlling vast lands, resources and peoples. Certainly, for the creation of such a small number of bronze vessels, the Erlitou rulers hardly needed to obtain, let alone control or dominate the production or trade of copper ore, as has been suggested by some (Shelach and Jaffe 2014: 355-356).

The later Erligang network of states and colonies are not directly supported by the archaeological data either and the nature of the relationship between Zhengzhou and other contemporaneous sites can hardly be seen as reflecting domination or subjugation (Campbell 2014a; Thorp 2006; Zhang 2006). Yet the vast amounts of bronze vessels found outside the Erligang capital of Zhengzhou is astonishing as is the existence of what could be called a blueprint of Erligang fortified sites. Still, it remains unclear if these sites were set up by a centralized authority nor the political relationship between them (Shelach and Jaffe 2014: 350). Prominent as it may have been, the Zhengzhou/Erligang sphere of influence was far from homogenous. Instead, many local variants of material culture existed and their regional developments remained the norm during this period (Campbell 2014a: 100-101). The actual characteristics of government and control of the hinterland of the later Shang period at Yinxu (1200-1046 BC) is challenged as well. Some question the very notion of the Yinxu sites as that of a large state capital (e.g., Yates 1997; Yoffee 2005) and others have focused on the complex and intricate nature of the Yinxu polity noting that it hardly resembled that of a powerful and authoritative state exacting its will via coercive force (Campbell 2009; Keightley 1983; Trigger 1999). The Shang kings were far from omnipotent and ruled instead a confederation of allies that required constant visits to persuade them to show fealty to the Shang kings (Keightley 2000).

In recent years Sino-foreign collaborative field work and research projects have been successful in delineating regional specific trajectories in a number of areas outside of the Central Plains (Chifeng 2011; Di Cosmo 2002; Falkenhausen 2006; Flad 2011; Major 2004). In the Rizhao plain in Shandong province a systematic survey has found that a four tier settlement hierarchy had already emerged at the beginning of the Longshan period (2700 BCE Underhill et al. 2008, 1998). Problematic as it is, still for those who employ the four tier settlement hierarchy as reflecting the state, why the Erlitou culture should be considered a state and not the Rizhou polities remains unclear, especially if divorced from the historical narrative (Shelach and Jaffe 2014). A different approach to political and social development is that pursued by the Chifeng collaborative team. A concern with ancient population preferences for specific ecological factors is emphasized, as well as changing settlement patterns to understating spatial distributions of sites. During the Lower Xiajiadian Period (2200-1600 BCE), for example, groupings of sites formed multiple supra communities and a number of small scale polities. By calculating population densities, the sizes of settlements and the type of land-use zones Lower

Xiajiadian sites where situated on, the Chifeng team was able to reconstruct the political landscape and nature of interaction between sub-regions (Chifeng 2011). The Chengdu plain archaeological team has similarly conducted a large number of field surveys in its efforts to understand the development of local cultural trajectories and small scale site settlement patterns, an often under studied phenomena in Chinese archaeology. While it is hard to discuss political integration, the sites of northwestern Sichuan were set up as small households, which were connected in various networks throughout the Sichuan plain and decoupled from the political actors of the Central Plains (Flad et al 2013)

These projects have reinforced the multi-faceted approach to the study of China's past and its origins, and have successfully shifted the discourse away from understanding the relationship of theses regions' cultures to the 'Core' in the Central Palins. In doing so, they have highlighted instead the independent and fundamentally different characteristics and developments of each region during the Neolithic and Bronze Age periods. However, they have to date been less influential in examining the Western Zhou period and society. K.C. Chang's (1986) monumental *The Archaeology of Ancient China* left the Zhou for another volume (which he unfortunately never wrote) and Underhill's (2013) edited volume *A Companion to Chinese Archaeology* is a fantastic new addition to the study of China's past, but one that covers periods right up to the Western Zhou (not including)

In fact the Zhou are still taken to represent a unique moment in the development of Chinese civilization. The Western Zhou marks: "the beginning of the end of formative Chinese antiquity and the beginnings of imperial China and its traditional pattern of life, which lasted for the next two thousand years and is still living" (Chang 1986: 346). Thorp (2006: 265) writes "…once we enter th[is] period, the first millennium BCE, we are confidently on the trajectory of the rings of Chinese civilization". More recently Campbell's (2014) work on the Bronze Age forcefully argued against the notion of an integrated China during the second millennium or that a strong common collective identity unified the people inhabiting. Yet he remains silent on the topic of the Western Zhou. They are not alone. Scholars from the West who have criticized the historic paradigm of Chinese archaeology have largely concentrated on its application to (mostly) pre-Zhou periods (e.g., Allan 1984; Bagley 1999; Shelach 1999; Thorp 1991).

As we saw in the introduction, elaborate reconstructions that find immense power to have resided in the hands of the Western Zhou state are as much a product of theoretical inclinations and interpretations of archaeological data in China as they are of the anachronistic projections of developments, seen as crystalizing in the later Eastern Zhou periods. The direction of study, so to speak, comes from the more recent past and not from the deeper past. Since this period was populated with states, many of which were established by or during the Western Zhou period, naturally many scholars have attempted to find the starting points of these polities and how they changed over time and coped with the collapse of the Western Zhou system (e.g., Li 1985, 2013). By doing so they have assumed that the colonial states set up by the Zhou were those that generated great impact in the various regions their influence spread to and thus also, ipso facto, have ascribed great power to have rested in the hands of the Western Zhou kings and the polities they supposedly ruled.

It is now becoming clear that there are indeed a number of reinforcing elements that all contribute to the assumptions of a unified and powerful Western Zhou polity and the political domination it is believed to have had: 1) Archaeologists attempting to find the development stages of Chinese civilization have privileged the areas in which it would later develop – the Yellow River valley or the Central Plains 2) The dominance of cultural-historical approaches in Chinese archaeology, which have relied on unbalanced models of interactions between dominating centers and subordinating peripheries. This goes doubly so for periods of time deemed historical in the sense that bounded material culture can be correlated to ethnic groups mentioned in later historical texts, and 3) The historical narrative of the Eastern Zhou period, put forward by its statesmen and philosophers (as well as subsequent scholars), who presented the turmoil of their times by specifically contrasting it with the previously glorious Western Zhou period (as discussed in chapter 1).

What I propose here, instead, is to extend the healthy skepticism of the above scholarship towards historical narratives further into the archaeology of the Western Zhou period as well. This is not to say that we should abandon them altogether, only that we approach this period in a critical study of the sources we have for it (as noted by Falkenhausen 2008).

Moreover, the power the Zhou are said to have held, and the process of cultural acculturation their expansion is credited with, also downplay individual regional developments as well and their reaction to the Zhou influences. Let us look instead to the many local groups the Zhou encountered and how local communities where each influenced by this expansion. These approaches have also elevated elite Zhou material culture and in doing have focused on the upper echelons of society leaving the rest of its stratums outside its reconstruction of history (and see chapter 4). By looking at communities as a whole and investigating their social practices on all levels, a more complete picture of Zhou influence can be recreated, as well as how elites sought to control and maintain power over their societies.

In fact many of the studies that have questioned the central roles of the societies inhabiting the Central Plains, have also pointed out the many limitations of cultural historical approaches and center periphery models of interaction espoused by them. Indeed, in order to better approach dynamics of power, often related to the realms of elite level exchanges among themselves, we must infuse the existing archaeological approaches to the study of the Western Zhou with a solid anthropological orientation. Michael Mann's (1986) IEMP model of social power: ideological, economic, military and political, highlights the independent yet intersecting nature of these four sources of social power, as individuals and groups in a given society work to best utilize them to their own best interests. To begin, we must turn to anthropological theory to reevaluate the relationship between material culture and group identity and how social boundaries are negotiated in cases of culture contact. Following this a presentation for political and material contact will be provided to address the ways influences of foreign power and material culture shape community social practices.

Part 2 - Anthropological Advances in studies on Ethnicity and Culture Contact

In the 19th century archaeologists came to realize that the past, reflected in agglomeration of artifacts and architectural ruins, was by and large geographically circumscribed, and that sites containing similar assemblages of artifacts could be seen as belonging to the same culture (Trigger 2006: 279). Cultures were understood to be bounded in space and time and had both spatial and temporal centers. Thus, as one got further away from these centers artifacts would also equally be removed, culturally, from their respective centers. Settlement archaeology, developed in the 1920s, viewed delimited cultures as reflecting past human groups or ethnic peoples, who were also the ancient ancestors of many of the world's contemporary races and nations (Jones 1997: 2-4). Childe (1929) critiqued the direct connection of material culture groups to known historical people and modern day states. His observations had the advantage of overturning notions of evolutionary stage-like developments, it also help solidify the idea that delimited assemblages of material culture represented bounded groups or ethnic peoples in the material record (Trigger 2006: 246-248). In fact these understandings were not uncoupled from contemporary prevalent conceptions of ethnicity, which focused on meta-level identity marker of social groups. This model, 'Primordialism' as it was later known, saw ethnicity as an objectively real quality pertaining to groups of people. Common (often times the biological) ancestry defined ethnicity, and each group of people where seen to represent a unique society among the totality of human cultures, and archaeology could uncover the historical development of each of these groups of people and their cultures (and see Thomas 2004: 148).

Even while archaeologists were quick to identify problems associated with this approach, appropriately named cultural history, such as its simplistic interpretation of material culture and the socio-political constellations it espoused, they were less open to the study of how geographic variation in types and assemblages related to issues of social identity (Emberling 1997; Jones 1997). Proponents of Processualism, developed in the 1960s argued that distributions of artifacts held no discernible connections to past human groups and stressed that material culture was first and foremost the reflection of regionally specific adaptation strategies (Binford 1962). In these models artifacts reflected the relationship between communities and their environment or the behavior that was produced in response to it, and did not necessarily correlate to a bounded social group. While these approaches could explain utility and function, they seemed to undermine social organization or individual agency as contributing factors in the construction of material culture (Shennan 1989: 12). Other critiques noted that the individual had a larger role to play in the internal changes of human society and was not to be taken as a mere passive agent of environmental determinism. These scholars argued instead that culture, and the meaning artifacts held, was constructed, produced and reproduced through the interactions between artifacts and all the other elements of society (e.g., Hodder 1982; Shanks and Tilley 1987).

Advances made in other disciplines in the 1960s and 70s continued to challenge the tenets of Primordialism. Particularly important was Barth (1969), who broke away from traditional ethnic studies in anthropology that looked at groups as defined from the inside out, as he saw it. Instead, Barth observed how the boundaries between two ethnic groups were maintained, and, more importantly for archaeologists, how individuals and groups could even switch from one side of this boundary to the other. Thus instrumentalism, or constructivism, was developed as an understandings of ethnicity that was socially constructed, fluid and as a non-intrinsic property of groups. Ethnicity was to be defined now form within (Jenkins 1997). Overall, instrumentalist approaches have contributed to comparative analysis of ethnic groups and the relationships between ethnicity and ideology, kinship structures as well as how they are maintained. Their sensitivities asideinstrumental approaches do not, however, provide an adequate theory for understanding the relationship between material culture and ethnicity, at least not in a clear common sense manner (Jones 1997: 79). Indeed in archaeological studies ethnic groups are no longer simply defined as an aggregation of all spatially and temporally related cultural traits. In fact, cultural and social identity is seen to differ from ethnic identity in that it is seen to transcend other social characteristics of gender, class or age (Antonaccio 2010; Lucy 2005; Woolf 1998). Ethnic groups are seen instead as self-aware entities that distinguish themselves from others by both conscious and unconscious stylistic choices. Scholars take note of the complexity involved in studying ethnicity as a concrete social quality, since to do so requires a consideration of how insiders and outsiders, as well as institutions, states and scholars who study groups, each define, classify and understand them (Hu 2013). In fact, many still see an archaeology of ethnicity as a near impossible task if attempted on the basis of mute material assemblages alone and without the aid of historical texts, the only emic ethnic construct to be found (e.g., Chrisomalis and Trigger 2004; Hall 1997; Kohl 1998).

The fact that many ethnographic studies continued to show the poor correlation between ethnic groups and artifact assemblages (e.g Hodder 1978; Insoll 2007a; Meskell and Preucel 2004; Shennan 1989) has not made this problem any simpler, even while artifacts remain emblematic markers of specific regions and times (one can hardly see the ziggurat as associated with anything other than Mesopotamia). Archaeologists working in the U.S., for example, repudiated widespread notions that the mound builders were descended from ancient Mediterranean people, by showing that the excavated mounds contained artifacts comparable and highly reminiscent of contemporary Native American groups (Rouse 1965: 3). Indeed the relationship between material and groups is no simple matter and archaeologists worldwide relate to this question in different ways. The style and function debates between Wiessner (1983) and Sackett (1985) were an early attempt to flesh out material correlates of ethnic groups. Evolutionary approaches in archaeology such as strong selectionism (Dunnell 1989; O'Brien and Lyman 2003), endeavored to side step this question by simply focusing on the material itself and to down play culture whenever possible. Followers of dual inheritance theory (Boyd and Richerson 1985) seek to understand the relationship between environment, culture, and reproduction of behaviors (e.g., Shennan 2002). Recent developments of materiality studies influenced by Appadurai (1986), study the biographical life of objects in their own right (e.g., Tilley et al. 2006). Symmetrical archeology, heavily influenced by Latour's actor-network-theory has been a recent effort to envision the entanglement of objects and societies (e.g., Hodder 2012; Olsen 2010). Perhaps the most popular approach in the past two decades has been to emphasize social and personal identity and the relationship these properties have with individual agency (Dobres and Robb 2000). This approach stresses the community or the more localized sphere of social behavior and in turn the sub-ethnic group level of social identity. Mostly, these studies tackle the way in which individuals construct their own personal identities in and among larger social constructs. In doing so this approach remains somewhat agnostic to ethnic definitions and their relationships to formations of larger social identities, let alone how material culture would correlate to them (e.g., Insoll 2007b; Meskell 2001).

In distinguishing between cultural groups, the archaeologist must think about which of the many cultural attributes found in the material record are pertinent for ethnic identification. Ethnic groups cannot simply be defined as an aggregation of all spatially and temporally related cultural traits. Rather, ethnic groups, are social entities that distinguish themselves from others through their social practices (Boyd and Richerson 1987; Sackett 1982; Wiessner 1984; Wobst 1977). In recent years a growing number of archaeologists have followed Bourdieu's practice theory as a way of representing social relations and the material assemblages groups produce (e.g., Jones 1997; Shennan 1989; Smith 2003; Stark and Chance 2008). Here, the habitus (mainly following Bentley's re-appropriation of Bourdieu) is taken to be the subjective construction of ethnic identity, one that is grounded in the shared subliminal dispositions which shape, and are shaped by, objective commonalities of practice: " shared habitus engenders feelings of identification among people similarly endowed. Those feelings are consciously appropriated and given form through existing symbolic resources" (Bentley 1987: 27). Yet while habitus can overlap with ethnicity it is not necessarily one in the same and may in fact interfere with its reproduction (Jones 1997: 93). Thus ethnicity becomes another facet of identity in the larger milieu of social practice.

For archaeologists, however, this is easier said than done and operationalizing practice theory as a nuanced framework of socially constructed identity is less than straight forward (c.f. Arnold 1998; Chrisomalis and Trigger 2004). However, the understanding that habitual practices can be seen as collective norms of larger social group, as well as their markers of social identity, have been quite influential in archaeological circles. Archaeologists now stress the role of material culture as crucial to the reproduction, shaping and contestation of communal social practices (e.g., Dietler and Herbich 1998; Knapp and van Dommelen 2008; Lightfoot and Martinez 1997)[28].

In a similar manner I too follow these advances and the research of archaeologists that find ethnicity as a 'shared ways for doing things' (Antonaccio 2010:50; Lucy 2005); the role of material culture is crucial to the reproduction, shaping and contestation of communal social practices. In this manner, I believe, material culture can be seen as a reflection of localized customs and traditions of doing things

[28] It is important to note that I am less concerned with the actual ability to find ethnicity in the archaeological record as I am inclined to use these advances to understand the difficulty in presenting clear markers of one group or the other.

akin to what has been coined as 'communities of practice' by Lave and Wenger (1991). Archaeological studies of communities of practice have tended to focus on the learning strategies and the transmission of knowledge of craft production (Sassaman and Rudolphi 2001; Wendrich 2012). Yet these models commonly emphasize the relationship between the way in which artifacts are produced and consumed by the community as well as the society this consumption in turn constructs (Canuto and Yaeger 2000; Kolb and Snead 1997). Stockhammer (2012; 2013), provides a useful approach to the study of community specific practices and their archaeological manifestations in material culture. He advocates for the inspection of both relational and material entanglement of an object: the former concerned with the appropriation and integration of objects into existing social systems and the later an actual manipulation of the object (Stockhammer 2013: 16-17). For Stockhammer material alteration presents a more intense degree of transcultural interaction, an assertion that could be contested to be sure, but what I find inspiring in this approach is that the existence of regional differences is not questioned. Instead it is the relationship between an object and other objects as well as how they are appropriated in community specific ways that are investigated. Thus, foreign and new artifacts are not taken as reflecting an existence of a specific culture group in an area, only the connection between them. The way in which they are utilized is precisely what represents the community and its social practices. We will return to these ideas at the end of this chapter and with these thoughts in mind we shift our attention to rethinking what happens to material assemblages and social practices when cultures come in contact with one another.

The Other that Never Was - Culture Contact and the Postcolonial Critique

Culture contact studies have long since moved away from simple models of diffusion or acculturation. Both world systems theory (Denemark et al. 2000; Kohl 1987) and center and periphery models (Champion 1995; Rowlands 1987) sought to extend these ideas and create a useful framework for the analysis of interregional interaction, where a more complex and multi-directional flow and exchange of ideas, ideologies and materials was accounted for. Yet these models still created centers of influence and recipient peripheries related to them, which in effect predetermined the nature of the interactions between cultures (Lightfoot 1995; Renfrew 1986; Stein 1999). Moreover, Rice (1998) emphasizes that it is crucial to realize how many approaches of cultural interaction models are static. In actuality frontiers and borders were fluid, ever-changing and ephemeral. Indeed, Hudson (1977) differentiated between divergent models of human movement in order to account for both the nature of population spread and their outcomes. He argued that groups of people can be compelled to move to the frontier of their known world for reasons other than aggressive expansion, such as a result of population density or environmental change. Notably, these movements do not demand group conflict nor do they necessitate innovation or unique adaptations that provided advantages over existing communities. Other models of population movement stress intricate and changing political and economic relationships between disparate loci of a single polity, which lead to regional specialization and intensification of production, accumulation of political power and even shifts in the location of political centers (D'Altroy 1992). Payntor (1985) has further emphasized the importance of regional elites and the relationship of production in his 'frontier surplus flow' model. In this model regional elites derive power from one of two methods: 1) by maintaining a connection to the core and political center or homeland termed dependent elites, and 2) those elites who facilitate developments in the frontier and obtain local status and prestige dubbed development elites.

Owing to the growing frustration with what many saw as over deterministic models of culture contact, in the past few decades archaeologists have increasingly relied on Postcolonial critiques to provide new insights into the study of culture contact in archaeology. Postcolonialism[29], developed in the 1980s began engaging in discussions about the cultural, political, economic and social effects provoked

[29] Here I follow Liebmann (2008) and use Post-colonialism (hyphenated) to denote a period of time which follows that of a colonialist arrival and Postcolonialism (unhyphenated) as the academic and theoretical body of scholarship devoted to the reexamination of colonial encounters.

by the colonial process from the sixteenth century until the present day. The heritage of European colonialism has been extremely influential in shaping the way scholars have theorized past instances of cultural contact. The idea of a unilateral transformation and acculturation was to be seen as a gross oversimplification of this process, one which required immediate reconsidering (Liebmann 2008). In the latter half of the 20th century, scholars began studying how the construction of archaeological prehistory was related to the colonialist enterprise (Gosden 2001: 6, 2004a; Liebmann 2008; Trigger 1984), as well as how archaeology has been used to promote a certain picture of the past and even served to legitimate colonialist domination (Chakrabarti 2000; Pollock and Bernbeck 2004).

Traditionally, colonialism was viewed as cultural contact processes occurring between powerful external entities, which forcefully acculturated indigenous societies, and where colonizers were ultimately seen to have erased native cultures, either physically or by absorbing them completely. Drawing on ideas developed in the Postcolonial literature, Chris Gosden criticized this supposed hegemony and has stated that this model, appropriately termed 'Terra nullius', stems primarily from modern notions of colonialism of the late 17th -18th centuries rather than the actual data from the past (Gosden 2004b: 18-21). Following a survey of colonial interactions in the archaeological record, he concluded that the far more common scenario was one of colonialism with a 'shared cultural milieu', where more often power was exercised within existing norms of social behavior and not against it (Gosden 2004a: 40). Indeed archaeologists have questioned the passivity of the endemic peoples, the notion that foreign relations are often brutally exploitive (Stein 2005) and that they result in the total acculturation or annihilation of local peoples by the colonizers (Cusick 1998). Colonialism is not a zero sum game where the colonizers either acculturate the local peoples entirely or are assimilated into the existing fabric of society. Rather multi-directionality follows where regional interactions lead to new social constellations and forms of social identity (Stein 2005b: 6-7).

Surprisingly though, a number of recent authors have pointed to the general absence of postcolonial theory in the archaeological analysis of ancient colonial situations, in fear that using parallels would imply a scholarly conceptual continuity between ancient and modern colonialism (Rowlands 1998; van Dommelen 1997; Liebmann 2008). Silliman (2005) has argued that archaeologist, afraid of being accused of working from a framework of colonial and imperialist remnants, have labeled the nature of regional interaction as culture contact even when the case is clearly that of colonialism. Yet as Liebmann has pointed out, archaeology as the study of material culture stands to benefit from postcolonial theory and postcolonial theory stands to benefit from the incorporation of archaeological practice to its discourse as well (Liebmann 2008: 7-8). Indeed, not addressing past cases of colonialism further downplays the severity and power of these interactions emphasizing the initial contact period and sites as singular and the crucial events (Silliman 2005: 66–67). Laydon and Rizvi in an introduction to a recent volume *Handbook of Postcolonial Archaeology*, define Postcolonialism as the "understanding of the relations of power that frame colonial interactions and identities and to resisting imperialism and its legacies… Postcolonialism's concern with the past is guided by the past's relationship with the present forgoing the links between cultural forms and geopolitics" (Lydon and Rizvi 2010: 19). As such, several scholars have called for a reconsideration of the archaeology of colonialism which is still heavily reliant on textual sources (Lyons and Papadopoulos 2002; Stahl 2002; Stein 2005a; Liebmann and Rizvi 2008).

Nevertheless culture contact and colonial encounters, even when Postcolonial critiques are not directly invoked, are now more prevalently seen as multi-directional, and research focuses on the agency local groups had in situations of contact, not only in active resistance to their domination, but also in the adoption of new customs to their own gain and benefit (D'Altroy 2005; Liebmann and Murphy 2011; Liebmann and Rizvi 2008; van Dommelen 1997; Wenke 2011; Webster 1997). Perhaps the greatest outcome of these postcolonial studies is that objects and artifacts, as well as other elements of the material world, are now seen not as the mere reflection of social interactions, but as actual agents in the forming and shaping of identities.

Culture Contact and its Role in the Shaping of Communities of Practice

This chapter started out with an overview of the common ways in which the archaeology of ancient China has been conducted over the past few decades to highlight both the historical biases in its reconstructions of the trajectories of social development, as well as theoretical models that find artistic styles and artifact types as seamlessly corresponding with ethnic groups and people. These views have reinforced the supposition that the Zhou, through their expansion, ruled and controlled a large political entity, as well as have begun a process of Sinicization that would culminate with the creation of a Han common culture in the later parts of the first millennium BCE. As a first step I argued that we must untie ourselves from the notion that Western Zhou culture was monolithic or that similar material elements were always exchanged when local populations came in contact with the Zhou. Indeed, most of the research on the Western Zhou period has focused on the study of elite assemblages, artifacts and contexts with little actual research dedicated to how it impacted the lives of other social strata of the 'others' they encountered.

I accept Li Feng's most recant claim that the Western Zhou expansion, and in a sense the Western Zhou enterprise as a whole, was an "installation of Zhou elite culture"(Li 2013: 134). Yet does this mean that these elites *controlled* local population? In fact, we might further ask, what power did the Zhou have over these cultures and the people they sought to dominate? As was argued in chapter 2 a combination of a ritual oriented reading of the bronze vessels inscriptions and an appreciation of the Western Zhou court as relying on favors and the hope that elites would cherish their trinkets, as opposed to commanding large military forces, provides for a far less powerful and controlling Zhou state and government system. Similarly, I suggest to follow an approach that advocates for the inspection of the state of both relational and material entanglements of an object. Here the relationship between an object and other objects, as well as how they are appropriated in community specific ways, are investigated - in the manner suggested by Stockhammer (2012; 2013). This investigation unties us from the sticky matter of relating ethnicity, even when one is mindful of its many designations, to material culture assemblages as well. When compared across a broad spatial constellation of communities, an intricate landscape emerges, populated not by artifact types and material culture clusters, but instead by local case-specific ways in which communities engaged with them.

There are, to be sure, a number of ways communities can be discussed and found in the archaeological record. For Kolb and Snead (1997) the defining element of communities is one where subsistence production is central to social life as is the self-identification and sense of belonging members of the community hold. Marshall's (2002: 212) more open ended definition of a community is one that finds an: ..“ aggregation[s] of people who have come together for all kinds of planed and contingent reasons”. Birch (2012: 649-650) in contrast, provides a definition that is mindful of the non-static nature of communities, and as such one that is constantly developing. For Birch the local community is where the formulation, negotiation and creation of social identity is to be found – in essence where social conflicts are addressed and resolved. One could argue that when this process stops, the community, as a social group structure for group identity, ceases to exist as well (though as Pauketat (2008) notes: violence is a common aspect of community existence as well).

As archaeologists are destined to make due with material remains and the occasional text that rarely relates to it, what I find inspiring about the above discussion is that material culture assemblages and the people who use them can be employed to delineate local agglomerations of social practices as well (an approach taken up in Harris (2012), but from a symmetrical archaeology perspective). Accordingly, I perceive communities and the practices they engender with their material culture assemblages, as a reflection of localized customs and traditions of ‘doing things’ akin to what has been coined as communities of practice' by Lave and Wenger (1991). Thus the discrete archaeological site is taken as the community and the artifacts found in its vicinity are analyzed to investigate the community specific usages and practices. This approach mirrors Yaeger and Canuto (2000) who do not reject the initial role space (the physical place where artifacts are aggregated) plays in delimiting the community (a point also emphasized by Kanpp 2003), but who focus on household interactions that structure, create and reinforce shared practices. Indeed as noted by Birch (2013: 6), the physical aggregation of material artifacts in a particular space is at the basis of all community based archaeology studies, but the ways in which people use and create in turn common identities with them is what forms the community. This sociospatial basis for the community is tantamount, in my mind, to Harris (2014: 89) who when arguing for a similar investigation of people and object relationships for the study of archaeological communities contends that the" communities we study do not impose themselves on particular places; rather, they emerge through them".

Accordingly, in this work, communities – the social framework for the local-specific aggregation of artifacts styles and people – is also an active definition of archaeological loci that renounces the simplistic model where 'Pots equal People'. It focuses instead on how social groups are manifested though their interactions with artifacts and the ways this engagement continually shape communities of practice. Further still, by using local communities of practices as those elements that both come in contact and are shaped by contact during periods of interaction and exchange, instead of larger (variability collapsing) ethnic peoples as a whole, the lessons of postcolonial studies and critiques can be readily implemented.

Many contemporary studies view complex processes of contact to result in new hybrid forms (after Bhabha, 1994), where the meeting of disparate cultures create new identities and material cultures (e.g., Knapp, 2008). This approach has been extremely successful in accounting for changes in material culture that follow the meeting of disparate groups. Yet it is worth pointing out that an unsophisticated straightforward use of hybridity can greatly oversimplify the connections between ethnic groups and material culture, as it tends to view contacts as a scenario where people coming into contact are seen as connected to specific original artifacts from different regions, and thus perpetuates the 'Pots equal People' approach to ethnicity in archaeology. In fact the greatest critiques of this simplistic use of hybridity have be made from within the Postcolonial community, as well as the development of important models with which to move beyond them (Dietler 2010; Dommelen 2006; Hodos 2009a; Liebmann 2008; Silliman 2013; Stockhammer 2012).

Indeed, recently Leibmann (2013) has offered a detailed discussion on how archaeologists could avoid such pitfalls when using hybridity and the many other terms used to denote, seemingly, similar culture contact outcomes (such as creolization, mestizaje etc..). Taking inspiration from all of the above advances, I similarly propose to view the social practices that emerge from the engagement with new materials as the hybrid outcomes of culture contact cases. Additionally the contextual analysis of the local specific cases of culture contact and colonial situations through communities and their practices, further gets away from viewing these interactions as occurring between homogeneous groups of people or as having equal and consistent outcomes. Consequently I find Birch's (2013: 7) following statement most appropriate for the definition of communities and their study in archaeology, and equally applicable to the discussion on the results and outcomes of culture contact cases: "…while the aggregation often has a macro-regional basis, each community develops within a set of uniquely constituted local contingencies, and what is true for one aggregated settlement within a particular region will not necessarily be for another".

In other words, for the case at hand, the finding of Zhou materials should not be seen, undoubtedly, as reflecting Zhou domination, but should instead be contextually investigated to reveal the case specific reaction to the Zhou expansion. Accordingly, the finding of Western Zhou materials, while reflecting the movements of artifacts or adoptions of styles, should not be seen as evidence of Zhou domination or the arrival of a homogenous well-defined and pristine group (even if it is a magnificent bronze vessel). In fact, for now, let us remain unconvinced in respect to the vast power traditionally attributed to the Western Zhou and view its influence as an open ended issue to be investigated critically, without an a priori assumption of its results. Instead, let us see how the Zhou impacted the regions into which they expanded, both physically and in spirt, and ask: What effect did they have on the local peoples? How were they received? How did the Western Zhou newly arrivals interact with the local populations? We will start from the periphery and only then make our way back to the core; in other words we will investigate the reactions to the spread of Western Zhou culture in order to speculate on the power and authority of the Western Zhou polity as a whole. The social practices that will be investigated will reveal region-specific preferences and tradition, which in turn reflect the existence of localized communities of practice, each reacting to the Western Zhou expansion differently. The methods I suggest – multivariate statistical exploration of burial data and ceramic analysis of residential assemblages – will provide results that allow comparison between different regions and sites of the Zhou world. The presentation of daily activates on the one hand, culinary preferences, and those that encapsulate specific ritualized events, mortuary customs, will allow for an in depth and wide investigation of social identities in flux and as products of intensified interaction and culture contact that was the Western Zhou expansion.

Chapter 4 - Mortuary Analysis in Chinese Archaeology

Introduction

The study of mortuary practices is a primary focus of Chinese archaeology. In fact many archeological cultures are still known only from burial assemblages, such as the Bronze Age cultures in Gansu (Xie 2002 and see chapter 7). While many Neolithic and Bronze Age domestic sites have been excavated from the Neolithic, Longshan, Erlitou and Shang periods (though less so for the latter two), Western Zhou archaeology has remained, almost solely, the domain of cemetery and mortuary data. The ways in which scholars have approached and studied mortuary practices of the Zhou, and in turn this period as a whole, is heavily influenced not only by broader practices of Chinese archaeology in general (discussed in chapter 3), but also by the special place the Western Zhou holds in the traditional narrative on the development of the Chinese past (as discussed in chapter 1).

This chapter presents the main approaches Chinese archaeologists have used in mortuary studies of the Western Zhou period. As we saw, methodologies are influenced by the ways in which archaeological data are understood and approached by scholars in China as well as the place the Western Zhou holds in historical development of the Chinese past. The way in which mortuary data for this period have been analyzed is less diverse than earlier periods as well. Owing in part to the historical orientation of Chinese archaeology, many archaeologists turn to later texts such as the *Zhouli* 周禮 *Liji* 禮記 and *Yili* 儀禮 for insight into Western Zhou burial rituals. Although as Falkenhausen (2006: 75–76) points out these texts provide information on the mourning rituals rather than on the burial practices themselves and in any case linking them to earlier Zhou period practices is not without its problems (and see Puett 2009 for a discussion on the nature of ritual in these works).

Another important focus of mortuary studies of the Western Zhou period is determining the ethnic or supra-cultural identity of a cemetery's occupants. As this is a period considered to be one of cultural expansion and Sinicization, the importance of ethnic and political delineation factors heavily into the discussions on delimiting the Zhou polity and its impact on the people with whom they came in contact. In both the nascent royal domain and newly founded regional states they established, the Zhou are understood to have incorporated members of the Shang clan and their supporters into the new Zhou political system. Through the stylistic examination of burial goods, researchers using the standard approach generally ascribe one of three identities to cemetery occupants: Zhou, Shang, or a local ethnicity (e.g., Beijing 1995; Luoyang 2002; Shandong 1982). Specific mortuary practices such as waist pits, or *yaokeng* 腰坑 (so named since they are found under the waist of the interred), as well as sacrifices of both humans and dogs are considered to be examples of distinctive Shang practices, while inscribed bronzes, for example, are usually taken to be Zhou artifacts.

This approach has not been met without criticism. Critiques point out the problems of conflating ethnicity with material assemblages and they doubt any unilateral outcome of Zhou culture contact (e.g., Jaffe 2012; Major and Cook 1999; Thote 2009). Both of these elements of the standard approach are problematic for the reasons discussed in the previous chapters, which need not be reiterated here. Moreover Falkenhausen (2006: 177-243) extensive study has shown the poor correlation between specific mortuary practices and supposed distinct ethnic groups: be they Shang, Zhou or 'Other'.

In order to better understand mortuary ritual and how Zhou cemeteries are interpreted by Chinese archaeologists using the standard view, it is important to first realize the social standing the deceased had as ancestors. Ancestors held importance in both the ideological and religious views of the ideal cosmological order of the universe, as well as in the segmentary lineage system that formed the sociopolitical basis of Chinese society. Indeed, ancestry was the basis for title and status of any individual: By tracing genealogical heritage and links to people of power and importance, rank was accordingly established in a defined social hierarchy system, which in turn was translated into rights over land and economic gain (Falkenhausen 2013: 120–121). The importance of ancestors and their worship in China might very well lie in the realms of deep antiquity (and see morebelow), but what made Zhou ancestors unique, however, is the notion that the living sought to continue and maintain connections to their dead ancestors, not only as esteemed forefathers who achieved great prowess during their own life time (and in doing so conferred this status to their descendants), but also as supreme entities who remained important as dynamic agents, able to influence the role of the living. In fact, ancestors could be influenced to actively maintain the socio-political standing of their offspring through proper ritual and sacrifice (Puett 2008 and see in Jaffe 2015). Naturally, elites sought to maintain lineage power structures and their place in it.

As communication with the ancestors was so important, it also shaped how the dead were buried, as well as the ways cemeteries were internally organized. K.C. Chang, when discussing the Yangshao cemeteries of the Neolithic period, noted that the lineage organization-style of the cemetery, evidenced by clusters of graves, was proof enough that ancestor cults were well in place during that time (Chang 1986: 119). In fact whether or not this social structure existed to the extent it did during the Shang and even the early Zhou periods can be debated as well, yet the connections that are often made between the two, ancestors and lineage cemeteries, is still the guiding voice in its investigation.

Excellent overviews of ancestor worship and traditional understandings of mortuary practices of the Zhou can be readily found in both English and Chinese (e.g., Zhonguo 2004: 67-126; Falkenhausen 2006; Lai 2015; Thote 2009; Wu 2010). Yet it is important to note that the main thrust of most of these studies has been to focus on elite tombs and to emphasize the communally shared elements among the cemeteries of the Zhou world (and see Selbitschka nd). Far less attention has been paid to the local-specific ways in which burial habits were performed during this period and how these practices shaped a community's identity as a whole. Such an approach is necessary to better reconstruct the complex cultural landscape and thereby highlight regional changes that took place during the Western Zhou period.

This chapter begins by recounting some of the main thematic approaches to mortuary analysis in anthropological archaeology so as to orient the reader to both Western Zhou mortuary studies specifically and mortuary archaeology more generally. Archaeologists elsewhere have noted certain problems when assigning ethnic identity categories to mortuary practices (see below). Mindful of the many advances in the field I propose an approach that finds a middle ground between studies that interpret mortuary packages in the archaeological record as the symbolic representations of social order and those that emphasize burial patterns as resulting from political manipulations of the living. I follow the discussion of this approach with an overview of previous Zhou mortuary studies, outlining some of their achievements and limitations, and focus specifically on their efforts in reconstructing social systems and local-specific customs. In the next chapter, I present the Tianma-Qucun cemetery (TMQC) as a case study illustrating the approach adopted in this dissertation. An important Western Zhou site in its own right, TMQC provides an example that will be analyzed in comparison with graveyards of peripheral locations in the Western Zhou world. The results allows us to gauge the results and effects of Zhou culture contact with the West, to be pursued in chapter 7.

Mortuary Analysis in Archaeology - Finding a Middle Ground

Mortuary practices were understood by many early 20th century sociologists and anthropologists to reflect the beliefs and world-views of their communities (Carr 1995: 108–110). Robert Hertz's work on secondary burials in Borneo and Indonesia was quite influential in establishing these ideas. In his study, Hertz linked secondary burial practices to indigenous beliefs that found the deceased required a second funerary rite in order to successfully advance to the afterlife. A number of scholars had viewed burial practices as essential to community identity (as well as to its very definition) before, but Hertz's was able to provide, for the first time, a clear case study for the way in which religious beliefs directly shaped mortuary ritual (Hertz 1960). Other scholars would continue to emphasize the inherent relationship and mutual influence social practices and mortuary rites had on each other in the early 20th century: For Durkheim (1915), religious ritual, burial practices included, were crucial in the solidification of social ties. Radcliffe-Brown (1922) too pointed out that funerals and mortuary practices were actions taken by the community to reaffirm and secure existing social realities.

In the following decades, however, what was initially studied to uncover variations in an otherwise universally human practice was quickly deemed incomprehensible. This was primarily the result of Kroeber's (1927) cross-cultural review of human disposal practices, which arrived at the conclusion that burial rites seemed to be uncoupled from other social action and thus could not be patterned in any consistent way. Sadly, in the earlier part of the 20th century most archaeologists would neglect the study of mortuary practices, deeming it simply as the idiosyncratic manifestation of another aspect of social life that was best left unexplored (a claim that would culminate in 'culture history' circles with Hawkes' (1954) ladder of inference theoretical model in which religious behaviors were deemed the least accessible social facet to an archaeological inquiry).

Early challenges to these ideas were put forward by Childe (1945) who shifted the focus of burial rites studies from reflections on belief systems to larger social practices (Krober's ideas were still being echoed in the 1960s where Ucko's (1969) famous study, for example, pointed out that many ethnographic observations found no clear correlation between mortuary practices and social organization or community roles). Childe argued that, in Europe, a clear change could be seen from the early stages of state development to the stages that followed, i.e. when political status become more established. Where earlier rulers expressed their power via wealth and made sure to be buried in lavish tombs, their heirs coveted the riches of these tombs and dug them up. As a result graves had to become more modest – a change that influenced the entire upper class burials as they too became less extravagant.

With the processual turn in the 1970s, archaeologists acknowledged the value of studying burial rites as practices that reflected social organization in terms of hierarchy and wealth (Chapman 2013: 48–50). A key figure in this advancements was Louis Binford (1971) who – building upon ideas put forward by Arthur Saxe (1970) – proposed that variables found in a single grave could be taken to be in direct proportion to the deceased's rank and social position he or she held during their lifetime. By accounting for the many variables of ancient tombs and the artifacts placed in them, Binford argued, archaeologists could find not only the amount of complexity that existed in a given society as a whole, but also the place of individual burials in it as well. In so doing the Saxe/Binford approach, as it was later called, encouraged archaeologists to investigate social structures and power relationships through mortuary customs.

Indeed, many studies would soon follow suit: Tainter's (1978) cross cultural study of burial practices showed that energy expenditure was consistently linked to burials of higher ranking individuals, and Rothschild (1979) suggested that community gender differences could be recognized by evaluating the patterning of artifact types and the analysis of their use and symbolic means. Likewise, Peebles and

Kus (1977) argued that clusters of burials reflected different social status among a given society. In addition, they argued, most societies could be expected to form a pyramidal differentiation of wealth and status, where the majority of individuals would receive lesser burial rights and only a small portion of society would enjoy higher and more elaborate burial treatment. Other, more universal assumptions are still widely acknowledged today. These include the understanding, for example, that when infants and young children are found buried in rich graves a ranked society, where status was hereditary, can be confidently inferred. Brown (1981) found that social rank, power and authority could all be approached through careful analysis of mortuary practices and could be recreated by paying careful attention to the percentage of the population that displayed specific mortuary practices. The Saxe/Binford approach also espoused certain correlations to exist in the way societies as a whole disposed of their dead, the most famous of which was *Hypothesis* 8, which found connections between burial rites and the economic strategies that were employed by the living communities. Chapman's (1981) study of the megalithic tombs in European Mesolithic and Neolithic periods showed that the decision for the location and placement of these cemeteries related to the different economic strategies (hunter gatherers and agriculturalists in this case) practiced by these groups and their interests in the control of restricted resources in the landscape.

Critiques, however, noted that these approaches downplayed the many other social meanings burial data contained. Several archaeologists forcefully argued that mortuary practices were not faithfully reflecting community social structures nor the individuals' place in it, but were instead attempts to represent and recreate social realties (following advances made by van Gennep 1960, see also Cannon 1989; Hodder 1982; Shanks and Tilley 1987). Moreover, the notion that more complex societies would have more complex burial practices was equally challenged (e.g.,. Chapman et al. 1981). A study by Goldstein (1980) showed that some of the propositions of the Binford/Saxe approach are in fact less than universal, specifically the assumed correlation between societies that exhibited formal burial grounds and economic strategies seeking to control of resources through lineal descent. Another major critique pointed out that processual approaches were neglecting to see mortuary remains as the remainders of burial rites performed by the living members of the community (e.g., Cannon 1989). In fact elites will often abandon elaborate burial rites to favor simpler burial packages if the former are emulated too strongly by the lower classes. As Rakita and Buikstra (2005: 7) note: "…Consequently, the traditional status-based interpretation of mortuary materials neglects the historical nature of status symbols and cycles of competitive display".

Indeed archaeologists began to view burial practices as social negotiations of power and turned to investigate instead how the dead were manipulated by the living. Parker Pearson's (1982) study of 19th century British mortuary practices showed that in fact an inverse relationship between mortuary remains and status could exist as well. Middle and upper class individuals were disposed of rather quickly and discretely, and the deceased often was cremated where both mortuary ceremony and the dead's final resting place restrained. The lower classes, in contrast, would put on greater displays of burials rites and inter their dead with more lavish ceremony[30]. The impact made by these critiques was quite substantial. Many archaeologists turned to study other social aspects that could be inferred from burial rites, such as religious beliefs (e.g., Carr 1995; Harrington 2013; Sugiyama 2011), territoriality and mobility (di Lernia and Tafuri 2013; Mantha 2009; Zohar 1992), diet and paleopathology (Ambrose et al. 2003; Larsen et al. 1991; Parker Pearson 2000), as well as the dead as living ancestors and their continued importance for the living (Bawden 2000; Whitley 2002).

[30] As has been pointed out to me by Gideon Shelach, a similar case can be seen in early Han period China, where aspiring bureaucrats used the death of their close relatives as ways to secure positions in the imperial bureaucracy. Recommendations were of vital importance in the process of securing a good administrative position as they established the achievement of high Confucian morals and ethics for the would-be-officials – the key component needed to demonstrate merit and candor in order to be accepted as a government functionary. To demonstrate these properties to their letter writers, even lowly commoners would throw the most lavish of ceremonies and inter their loved ones with the finest gifts and burial articles – luxury the dead would never have dreamed of enjoying in life – in the hope that the deeds of the sons would be known to the living (Powers 1991: 7,42-43; Wu 1995: 194–195).

Yet this turn did not bring about a total abandonment of studies that looked for information pertaining to social organization and their relationship to burial practices (discussed in Chapman 2013). In fact numerous attempts to reconcile these approaches have been put forward: Kamp (1998) points out that the degree of variability that is attained when inferring social status is much greater than that assumed by archaeologists. In fact, social competition, rather than hierarchy, is the variable most directly measured, and burial treatment is only one of the many choices available for possible competitive display. O'Shea (1984) suggested that continued treatment of the dead by the living can be seen to indicate a certain degree of predictable correlation to the deceased's status in life. Similarly Morris (1991) differentiated between funerary rites and ancestor worship in order to reconfigure Saxe's proposition 8, which saw a correlation between a society's formal disposal areas and claims it made with it to specific resources. Carr (1995) too remained optimistic in respect to the ability to determine, archaeologically, status and rank from burial assemblages, but cautions that this requires contextual interpretation and the acknowledgment that burials are reflections of an accumulation of social events and not a perfect 'photographic negative' of a single person's social identity or even burial ceremony.

Williams and Sayer (2009) have combined a number of articles inspired by the influential work of the German archaeologist Heinrich Harke, who pioneered methodologies that investigated long term socio-political and economic process related to mortuary practices, by understating the specific contexts they were created in (and see in Sayer and Williams (2009: 13–14)20[31]. Aranda et al. (2009) evaluate the connection between gender roles and artifact types by observing specific objects used as grave good and the traces of their use, as can be observed on skeletons in Argaric societies of southern Spain. Contributions in Heilen (2012) utilize a host of approaches to

[31] Reading Harke's work is quite exhilarating as the range and scope of his research on mortuary archaeology is quite astonishing. One is tempted to add a 'Harke reference' to most all of the points made in this section and his shameful neglect in anglophile archaeological circles is a great loss to entire generations of scholars and students.

uncover community-based social identity among over 1000 graves of the late 19th century cemetery of Tucson Arizona. Spatial arrangement, osteological signatures, and textual data accompany the analysis of grave goods and burial styles in the reconstruction of groups and individuals among this community. Similarly Rakita et al. (2005) is a collection of essays that engage with early theoretical developments, their influence on archaeological practice and ways of moving the field of mortuary analysis forward. Their main conclusion is not to dismiss one or the other approach, but to argue the contextual analysis of communities in time and place allows for a more accurate and nuanced reconstruction of beliefs, social structures, rank and role of the dead in a given society. Here I too adopt what can be seen as a middle-ground approach, and in doing so I concur with Brown (1995: 25) who finds that:

"The controversy over the use of burials as symbolic representations of the social order or as an object symbolizing political manipulation is not a problem of the exclusive legitimacy of one or the other perspective in mortuary analysis. Instead, they are two perspectives to symbolic representations that are potentially co extensive".

Indeed, social organization is no longer considered the primary determinant of variation in mortuary practices and burial form. Instead, as Chapmen (2009, 2003) points out one must be explicit about what aspect of social reality mortuary practices do in fact reflect. To summarize, it is crucial to acknowledge that firstly mortuary practices mirror specific beliefs about death and the afterlife, which may or may not relate to the status an individual held in life (Fowler 2013; Meskell and Joyce 2003). Secondly, we must realize and accept that the dead have limited control over actions and often times become tools to be used in the power games of others (Fowler 2004; McGuire 1992). In short, mortuary practices reflect an intricate blend of social norms, religious beliefs, and social identity combined with their manipulation by their relatives and members of their larger social network. With these ideas in mind we now turn to the discussion of Western Zhou mortuary studies.

Lineage Cemeteries as Material Manifestations of Power

As has been lamented above, little residential evidence has been excavated and studied for the Western Zhou period. Yet the wealth of mortuary data that has been unearthed could be said to (almost) make up for this fact. Over the past few decades a number of important cemeteries have been systematically unearthed and published, and their contents provide for the bread and butter of Western Zhou study. The locations of these sites comprise the areas associated with important lineages and states .The most completely reported and important cemeteries are Zhangjiapo 张家坡 near modern day Xi'an (Zhonguo 1999, also forming the key type site for internal ceramic periodization), the Beiyao 北窑 cemetery outside of Luoyang where the Eastern capital was established (Luoyang 1999), the Yu 虞 lineage cemeteries near modern day Baoji (Lu and Hu 1988); the Jin 晋 state's graveyard at Tianma-Qucun in Shanxi (Shanxi 1999 and below), the Yan 燕 state's cemetery at Liulihe in Hebei (Beijing 1995), and the Guo 虢 lineage cemetery in Henan (Henan and Sanmenxia 1999).

A number of other important lineage cemeteries have been the focus of recent field research and some publication, and more work on already published sites waits to be done as well (and see Zhongguo 2004: 78-128)[32]. New publications produced in recent years include Shaolingyuan 少陵原, 5 km south of Xi'an, a large cemetery of what might have been a military encampment of the Western Zhou (Shanxi 2009). The important recent excavations of Zhougongmiao 周公庙, in contrast, have yet to be reported, but initial findings from 2004 include high status burials and a bronze foundry (Chong and Lei 2007; Xu 2006). Similarly the recent discovery of the Peng lineage cemetery in Shanxi has revealed a formerly unknown lineage, but has only been briefly reported (Shanxi et al. 2006a, b).

[32] The 1950's excavation of the capital of the Qi state in Shandong only came out in 2014 (Linzi 2014)!

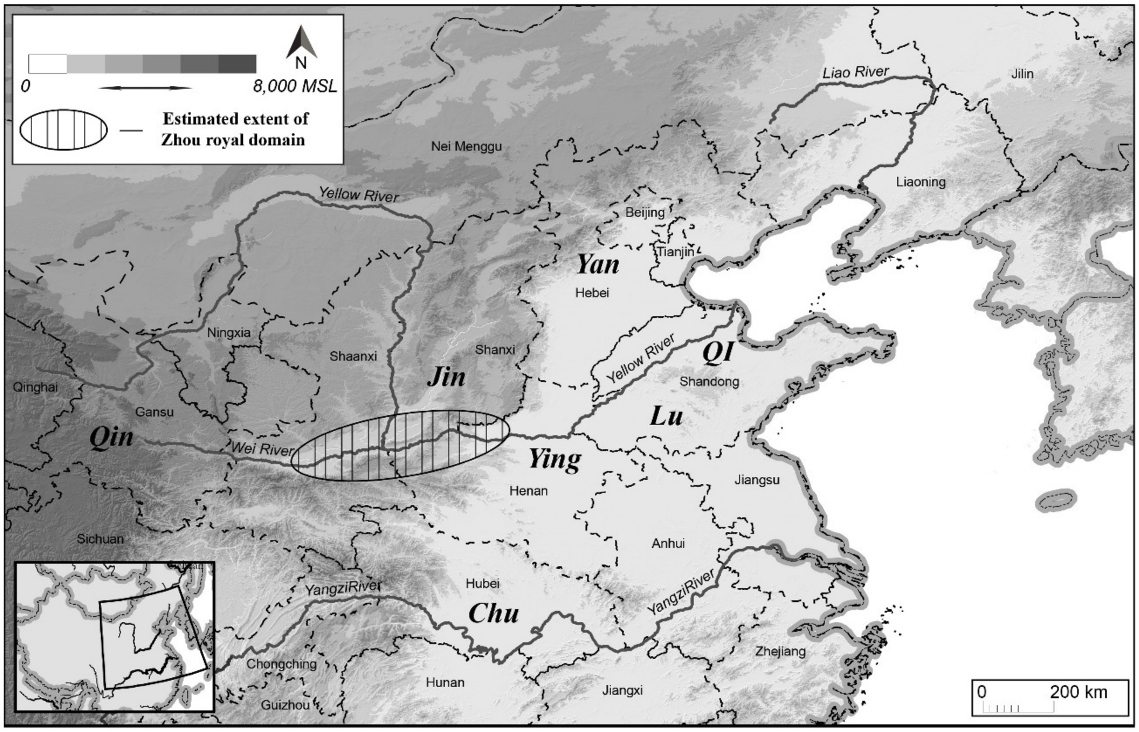


Figure 4-1 - Main states of the Western Zhou world

The Western Zhou tomb, like the Shang period grave before it, was typically a rectangular pit with a shaft (of varying depth) leading down to it. The chamber served as the main room where the deceased was laid to rest inside a coffin *guan* 棺, often surrounded by a stepped ledge (*ercengtai* 二层台), where grave goods could be placed. Many graves had a second coffin, a *guo* 椁, which was built as a wooden chamber creating a protective room, but most important vessels are thought to have been placed inside the inner coffin with the deceased and the ritual vessels, mostly bronzes, on the raised platform or *ercengtai* (Flad 2001; Rawson 1999: 30; Thote 2009: 121 and see Figure 4-2 as an example of grave from TMQC cemetery).

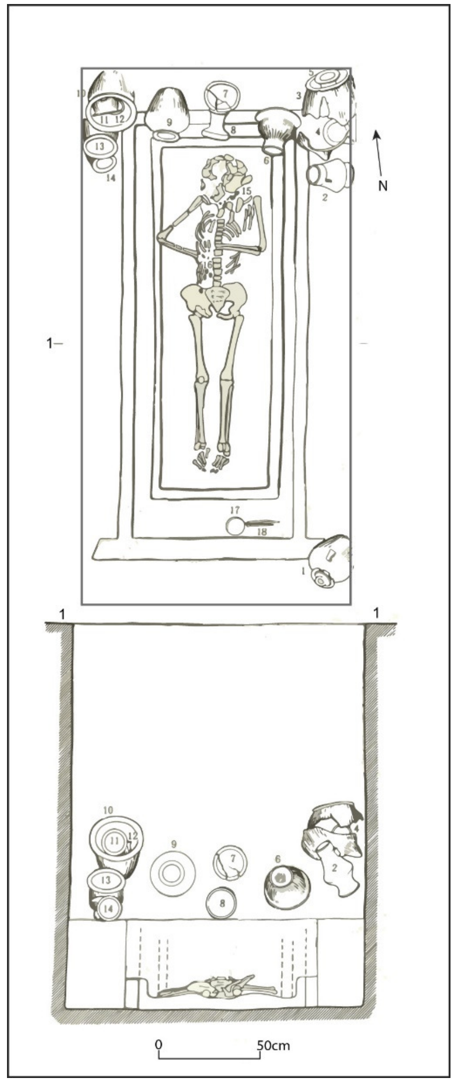


Figure 4-2 - Tomb M6136 from TMQC (redrawn from Beijing and Shanxi 2000: 562)

The amount of grave goods accompanying the dead, as well their types, are considered by most archaeologists as reflecting the status the grave owner held in life. Regional variability existed among the Western Zhou cemeteries, but Falkenhausen (2013: 123-127) finds a number of communalities that can be taken as general forms of rank display. These include: the size of graves, number of sloped passages leading down into a grave, number of coffins, number of sacrificed horses, humans and other animals, chariots, the number of music and ritual artifacts, as well as the material they were made of (such as bronze, jade, bone, stone etc..), and overall furnishings. In the Zhou patrilineal descent system, women, unsurprisingly, held lower status than males and their graves were often not nearly as impressive. In addition a number of artifact types have been correlated with gender differences; these include weapons for men and ornaments for women. These distinctions are not, however, always strictly adhered to, with *ge* axes found in a number of female graves and different ornaments found in male graves (Thote 2009: 123)

As a whole, the Western Zhou cemetery arrangement is believed to have reflected the social hierarchy of the lineage. Large tombs were reserved for lineage heads and their wives and contained the most impressive artifacts. That said, the rulers and elites were not entirely separated from the rest of society. A ruler was not:

"…categorically different from the rest of the ranked elite; he was, instead, its highest representative. Political power, and the social prestige that came with it, were thus not concentrated in single individuals, but inhered in the lineage a collective unit, in which every member had a stake proportional to his or her position in the genealogy" (Falkenhausen 2006: 326).

Indeed it is not uncommon for archaeologists to find a four-tier hierarchy in Western Zhou cemeteries, where tomb size and grave good quality and quantity were correlated to the rank the deceased held in his or her lifetime (though others find 3 or even 5 tiers as discussed in Xie 2010 and Cao forthcoming). The heads of lineages were buried in the largest tombs, often separated from the rest of the lineage members, sometimes with ramps leading down to grave. The largest number of ritual vessels would be placed in their tombs, and a separate pit would be constructed nearby with teams of chariots and horses placed in it. The second tier, consisting of relatives of the royal family, high ranking officials, and even rulers of petty states, would be buried in smaller tombs with fewer objects, but still included bronze ritual vessels, weapons, chariot fittings and other prestigious goods. The third tier were the lower elites of the Zhou world and were buried in smaller graves accompanied by fewer burial artifacts, though they could still contain bronze ritual vessels and horse chariot fittings. The fourth tier, comprised of the commoners of the Zhou world, had the smallest graves, contained no bronze vessels, and their burial offerings were simple, often limited to a few simple pottery vessels. These four-tier hierarchies are found both in the Central Plains areas and the many states outside of it (e.g., Sun 2001; Zhongguo 1999; Luoyang 1999; Hsu and Linduff 1988: 163–171; Yu and Yan 2005: 191–195).

Bronze ritual vessels play a prominent role in these reconstructions[33]. Both the number and type of vessels are considered important. The number of *ding* tripods found in a particular grave is commonly used to distinguish rank among the lineage system (Zou and Xu 1981). The *lieding* 列鼎 sumptuary system, as it is known, exhibits a graded uneven number of *ding* bronze vessels and an even numbers of *gui* vessels that correspond to the aristocratic rank in the nobility system of the Zhou world. The *Liji* notes five aristocratic tiers; Nobles of the highest status could be interred with 9 *ding* and *8 gui,* lower nobles with 7 and 6 and so on, with the lowest aristocratic members accompanied by only 1 *ding* and 1 *gui* (Yu and Yan 2005: 197). These sets were also accompanied by ritual musical sets that were related to the change in the mortuary ritual itself and the role of bronzes in ancestor communication (Falkenhausen 1999, discussed briefly in chapter 1 and see below). How closely these *ding* sets were followed and consequently related to the ranks described in the inscriptions is unclear, yet these sets are taken to reflect the relative rank and position specific families and lineages in the Western Zhou world as well. For example at Locus number III of the TMQC cemetery, the rulers of the Jin lineage were found interred with only 5 *ding,* reflecting a situation where the heads of this lineage were nobles of mid-rank status (and see chapter 1 for Li Feng's discussion on this topic). In practice, it is clear, this tradition was not always followed, and the *lieding* system, while appearing as early as the Middle

[33] As were musical instruments, discussed in Falkenhausen (1993) yet the vast majority of scholarship still focuses on vessels.

Western Zhou period in some contexts, become popular only during the later Eastern Zhou period (and see Falkenhausen 1999b: 472–475; Li 1985: 490–495)[34].

The emphasis on lineage prominence, manifested in differences between commoners and nobleman, somewhat paradoxically, provides for an in-depth understanding only of the upper levels of Zhou society rather than Zhou lineages as a whole. Following the discussion above, this claim can seem counter intuitive: the study of Western Zhou cemeteries is concerned with the lineage as the overarching frame of society and is a case where cemeteries are, in fact, separated along socially structured hierarchical lines. Yet the manner in which these levels are understood and when they are addressed, is always in relation to these prefixed aristocratic understandings of the Zhou world as a whole. In other words we have a fair understanding of the manners in which aristocrats displayed their wealth and status, and from it the differences that existed between different lineages and their aristocrat members. Yet these practices, however, have far less to say about the masses other than that they were not included in the sumptuary rituals of the Zhou elites. Put plainly, commoners are identified by not being Zhou elite.

In contrast, the structure of a lineage cemetery, as a discrete social unit reflecting a community of practice defined by its distinct mortuary practices, has yet to be investigated in Zhou archaeology. It is precisely this relationship, i.e. the social structure of a Zhou community as a whole, how it was organized and internally comprised, that is the focus of the reminder of this chapter. In general, the studies and approaches presented above have subscribed to a view where the overarching framework of the entire Zhou society was its

[34] Interestingly the sumptuary rules put forward during the Early and Middle periods of the Western Zhou were not as closely followed as those that were introduced during the Late Western Zhou (Falkenhausen 2013:126), leading once again to the conclusion that the power the Western Zhou court had was ritualistic and not easy for the court itself to actualize, though it did mobiliz symbolic power to aid aspiring political interest groups (Jaffe 2015 and discussed in chapter 1)

aristocratic culture, and as such, the propagative structuring mechanism of social standing was one that emanated downwards from the noble classes in a system conceived to be dictated by the Zhou elite worldview. Yet, to date, this notion has not been tested or scrutinized; it is simply accepted.

To aid us in this investigation, a final aspect of death and burial in Zhou times must be accounted for: the religious role of mortuary practices and their influence on grave construction and the goods placed within, as well as the role of the dead as ancestors and communicators with the spirit world. It is to this aspect that we turn our attention to now.

Ancestor Worship, Religion and Mortuary Practices

The importance of Ancestor worship in traditional Chinese society as well as its centrality in Confucian teachings has unsurprisingly generated interest into how this tradition developed over time and how it came to eventually assume this position of prominence (Chang 1983; Freedman 1966; Keightley 1978, 1990; Schwartz 1985; Watson 1988). For example, Liu (2000) traced ancestor worship in prehistoric China through a number of major stages: from group to individual ancestor worship and finally to the hierarchal and stratified system that would form the basis of the Shang political system. In this model, ancestor worship moves from an inclusive and community oriented worship to one that is exclusionary and systematic. The grave itself, as the final resting place of the soon-to-be-ancestors, becomes an important locus for ancestor ritual, where a number of archaeological correlates can be found of the ancestor sacrifices performed: The blackened remains of pits surrounding the graveyard of the Yangshao period site of Longangsi can be taken to reflect group worship as a whole, i.e. on a community-wide scale, while similar pits can be linked to individual graves later during the Shang period, as is evident at the graveyard in Xibeigang 西北岡 (Liu 2003: 132–140).

Enticing as this type of argument may be (as well as Chang's speculation quoted at the beginning of this chapter) it is rather difficult to reconstruct the precise attitude towards the ancestors during Neolithic and Early Bronze Age periods or elaborate on ancient beliefs toward the afterlife. By the time of the Shang period, however, oracle bone inscriptions reflect the importance of ancestors and their special roles in the sociopolitical system (Keightley 2000). In chapter 1, I discussed the importance of the ancestors in providing the communicative link to the spirit world and their role in influencing the world of the living for the Shang and Zhou elite. The ancestors each held their place along a rigid hierarchy that was structured by their order of birth and death, and when attempting to influence the high gods in the spirit world each ancestor could only address that ancestor which was directly above himself. Indeed the Shang kings needed to sacrifice in proper sequence to their dead ancestors so that those ancestors could eventually advocate on their behalf to the high god (Puett 2008). In Jaffe (2015) I traced the changes that took place from the Shang to the Weston Zhou periods, when ancestors remained vital in the process of securing the political legitimization even though the medium of communication with them shifted from the oracle bones to bronze vessels.

A marked difference in the role of the ancestors has been observed during the Later Western to Eastern Zhou periods as well. Falkenhausen (1995, 1999a) finds that not only did the bronzes, the main communication media to the ancestors, change in shape and style, as had already been noted by Rawson (1990), but that the ritual itself changed as well: from a focus on simply communicating with the ancestors successfully to performances meant to engage the living attendants. During the Eastern Zhou period the role of ancestors in these ceremonies continued to decline. Indeed, bronze vessels contained inscriptions that rarely acknowledged their construction for specific ancestors, but for their donors instead (Falkenhausen 2006: 295). Needing the ancestors to secure blessings and influence worldly affairs was no longer of primary concern, and sacrifices ceased to be conducted through the established spiritual hierarchy described above. Instead what had begun to take shape was a system that would later be known as the Confucian ethic of self-cultivation: 'ritual for ritual sake'; ritual to cultivate the living (Falkenhausen 2006: 297).

The physical place of worship and communication with the ancestors was a primary component in this change. During the Shang and Western Zhou periods, the temple was the center of spiritual and symbolic power, and during the Western Zhou period it also became the physical manifestation of the symbolic centrality the lineage held in the sociopolitical world of Zhou nobility. The smaller shrines found at times near or on Shang and Zhou tombs were ancillary, and represented minor rituals made to the ancestors, which were not performed in the lineage temples[35]. An important development that is seen to have taken place from the Shang and Western Zhou to the later Eastern Zhou periods is a move away from ancestor worship in the lineage temples to the location of the grave, as evidenced by their increased elaboration and the energy invested in making them. During the Eastern Zhou period graves become increasingly more elaborate. Underground, mostly single vertical pit chambers, which remained unseen to those above ground, were built during the Shang and Western Zhou periods. Pyramids and mounds with larger chambers to house goods for the deceased and their families gradually replaced them[36]. At the same time, the lineage temple began to lose its place as the center of worship. Instead large temples were constructed atop or near these new burial complexes where family worship could take place (Wu 1995: 110–126). Wu Hung has viewed this process as a change in grave status as well, from a symbol of individual and social identity to that of a physical house of the dead. Here the types of objects placed in these graves reveals a shift from a tomb as a temple to the tomb as the house and residence of the dead as well: a shift from bronze ritual vessels sets to everyday objects or their imitations, *mingqi* (i.e. vessel for ghosts), which would further develop in the Han period to include all of manners of everyday life (Wu 1999: 727–729). The living could still continue

[35] The physical place of worship is discussed in the *Liji* to some extent and has in turn shaped how scholars have understood the underlying kin network for the Western Zhou discussed in the preceding section (Wu 1988: 80-90).
[36] Lai (2015: 67-68) finds this to have initially been a southern Chu state invention and influence.

and sacrifice to the dead, but this was done in order to maintain their life-force in the afterlife and not to influence the affairs of the living. At this time the soul is understood to have been comprised of two parts: The *hun* 魂 would ascend to the spirt world but the *po* 魄 would remain and require its keeping in a secure location: the tomb (Seidel 1987). This shift has also been described by Poo Muchou (1998) as an active concern with the personal welfare and life after death of the deceased, where in order for the *hun* to survive in the spiritual realm the *po* had to be preserved in the world of the living.

It is important to point out that this model, the shift from temple to grave, is not accepted by all[37]. Several scholars have suggested the notion of the 'grave as a house for the dead' was in fact a well-established norm before the Eastern Zhou period, even while its importance grew in importance over time (e.g., Rawson 1999). In fact as early as the Western Zhou period, a number of different methods were employed to preserve the wooden structures that created the outer coffin or *guo* compartment of the tombs, which can convincingly been seen as a preoccupation with the preservation of the dead's physical remains (Thote 2004: 75). Others view the efforts to create a tomb that mirrored domestic places and familiar social surroundings not as a means to contain the ancestors, but one that aided their journey to the afterlife (Falkenhausen 2006: 312-320; Lai 2015: 75-77). In this understanding of the changing roles of the tomb and ancestors in early Chinese society, while the spirt realm is taken to have been an established theoretical construct during the earlier Shang and Western Zhou periods, it is believed to have existed side by side with the world of living (and indeed the living sought to maintain the connection with it through the dead ancestors). In contrast, during the later Eastern Zhou periods, a marked separation is enforced between the two worlds: the ancestors no longer moved between the realms of the dead and the living, nor were they inextricably connected to their living dependents as before. Thus during the Eastern Zhou period the tomb physically severed, in a

[37] In fact as was pointed out to me by Armin Selbitschka, Ken Brashier's (1996) survey of Han period literature quite plainly shows that the notion of multiple souls was not supported, any attempt to project these ideas back to earlier Zhou period becomes doubly problematic.

sense, the ties between the living and the dead and in doing so created a reality where the ancestors were no longer linked to this world nor did they desire to return to it (Falkenhausen 2006: 309). If anything, ancestors were potentially harmful to the living if they could not safely make it to the afterlife and were forced to roam the world against their will (Seidel 1987)[38]. In any case, most all scholars agree that by the later Eastern Zhou period the living no longer communicated with the ancestors via bronze vessels, in tomb or temple. The vessels remained important and their production demanded the same amount of resources and labor to create them, yet they were rarely inscribed in the formulaic manner after the late 6tch century BCE (Falkenhausen 1995: 68). Instead, they were reserved for the display of personal achievements and could even be used to rewrite lineage genealogies and histories (Wu 1995:68-70; 98-99).

Finding the Middle Ground in Western Zhou Mortuary Studies

The changes described above are often taken to directly reflect a waning of the power lineages held in the structuring mechanisms of Western Zhou society, and with it the rise, in turn, of individual families of the Eastern Zhou period (e.g., Lewis 2006: 77–133; Wu 1995: 100–109). In fact the collapse of the Western Zhou political system translated into the loss of authority previously held by the members of the important noble families and was replaced by new elite groups, not necessarily tied into the previous aristocratic world, beginning in the Middle Eastern Zhou period (Hsu 1965). The Zhou royal family survived, in a small state during the Eastern Zhou period, but whatever influence they held during the Springs and Autumns period, their importance continued to dwindle in the following centuries. The royal fiefdom continued to shrink in size and their rituals, venerated by Confucius, were no longer adhered to (Li 1985: 17–22).

[38] As noted in chapter 1 and discussed in Jaffe (2015), the author follows Puett (2001) who argues that ancestors were seen as capricious and potentially harmful during the Shang and Western Zhou periods as well.

These religious and ideological changes manifested themselves in the graves and cemeteries of this period, but also reflected and reinforced socio-political changes as well, most notably ones that were geared towards asserting the individual status of the living. This was achieved through the construction of larger above-ground graves for all to see and in the internal organization of the graves as well, made to accommodate the point of view of the visiting living mourner and the larger public. Doors were built at the entrances of tomb structures to provide for easy reopening and graves now contained internal compartments for sacrificial events as well as rooms where graves goods could be put on display (and see Lai 2015: 68-97 for an excellent overview)[39].

Was the close relationship between the spiritual world and the role of the recently dead as active ancestors intimately tied into the socio-political structure of the living during the Western Zhou period? Grave size must have been an important factor for Shang and Zhou peoples since creating large tombs required highly labor intensive-work and seem, on the whole, to correlate to richness and quantity of offerings as well. However, since these burials were subterranean and would not be seen after the burial ceremony, size must also reflect a mortuary ceremony where this element could be displayed to the mourners, perhaps only during the time of internment, though mobilizing the labor to construct these tombs would have had an effect on the community as well (Flad 2001). That being said, constructing these tombs would take quite some time, involving filial piety by family members or even concentrated efforts on the part of the soon-to-be-interred themselves, and providing for longer periods when others could be impressed (Rawson 1999: 28-29).

Whether or not the tomb was meant to house the spirits, guide them to the afterlife or serve as a temple for ceremony, it is important to highlight that these debates revolve around textual data

[39] These realization should also in turn question the role of internal compartments, previously thought to be for the utility of the dead in their afterlife homes (i.e kitchen, toilets, stores etc) and partly for the use of the living as well. In other words the tomb housed the dead, but was constructed in a manner to both impress and service the living.

pertaining to the Eastern Zhou periods. That being said, the ways in which bronze vessels found in tombs were used during the Western Zhou period are perhaps better understood. In contrast to vessels that were placed and used in temples – used to display the devotion of the living to the ancestors to secure their blessing (as well as impress the living) – bronzes placed in graves could be continually used by the deceased in the spirit realm to display their status and sacrifice themselves (Falkenhausen 2008).

Above I argued that grave goods can be seen as reflecting both the status of the dead and the mortuary ritual of the mourners. In other words, as suggested by Flad (2001: 31), both the social identity of the deceased and the social actions of the living can be inferred from burial remains[40]. Correspondingly here I also follow both Jessica Rawson who astutely finds that:

> "…the tomb presented the essential and the best features of life: how it should be, not necessarily how it actually was in all respects. Idealized though the life might be, however, it would be misleading to treat the presentation of the individual achieved in the tomb as fictional in any way. Rather, we should view the objects in tombs and the activities that they enabled as the best possible range of material to provide the best possible apparatus for future life" (Rawson 1998: 120).

In other words grave furnishings provided the deceased the best afterlife he or she could hope for (to be executed following instructions by the soon-to-be-dead themselves or by his or her remaining kin), as well as with the materials needed to provide their descents with aid in the world of the living. This was not, however, uncoupled from the position the interred held during their lifetime, and in fact the ancestral system of sacrifice would only work if the living descendants saw the rank of their ancestors as a continuation of the status they had gained in life. At the same time, even while the social status implied by grave

[40] By running a correlation analysis between the various artifacts found in the different graves and their frequency in them Flad showed that it is possible to retrace the burial ritual of the LXJD culture and its change over time: In the earlier period the burial ritual was a place to negotiate and contest power and status, while later on the burial process became ritualized and served to maintain and affirm existing hierarchies (Flad 2001: 46)

construction efforts and the goods in them were reflect social rank, they were also geared towards securing ancestral blessing and their influence.

This tension, concerning the contribution of ancestor worship and social status to the mortuary ritual, indicates that both should be taken in consideration in order to provide the larger Western Zhou umbrella of mortuary ritual and practice within which local variation can be appreciated. This larger mortuary tradition should be understood to have been of greater import to the Zhou elites, yet their impact on the lower echelons of society remains less clear. Indeed how clearly such practices were installed and followed remains unclear. Finally in direct relationship to the main question of this work – the impact the expanding Zhou society had on its neighbors – even if these traditions provided the larger structuring mortuary practice of the Zhou world, the extent to which it was adhered to or played upon in its larger sphere of influence remains to be seen.

Zhou Lineages as Communities of Mortuary Practice - or Zhou Cemeteries (in Culture Contact) and their Communities

As discussed in chapter 3 and continually reiterated throughout this work, the simple conflagration of material objects and ethnicity is highly problematic. Even while a large number of studies have highlighted the importance and close relationship between ethnicity and specific burial practices (e.g., Emberling 1997; Hall 1997; Santley et al. 1987; and indeed the prevalent link made between the two that has been discussed above in Chinese archaeology), we should not be overly eager to identify specific burial practices with discrete groups of people. To begin with the simple conflagration of material objects and ethnicity is highly problematic. While disparate groups might certainly entertain differing mortuary practices replete with idiosyncratic ceremonies, artifacts and ways to treat the body, they should not be taken to represent pristine ethnic groups nor to have been limited to them (Beck 1995; Gillespie 2001; Härke 2001; Morris 1992).

Indeed the approach advocated in this work is one that seeks to uncover ancient communities through their local-specific mortuary practices. Local practices and shared ways of doing things are examined first, and only then are these practices compared to other cemeteries in order to ascertain their similarities and relationships, or even how they can be grouped in larger regional groupings, as is done with other archaeological remains. That being said, the variation among burial rites between communities, albeit linked by larger religious, historical, regional or other social connections, need not collapse all variation among it (Meskell 2001) In Jewish cemeteries, a case I am familiar with from my personal life, a great deal of variation exits not only between Sephardi and Ashkenazi descendants, but also between communities in different cities (Jerusalem chief among them). Variation, in terms of when the deceased should be buried as well as the particularities of the death rites that accompany interment, is so varied that they cannot be summarized here (Abramovitch 1991).

This is not to say that burial rites do not pertain to aspects of social identity, quite the opposite. When we remember that mortuary practices are arenas for the negotiation of social identity, in cases of culture contact we would expect there to be great concern with the place of group identity markers as a reaction to foreigners and external materials (Barth 1969; Härke 2007, 2014). The outcome, however, of these interactions, as well as what we can be expected to exist in the material record as a result, is far from uniform[41]. Spanish colonial contact in South America, for example, provides an important reminder that the rates at which changes took place in admixture between communities, and the preservation of pre-contact tradition, was uneven and greatly varied (Jamieson 2005). In contrast Shepherd (2005) finds that Greek colonies established in the 1st millennium in Sicilia shared a propensity for including local groups into their communities, but one that sought to create a simple

[41] Brandt et al. (2015) is a collection of essays reminding us that change happens among societies that would otherwise be seen as ethnically homogenous and stable naturally through the passing of time.

yet comprehensive burial rite to erase old group affiliations and unite all members under a new Greek identity. Yao (2008) has looked at the expansion of the Han state into the modern day region of Yunnan Province and compared the way in which foreign artifacts were incorporated differently into the mortuary practices of each community. Artifacts were used in variable ways in each site and their numbers, as well as the access each members of society enjoyed, differ quite markedly between communities. Smith (2003) has shown that at the Egyptian colonial site of Askut in Nubia, individuals played with artifacts, architectural styles and burial offerings differently to reflect their personal identity in various ways. While governors might limit the placement of local materials in graves and flaunt traditional Egyptian symbols of power, Nubian women were be buried with indigenous ceramic vessels accompanied by what were mostly Egyptian funeral rites. Similarly, for the Mississippian cultures of the 16th century, Sullivan and Harle (2010) argue that ceramic assemblages alone provide a poor marker for ethnic boundaries. In fact, although the cemeteries of the Ledford and Fains Island contained similar ceramic types and styles, burial practices at these two sites differed on almost all other attributes including: architecture, placement of the deceased, personal ornaments and gender distinctions.

Additionally, how we understand the interaction between communities of the Zhou world is related directly to the question of whether one understands the Western Zhou period to be: 1) period of strong government that controlled and dictated norms and practices during which variation is a natural occurrence perhaps akin to genetic drift, or, in contrast, a 2) vibrant and heterogeneous landscape of peoples, traditions, tastes, and aspirations all tied together by a shared cultural sphere? Elsewhere (Jaffe 2015) I have argued that in fact change, adaptation and manipulation of existing rituals, including mortuary ones, were common in the 1st millennium BC. As was noted above, even as the central court attempted to monopolize ritual, regional variations flourished and lineage cemeteries developed their own traditions and practices (and see in Thote 2009: 121-125; Falkenhausen 2006, ch 2). The many changes that took place during the Western Zhou period indicate the lack of a single uniform burial tradition that prevailed throughout the Zhou sphere. Jade artifacts, for example, increase in importance from the Middle Western Zhou period onwards. Based on their motifs and the fact that jade was popular during the Shang and not Early Western Zhou period, Rawson (1999b: 423–433) has argued that this influence, the use of Jades, unlike the adoption of bronze ritual vessels, was not directly taken from the Shang as evidenced by artifact styles, but instead adopted from cultures of the south of the Central Plains. Similarly, the addition of multiple chambers alongside the main room in tomb constructions is a prominent feature of the Eastern Zhou period mortuary custom Figure 4-3, but they are not a direct continuation and development from an earlier broadly-shared mortuary custom. Instead they seem to have developed in a sub-region of the Zhou world and are found during the Middle Western Zhou periods only at Fengxi and Baoji (Rawson 1999a:30-31).

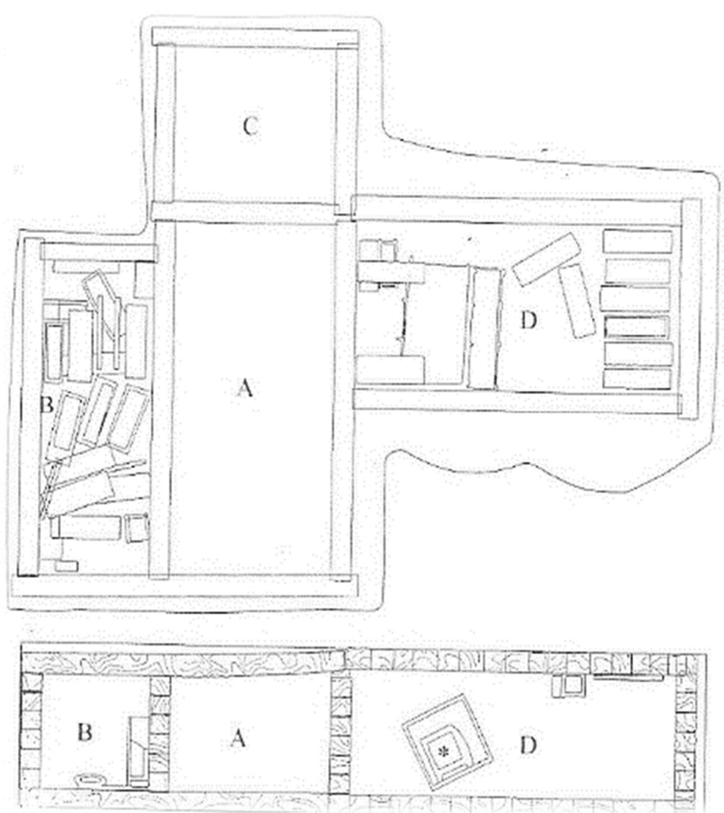


Figure 4-3 -Marquis Yi of Zeng tomb dated 5th century BCE (A- the public hall, B- Wives quarters C- storage rooms D - Marquis's quarter (after Shelach 2015: 289)

This understanding should also question ethnic ascription of single graves or small graveyards, solely on the basis of the material found in them that are found outside of large lineage cemeteries. In fact when graves are identified as belonging to Zhou people based on material assemblages of Zhou status, scholars precede to trace grave agglomerations that reflect a specific status that the interred might have maintained among his or her lineage. For example Lu and Yan (2005: 195) find tombs M1 & M2 of Baicaopo 百草破 in Lingtai, Gansu as exemplifying a second tier grave in the Zhou four tier social configuration and M19 in Fufeng 扶风 county Shanxi as tier 3, based on their relative grave size and types of offerings.

An approach is needed to address the variability of Chinese mortuary practices in and among the Zhou world that organically constructs the relationships between the local communities and the overarching Zhou influences. Instead of singling out certain artifact types and assuming they held the same meaning or were used in a similar manner throughout the entire Zhou world, each cemetery in its entirety and the community specific burial rites that were observed should be studied instead (Härke 2007). Here again we shift our focus to the community as local-specific mortuary practices are investigated, while remaining aware of the larger social reality of the period. As suggested by both Flad (2001) and Rawson (1999b), a contextual approach that identifies the change and appropriations of external influences alongside internal developments is crucial. It is precisely this approach we must embrace if we are to better understand the manifestations of local-specific burial practices among the wider Zhou world.

Elsewhere, following advances made by Shelach (2001, 2005, 2009), I conducted multivariate statistical analysis on the Yan state Western Zhou period cemetery at Liulihe in modern day Hebei and the Yu lineage burial of modern day Beiyao (Jaffe 2012, 2011 and see below). This approach allows researchers to identify which variables are strongly related and how they aggregate into factors.

Underlying dimensions of variability can then be examined in terms of potential meaning in cultural and social terms. By evaluating the correlations between the different categories comprising the factors, we can heuristically propose burial styles manifested through the material remains found in a given tomb (see Shennan 1997: 242-245; Jaffe 2012: 57-59). This method of analysis allows us to explore the society as a whole by providing a way with which to reconstruct social organization as it takes the community-wide behavior rather than not individual graves as its unit of analysis. A further advantage of this method is that it does not preclude the comparison of other Western Zhou cemeteries, it merely does so along practices rather than single artifact types. Indeed focusing on single artifact types is precisely what has led to a focus on the upper echelons of Zhou society mortuary research. In contrast, community-wide mortuary practices can be identified first and further explored in their relationship to other cemeteries.

In the following chapter I introduce this approach and how it is performed by conducting it on excavated and published data from the Tianma-Qucun (forthwith TMQC) the burial ground of the Jin 晉 state during the Western Zhou period[42]. Following the presentation of these findings for each period I evaluate these results in respect to those trends found at TMQC and the larger traditions of the Zhou world. Finally, I end the chapter by presenting a summary of the comparative analysis conducted on the cemeteries of Liulihe and Beiyao to illustrate the importance and utility of this methodology for the comparison of ancient cemeteries. First I provide a brief background of the Jin state cemetery, the history of its study and its importance and place in the Western Zhou world.

[42] The residential site, which provide a case study for examination of culinary practices, is presented in the following chapter.

Chapter 5 - TMQC Cemetery Analysis

Introduction - The History and Archaeological Significance of the TMQC Site

The TMQC area was initially a training ground for Peking University archaeologists in the 1960s and 70s who conducted interment work at the site (Xu 1996: 193). Beginning in 1979 the site was jointly excavated by Peking University and the Shanxi provincial institute of archaeology for over a decade. Their work uncovered over $10km^2$ of residential area and thousands of tombs dating from the Western Zhou through Warring States periods (Figure 5-1). The graves were small and were not taken to reflect the tombs of high aristocrats of the Western Zhou world, but in the early 1980s the lead archaeologist at the time, Zou Heng, suggested that this was in fact the site of the Western Zhou period capital of the Jin state, an important polity of the Zhou period (Beijing et al 1982).

At the time this was a bold statement as the location of the Jin state was still unclear. Textual sources (most nobly in the Shiji 史记 and Lushichunqiu 吕氏春秋) noted that during the Western Zhou period King Cheng had enfeoffed the territory of the vanquished Tang 唐 state to his younger brother Shuyu 叔虞, both as a means of rewarding his service and with the request of creating a stronghold guarding the northern pass leading to the Central Plains (Li 2006: 87; Shaughnessy 1999: 312). His son, the Marquis Xie 燮 would change the name of the territory to that of the state of Jin (Liu 2007). Much more is known, historically, for the later Eastern Zhou period, when the capital of the Jin state is believed to have been moved again in the early part of the Springs and Autumns period: Duke Jing 靖 is reported in the Gongyang commentary 公羊傳 to have relocated the capital to the site of Xintian 新田 (Miller 2015: 174) The importance of the Jin state was such that its dissolution into three separate states, traditionally dated to 453 BCE, also marks for historians the end of the Springs and Autumns and the beginning of the Warring States period (and see Pines (2002) ; Hsu (1999)).

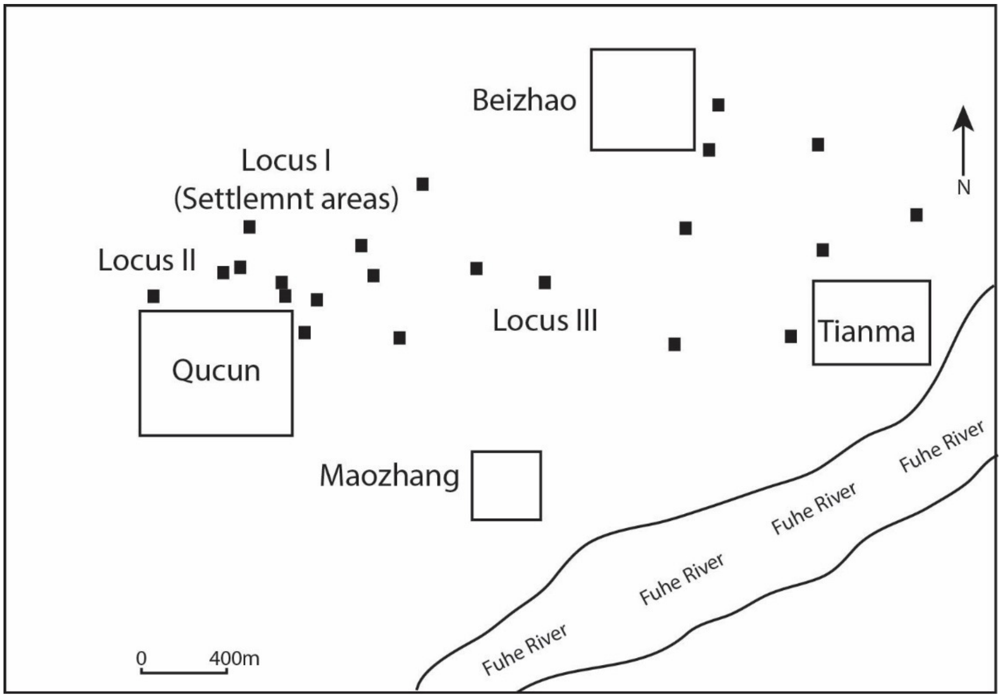


Figure 5-1 - Schematic of TMQC site excavations (For a nicer map see Falkenhausen 2006: 234)

Excavations had unearthed impressive remains of a city near present day Houma 侯马 as early as the 1950s, which was quickly identified as the Jin capital of the Eastern Zhou periods – the massive Shangma 上马 cemetery is one of the most complete and undisturbed cemeteries of the entire Zhou period and has garnered a great deal of work as well (see in Falkenhausen 2001). As the TMQC site is located roughly 25 km north of Houma, the suggestion that this would have been the site of the earlier Western Zhou period capital seemed quite plausible. With the discovery of the rich aristocratic cemetery in 1992 at Locus III of TMQC, all but a small minority accepted that this was in fact the final resting grounds of the Jin Marquises who ruled the Jin polity (and see discussion in Beijing and Shanxi 1994; Li 1999; Falkenhausen 2006: 109-119). These findings prompted a second series of excavations that took place, mostly, at the site of the Locus II cemetery over the course of six seasons (see Figure 5-2 for the Jin lords cemetery layout) the results of which, however, have not yet been fully been published outside of six preliminary reports.

Overall 19 graves in nine groups have been unearthed in Locus III, belonging to the dukes and their wives, arranged in rows facing the same cardinal direction. Each of the grave groups revealed an adjacent chariot pit with dozens of horses, and additionally 14 of the 19 graves were also furnished with elongated ramps leading down into them[43]. Based on chronological dating of the grave goods, the excavators deduced that the tombs spanned the Early (later part), but mostly Middle Western Zhou to the Early Springs and Autumns period. An inscription made in one of the bells found in tomb M8 commemorates the marquis Su's 蘇 successful expedition to the territory of the Su Yi 夙夷 during the 33rd year of the Zhou king Li. Five additional, until then unknown, Jin rulers have also been identified from these graves based of the reading of bronze vessels inscriptions found in their graves (for excavations and reports see Beijing and Shanxi 1993; 1994; 1995; 2001 Shanxi and Beijing 1994a;b, for dates see Shim (1997); Nivison and Shaughnessy (2000))

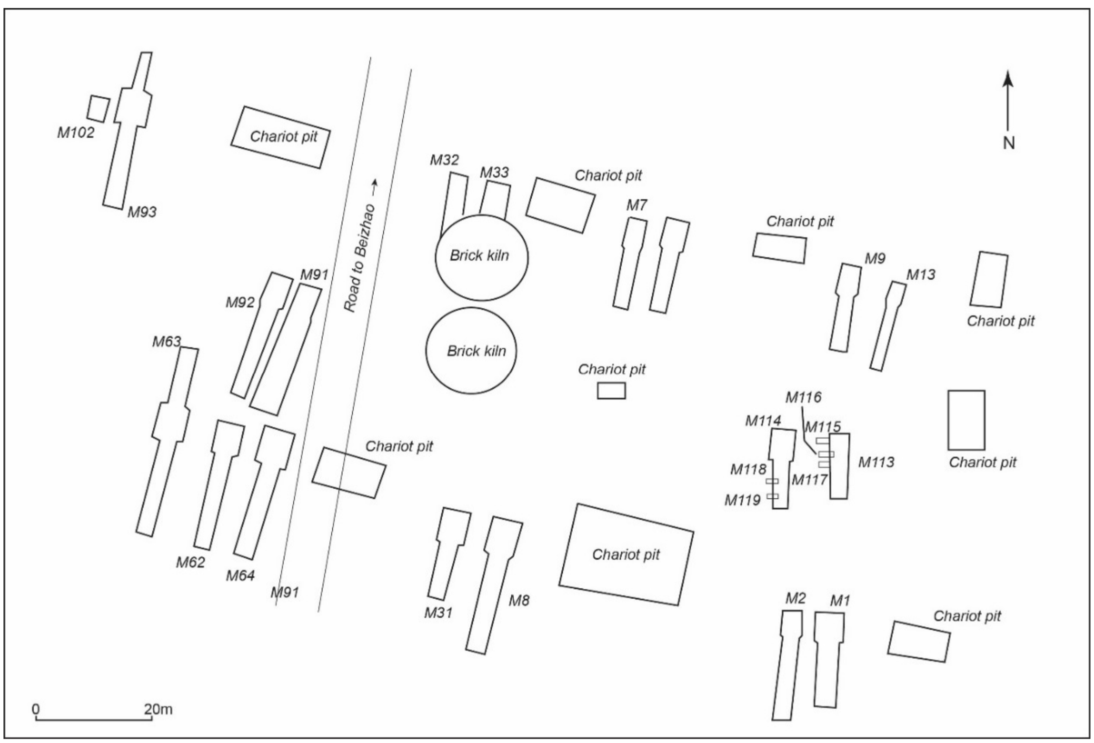


Figure 5-2 - Layout of TMQC locus III (redrawn from Beijing and Shanxi 2001: 4)

[43] The newly opened museum at the site of the Locus III cemetery affords an impressive view of the tombs, chariot and the offering found in them http://www.xn--9kr97f23ruylpu1c.com/

The discovery of the Jin Marquis cemetery has been heralded as one the most important archaeological discoveries of Zhou dynasty and Chinese archaeology (Li 2012). While many of tombs were badly looted, what remained was spectacular nevertheless. Hundreds of ritual bronze vessels spanning the known spectrum of vessel types have been found along with gold, lacquer, pottery, bone and stone items, as well large quantities of jade artifacts, the most impressive of which were made by sowing together pieces of jade (high quality images as well as an overview can be found in Shanxi et al. 2002).

Since its discovery, scholarship has focused on the analysis of these graves and their role in the reconstruction of the Zhou nobility's taste and decorum. The understanding of the internal chronology of these graves has been a chief concern as well and involves the assessment of the material remains, the internal layout of the cemetery, inscriptional evidence and comparison with later historical texts. Research has also looked more broadly to use these finds to refine the Western Zhou calendar and history (Ping 1997). Other aspects that have been studied have been the production techniques used to make the Jin bronzes (Yu et al. 2001), as well as the elaborate jade pendants and masks found in them (Nan 2012 and see overviews in Xu 1996: 194-199; Falkenhausen 2006: 80-91; Li 2006: 86).

Other studies have focused on the many unique elements of the Jin marquis cemetery. Yong's (2004) study of the burials of Jin Marquis cemetery finds that female status was not static during the Western Zhou period and thus was not strongly regulated by an overarching ritual system. A number of scholars have further noted the stylistic resemblance of many of the standard shape bronzes to the established styles of the Central Plains (Xu 1996: 218) alongside unique bronze vessels shapes such as birds, rabbits and other animals (Li 2002). Rawson (1999: 440–446) notes that the bronzes interred in the marquis tombs where made in the shape of more ancient looking vessels. In addition, the importance of jade at the site is evident both in terms of sheer quantity as well as the location preference of ancient jade pieces, mainly on the bodies of the deceased.

This tension between the uniqueness of styles and traditions displayed among the Jin Marquis tombs as well as their importance for understanding the Western Zhou period and society more generally, remains a point of contention among scholars. The TMQC cemetery holds considerable importance in the study of the Western Zhou world and is used as a primary example of its burial rituals and beliefs. In fact Li Boqian (1999) acknowledges that the Jin displayed a certain divergence form traditional use and style of bronze styles, but still views them to be reflective of larger Zhou styles and practice. Alain Thote (2004: 69–70) takes the Jin tombs to be representative of the main Zhou burial tradition in his survey of mortuary practices. Li Feng (2006: 87–88) finds the Fen river valley region and the states there, Jin chief among them, to have had a special relationship with the Zhou court unlike the other more distant states. Finally Falkenhausen's (2006 chapter 2) study of the TMQC cemetery is made in close comparison to that of two other important Zhou cemeteries: the Yu lineage cemetery in Baoji, dated to the Early and Middle Western Zhou, and the Guo lineage in Shangcunling, Hennan province to discuss difference and similarities among the Western Zhou world.

Quite understandably the tendency to study the opulent and impressive artifacts of the marquis and their wives provides excellent information on the upper echelons of Zhou society, but have provided far less insight into the nature of lower levels and as a result the community as a whole. The fact that the graves found here (locus III) were separated from the main cemetery area (locus II) should be noted as it signals not only a departure from what is found at other Western Zhou lineage cemetery, but also a growing class differentiation between higher aristocrats and their kinfolk (Falkenhausen 2013: 124). Moreover, this separation makes it difficult to discuss the significance of tomb placement among the locus II cemetery area, at least in relation to the ways in which burial cluster are noted in other Western Zhou cemeteries (Falkenhausen 2006: n96-98)

Concomitant with the discussion in chapter 4 on the importance of site specific practices, I propose here to look at the entirety of Jin society under the Jin lords to understand their mortuary traditions.

Huang (2004) is an example of the larger investigation of the cemetery in its entirety, but one that focuses on a single material, jade, and its relationship to gender inequality in a very broad way. What will be conducted here, instead, is a study of all available variables and graves of the locus II graveyard. I am mindful of what Falkenhausen (2006: 91) has cautioned against, viewing the published segment of locus II as faithfully representing of the Tianma-Qucun society as it accounts for a small portion of the total cemetery (reportedly on 1/35 of the cemetery has been excavated and published!). That being looking both at the areas in which the excavators have worked – different parts of the cemetery as opposed to only one geographic area – as well as the mortality and gender distribution information (see below) all indicate that this sample can be taken as representative of the larger TMQC community.

I begin the analysis with an overview of the basic data of the TMQC cemetery, i.e. age, sex, ceramic assemblage types and so forth. This affords one way with which to gain important information from the limited sample size that is available. Additionally, the second stage of the analysis, the submission of the data to a multivariate examination, will present overall trends that existed at the site. In the following pages I present the results of the analysis I performed on this graveyard with Dr. Cao Bin of Renda University[44]. Unless otherwise noted the data comes from the final report of the 80-89 excavation seasons published in the four volume report from 1999[45].

[44] A more concise version of this analysis and its implication for the understanding of Western Zhou mortuary analysis is in preparation to be submitted to a peer review journal.

[45] As the later seasons have not been fully published I was not permitted, quite understandably, to utilize them in my analysis. I am extremely grateful to Professor Liu Xu of Peking University for accompanying me to the site and helping me gain access to the materials. I am also grateful to Dr. Jin of the Shanxi province archaeology institute for his hospitality as well as all of the wonderful people who accommodated me at the field school.

Part 2 Cemetery Analysis

In total 631 graves from the Western Zhou to Early Springs and Autumns period were counted. Only those graves that were found in the Locus II cemetery were utilized in the analysis here (as opposed to those found among the residential area). Over 160 graves could not be dated, either because they were looted, damaged or did not contain chronological relevant artifacts: some shell, bone fragments or nothing at all. These graves might very well represent a meaningful stratum of people among the TMQC occupants whose social level was too low to obtain burial goods or were not allowed to participate in the community's burial rites. However, due to the inability of chronologically identifying them they were omitted form the final analysis.

Age and sex

The age and sex of the interred at TMQC locus II reveals that while the parried bonds of male and females was of importance for the rulers at Locus III this was not the case for the commoners (and see Falkenhausen 2006: 150-151).

		sex					
period	**N**	**N/A**	percentage	**female**	percentage	**male**	percentage
Early	223	48	21%	81	36%	94	42%
Middle	138	27	19%	59	42%	52	37%
Late	86	13	15%	41	57%	32	36%
SA	24	5	22%	11	45%	8	33%
All	471	93	19%	192	40%	186	39%

Table 5-1 - Sex disribution of the TMQC locus II graves

There is a slightly higher percentage of females for all periods, but except for the Early Western Zhou this find should not be taken to be representative, necessarily, of the overall trend that existed at the graveyard as almost 20% of all graves could not be sexed (Table 5-1). Those graves that could be sexed revealed a very similar overall pattern of similar age at death for both males and females (roughly 30-35) except for the early Springs and Autumns period were the average male age was 37 and 29 for females. Most of the individuals non-sexed were younger on average, or under 12 years (Table 5-2)

Grave orientation is fairly similar throughout periods with the vast majority of graves oriented along the north axis, also the cardinal direction to which the Jin Marquis graves at Locus III are oriented to, though a large number are also oriented to the West or East (Figure 5-3).

		age		
date	**sex**	**count**	**Mean**	**Std Dev**
Early	**N/A**	24	17.83	13.53
	F	72	33.61	11.2
	M	82	34.70	10.96
Middle	**N/A**	11	28.09	17.36
	F	52	36.13	11.37
	M	48	36.6	11.29
Late	**N/A**	2	31	5.65
	F	35	35.97	8.969
	M	30	35.76	9.97
SA	**N/A**	2	24	22.62
	F	8	29.75	5.47
	M	6	37.16	8.84

Table 5-2 - Age distribution from the TMQC Locus II graves

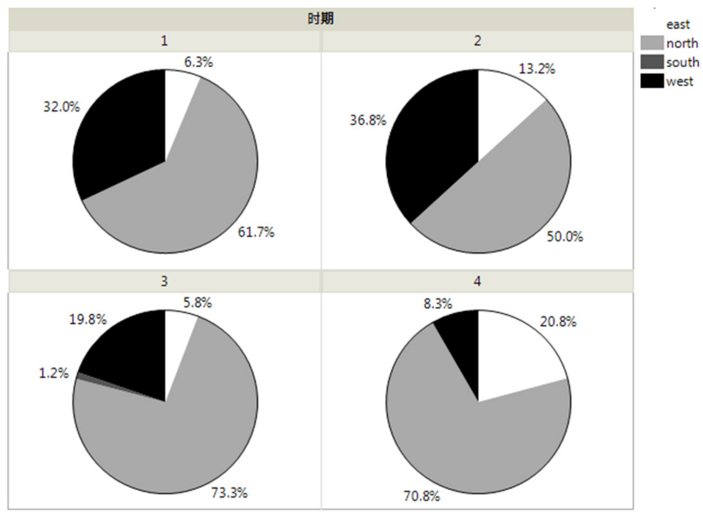


Figure 5-3 - Orientation distribution from the TMQC Locus II graves

This data also sheds light on the issue of this sample's representativeness, as can be shown via age survival exploration. The reconstruction of mortality profiles from past populations has been characterized in a number of societies (though mostly Western and spanning the last 500 years or so). Comparative studies of both historical and contemporary agricultural and foraging societies find a remarkably similar common age pattern of human mortality (Wood et al. 2002: 137–138): high mortality rate for infants and children up to the ages of 10, a stable with slight increase to the age of 25 and a sharp, almost exponential rise in mortality rates afterwards. Variation is seen across society mostly in relation to the number of infant deaths and maximum age at death as well as other factors influencing conditions of high mortality (famine, disease or war). Chamberlin (2006: 66–67) noted that survivorship among ancient agricultural populations follows a similar pattern to that presented above and where almost half the population can be expected not to survive after the age of 25-30 years.

Plotting all available aged individuals from the cemetery reveals survivorship and age at death to be rather similar between males and females for all periods at the TMQC graveyard (Figure 5-4). When observing survivorship patterns C a somewhat higher age or 30-35 with the sharpest declines between the age of 25 and another at 45 years.

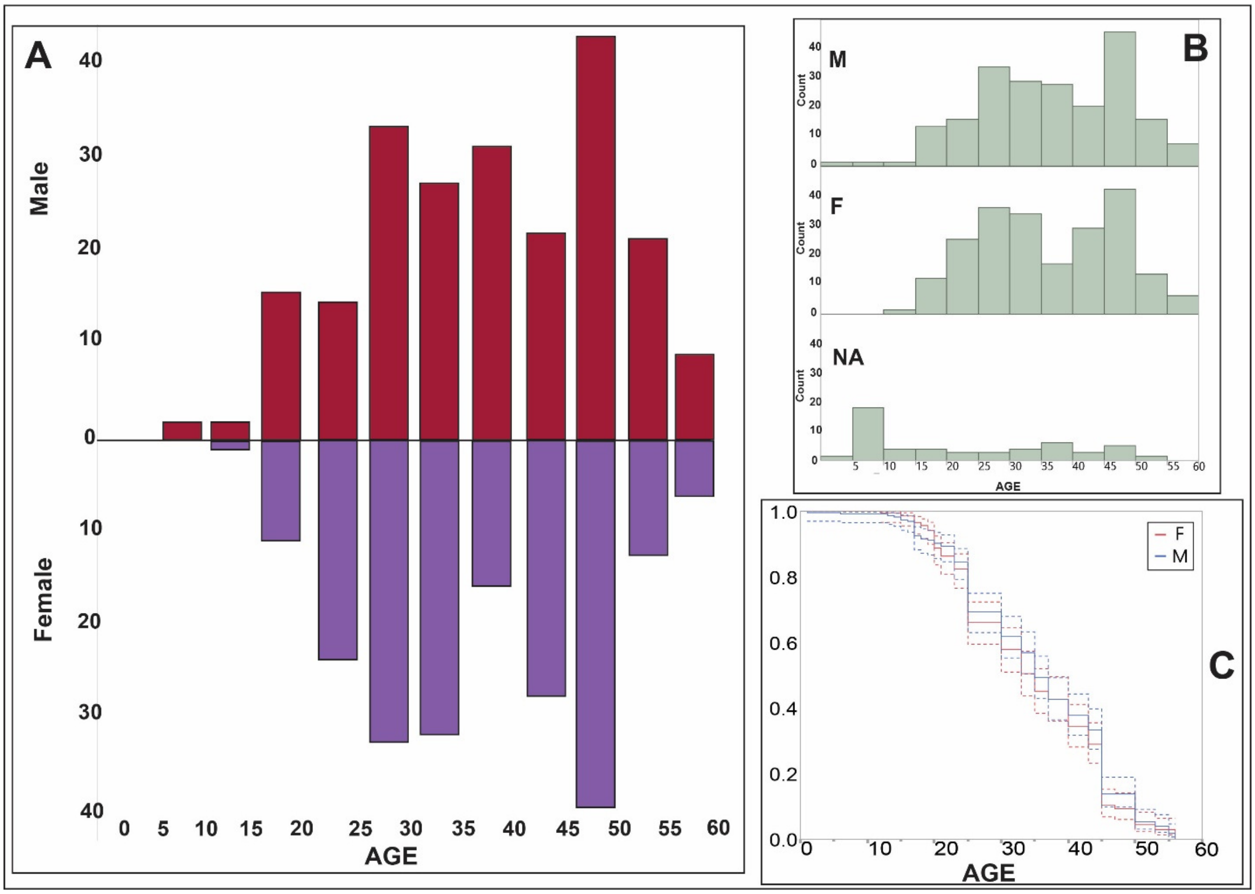


Figure 5-4 - Age mortality distributions by sex for TMQC locus II data (A- Age at death distribution by sex, B- Age at death distribution histograms by sex including non-sexed individuals, C – Survivorship of males and females)

It is important to remember that the cemetery population may not reflect that exact mortality profile as certain members of society may not have been buried in them, especially young children who are often times placed under the floors of houses rather than in the community graveyard (e.g., Gopher and Orrelle 1995). That being said the fact that the vast majority of non-sexed individuals were found to be up to, roughly, 10 years old, suggests that this group (one that is indeed harder to sex based on standard bio-physical markers Chamberlain 2006: 92–104), were buried in this graveyard with the rest of the community.

When the survivorship curve of the TMQC cemetery is compared to those provided in other studies for ancient agricultural populations, it differs quite a bit. However this is the result of very low numbers of young community members (under 5 years of age) in the TMQC data as discussed above, as well as having no cases of individuals living beyond the age of 55, while studies on other populations record death in ages nearing 90 (in fact up to 30% of the population can survive past 55 years of age in some societies Chamberlin 2006: 67). Indeed when survivorship curves of ages 20-55 are compared via a simple log-rank test we fail to reject the assumption that the curves are not identical (p=0.0697). In other words the TMQC excavated and published data sample used in this work can be taken to be a good representative of this age group as seen when compared to other ancient agricultural societies (Figure 5-5)[46].

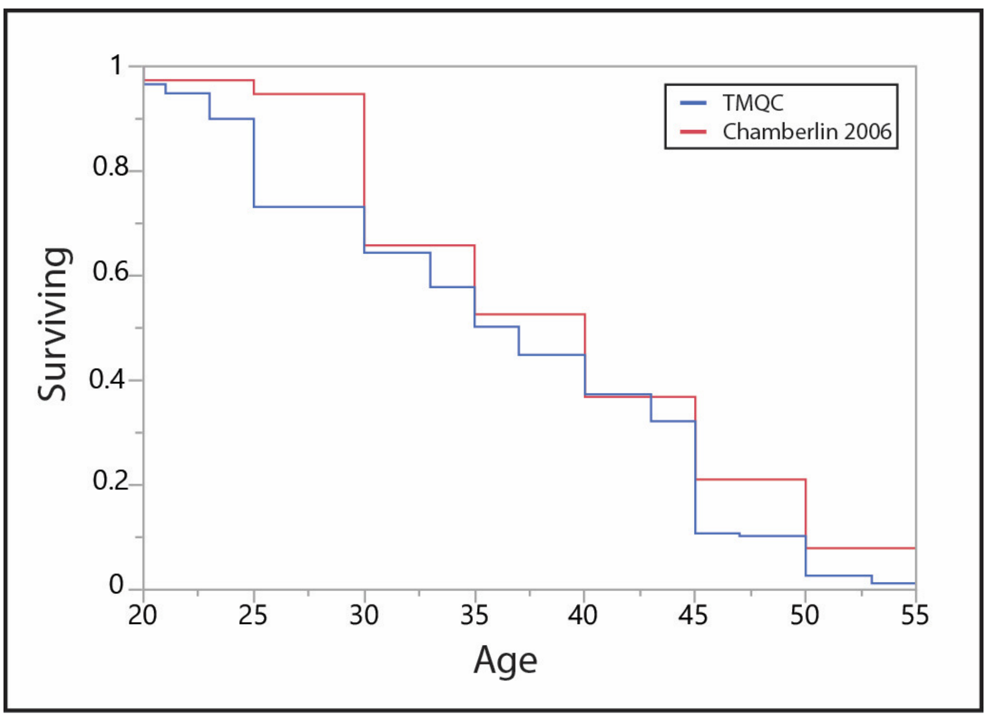


Figure 5-5 - Comparison of survivorship curves for age groups 20-55 between TMQC locus II and data in Chamberlin (2006: 67).

[46] Many thanks to Jon Clindaniel for offering his help with this analysis.

Grave Paraphernalia - Size, Coffins and Stepped Ledges

The TMQC locus II graves are mostly shallow rectangular pits, but of irregular size and shape: The opening or bottom of the grave is larger than the other in many cases. In order to find grave volume a formula for a pyramidal frustum was used[47]. In this analysis graves that were either destroyed, heavily looted or did not contain artifacts to proper date the grave with were omitted from the final analysis. Overall, mean grave volume was roughly the same for all periods with a drop to fairly small sized graves during the Springs and Autumns period. The variation in grave size, however, is much higher during the Early and Late Western Zhou period, with the largest graves reaching over 110m³ (yet still considerably smaller than the tombs of the marquis and their wives in locus III, which reached almost 300 m³ in volume). Most all graves for all periods contained inner coffins of wooden boards, but only about a third of all graves during the Early and Middle periods contained the outer *guo* coffins. This seems to have become more popular in the later periods as 2/3 of graves contained them. In contrast *ercengtai* stepped ledges, decline considerably during those same periods (Table 5-3).

period	N	Grave volume m³			棺/inner coffin		椁/outer coffin		stepped ledge	
		Mean	stdv	Max	sum	probability	sum	probability	Sum	probability
Early	223	10.7	15.81	116.01	214	0.95	71	0.31	131	0.58
Middle	138	7.07	5.91	31.5	137	0.99	52	0.37	75	0.54
Late	86	9.82	17.8	114.04	86	1	58	0.67	13	0.15
SA	24	4.87	4.88	20.36	22	0.91	14	0.58	1	0.04

Table 5-3 - Grave volume, number of coffins and stepped ledge from the TMQC locus II graves

Only four graves had niches and only six graves had waist pits or *yaokeng*. Human sacrifices were found in only two graves during the Early Western Zhou period: an infant found in M6080 accompanying a 15 year old female (perhaps her child) and another in M6123. In addition only six burials had dog sacrifices in them, one dog sacrifice was found in M7184, M7126, M7030 (graves that could not be dated), and M6243 and M6081, dated to the Early Western Zhou. Tomb M7110 contained 2 dog

[47] h/3*(a*b+c*d+(a*d+b*c)/2); where h= height; a&b the length and width of first base and c&d of the second].

sacrifices and was dated to the Middle Zhou period. These low numbers seem to indicate the lesser importance of these custom at the TMQC locus II cemetery and were not pursued further.

Grave goods

Ceramic vessels - Ceramic vessels found at the TMQC Locus II graveyard included many of the standard vessels types found at other Western Zhou cemeteries. In addition the same reduction in pottery types seen at other graveyard is observed at TMQC: This includes the disappearance of *gui* in the Late Western Zhou period, as well as an overall preference to simply be buried with *li* and *guan* type vessels. Richer graves contained fewer ceramic vessels, and some none at all, indicating that ceramics were perhaps the province of the lower classes.

	壶/hu			**尊/zun**			**杯/bei**			**甑/yan**			**瓮/weng**			**器盖/lids**		
Date	**Sum**	**Mean**	**Max**	**Sum**	**Mean**	**Max**	**Sum**	**Mean**	**Max**	**Sum**	**Mean**	**Max**	**Sum**	**Mean**	**Max**	**Sum**	**Mean**	**Max**
Early	9	0.38	1	17	0.63	3	4	1.33	3	8	1.14	3	3	0.75	1	6	2.00	4
Middle	9	0.60	1	14	0.93	1	0	0.00	0	4	0.80	1	5	0.83	1	0	0.00	0
Late	0	0.00	0	3	1.00	1	.	.	.	1	1.00	1	.	.	.	.	.	.
SA	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All	18	0.44	1	34	0.76	3	4	1.00	3	13	1.00	3	8	0.80	1	6	1.50	4
	鬲/li			**簋/gui**			**罐/guan**			**盘/pan**			**豆/dou**			**盆/pen**		
Date	**Sum**	**Mean**	**Max**	**Sum**	**Mean**	**Max**	**Sum**	**Mean**	**Max**	**Sum**	**Mean**	**Max**	**Sum**	**Mean**	**Max**	**Sum**	**Mean**	**Max**
Early	260	1.29	4	36	0.72	3	115	1.14	3	0	0.00	0	108	1.15	5	31	0.67	1
Middle	128	1.12	3	10	0.37	2	86	1.06	2	1	0.05	1	32	0.63	2	42	0.91	2
Late	81	1.00	1	0	0.00	0	14	0.93	1	0	0.00	0	3	0.27	2	16	0.89	1
SA	23	1.00	1	0	0	0	1	1.00	1	0	0	0	0	0	0	3	1.00	1
All	492	1.17	4	46	0.53	3	216	1.09	3	1	0.02	1	143	0.92	5	92	0.81	2

Table 5-4 - Cermaic vessel types from the TMQC locus II graves

Bronze - Nearly 2700 bronze artifacts were found in the TMQC cemetery and as such comprise the single most abundant material category at the site. These artifacts types where divided into subgroups, following the identifications made by the excavators of weapons, vessels, ornaments, tools and items associated with chariot use and horse riding. They are listed here:

1) Ritual vessels (total 141) - *ding* 鼎; *li* 鬲; *pan* 盘; *hu*; 簋, *yan* 甗; *jue* 爵; *zhi* 觯; *zun* 尊; *you* 卣; *he* 盉; *hu* 壶; *shao* 匕.

2) Tools - (total 23) - *fu* 斧(hatchet); *cuodao* 锉刀 (file); *ben* 锛 (adze); *zhui* 锥 (awl); *zao* 凿 (chisel); 柱 *zhu*

3) Weapons- (total 129) - *zu* 镞 (arrowhead); *mao* 矛 (spear); *ge* 戈 (axehead); *jian* 剑 (sword); *shu* 殳 (poleaxe).

4) Ornaments – (total 297) – these include bells (attached to clothing) figures rings and earrings

5) Chariot and horse riding items - (total 2054)- *luan* 銮(small bell); *yuan* 辕(shaft); *xia* 辖 (linchpin); *biao* 镳 (bridal); *e* 轭 (yoke);*guan* 冠 (head gear); *biliang* 鼻梁 (nose ring); and other ornaments of varying types and style: *qi* 錡; *pei* 轙; *guan* 管; and *danglu* 当卢.

In addition, the *pao* 泡 artifact type, the single most abundant bronze item category at the cemetery (over 1500 have been found), is actually a generic term in Chinese archaeological reports given to small bronze objects While they are mostly associated with horse riding activates, similar to those found at Luoyang and Liulihe cemeteries (Luoyang 1999; Beijing 1999), this is not entirely the case at TMQC. Following the initial observations made by the excavators and Cao (2011), these object categories were used to separate *pao* object into armor, horse and riding, as well as ornaments (and see a similar discussion in chapter 7).

Note that no bronze artifacts of any kind were found during the 4th stage at the site or the Springs and Autumns period and are indeed far less abundant during the later periods as well. A strong preference for ornaments can be seen during the Late Western Zhou period in contrast to the earlier periods while and chariot and horse riding artifacts decline almost entirely (Table 5-5).

	Ritual vessels				Riding				Tools				Ornaments				Weapons			
Date	**Mean**	**Sum**	**Max**	**Std Err**	**Mean**	**Sum**	**Max**	**Std Err**	**Mean**	**Sum**	**Max**	**Std Err**	**Mean**	**Sum**	**Max**	**Std Err**	**Mean**	**Sum**	**Max**	**Std Err**
Early	0.47	105	12	0.12	5.98	1333	314	2.51	0.08	18	7	0.04	0.34	76	49	0.22	0.39	88	11	0.09
Middle	0.17	23	9	0.07	3.59	496	244	2.41	0.01	2	2	0.01	0.25	35	27	0.20	0.14	20	5	0.05
Late	0.12	10	5	0.07	2.58	222	222	2.58	0	0	0	0	2.16	186	153	1.82	0.02	2	1	0.02
SA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All	**0.29**	**138**	**12**	**0.06**	**4.35**	**2051**	**314**	**1.46**	**0.04**	**20**	**7**	**0.02**	**0.63**	**297**	**153**	**0.35**	**0.23**	**110**	**11**	**0.05**

Table 5-5 - Bronze vessel categories from the TMQC locus II graves

The types of ritual vessels at the site are, similar in terms of their types to those found at other Western Zhou cemeteries (Cao 2015) and are presented below (Table 5-6):

	ding		***li***		***pan***		***gui***		***yan***		***jue***		***Zhi***		***zhi***		***you***		***he***		***hu***	
P	**Sum**	**Max**	**Sum**	**Max**	**Sum**	**Sum**	**Max**	**Sum**	**Sum**	**Max**	**Sum**	**Max**	**Sum**	**Max**	**Sum**	**Max**	**Sum**	**Max**	**Sum**	**Max**	**Sum**	**Max**
E	42	4	11	2	1	1	24	2	7	1	4	1	6	1	4	1	5	1	.	.	1	1
M	11	1	1	1	1	1	4	1	1	1	2	2	.	.	1	1	1	1	1	1	.	.
L	4	2	.	.	2	1	3	2	.	.	.	.	.	.	.	.	.	.	1	1	.	.
SA	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All	**57**	**4**	**12**	**2**	**4**	**1**	**31**	**2**	**8**	**1**	**6**	**2**	**6**	**1**	**5**	**1**	**6**	**1**	**2**	**1**	**1**	**1**

Table 5-6 - Bronze ritual vessel from the TMQC locus II graves

<u>Stone</u>**-** Stone artifacts were another important material for the construction of grave goods at TMQC, with over 1000 items found at the graveyard. These items were divided into three different types of categories in a similar manner to that of bronze vessels (the same was done for jade and shell material artifacts below and see Table 5-7).

1) Ritual artifacts (associated with burial practices, total 301) - *gui* 圭(tablet); *huang* 璜 (pendant); *han* 琀(polished stone placed in mouth); *jian* 剑(sword); *zhang* 璋(tablet); *ge* 戈(axehead); *bei* 碑(tablet).

2) Tools (total 59)- *li* 砺(whetstone); *fu* 斧(hammer); *xishiqi* 细石器 (microliths); *dao* 刀(knive); *fanglun* 纺轮(spindle whorl).

3) Ornaments (total 65) - mostly *zhui* 坠, which are pendants of varying shapes and styles as well as beads and rings.

	Ornaments				Tools				Ritual			
P	**Mean**	**Sum**	**Max**	**Std Err**	**Mean**	**Sum**	**Max**	**Std Err**	**Mean**	**Sum**	**Max**	**Std Err**
E	1.08	241	49	0.35	0.12	27	3	0.03	0.26	58	9	0.06
M	1.70	235	139	1.05	0.03	4	1	0.01	0.69	95	31	0.24
L	0.20	17	7	0.09	0.22	19	9	0.12	0.76	65	14	0.23
SA	0	0	0	0	0.04	1	1	0.04	0.42	10	5	0.26
All	**1.05**	**493**	**139**	**0.35**	**0.11**	**51**	**9**	**0.03**	**0.48**	**228**	**31**	**0.09**

Table 5-7 - Stone artifacts by category type for the TMQC locus II graves

Jade - Jade artifacts were not nearly as plentiful as other item types with only 204 pieces from all periods, in sharp contrast to their abundance at the Locus III cemetery and the importance scholars discussed above have placed on this artifact type. They were separated into two different artifact categories ritual items and ornaments (Table 5-8).

1) Ritual (associated with burial practices total 85**)**- *huang* 璜(tablet); *pai* 牌(tablet); *cong* 琮 (hollow tube); *zhuai* 圭 (tablet); *han* 琀 (polished jade placed in mouth); *ge* 戈(axehead);
2) Ornaments (total 119)- *zhu* 珠(beads); bracelets *huan* 环 and pendants in the shape of fish, flat circles and other styles.

	ornaments				Ritual			
P	**Mean**	**Sum**	**Max**	**Std Err**	**Mean**	**Sum**	**Max**	**Std Err**
E	0.31	70	22	0.13	0.19	43	24	0.11
M	0.22	31	17	0.13	0.14	20	12	0.09
L	0.05	4	1	0.02	0.09	8	3	0.05
SA	0	0	0	0	0.17	4	3	0.13
All	0.22	105	22	0.07	0.16	75	24	0.06

Table 5-8 - Jade artifacts by type from the TMQC locus II graves

Lacquerware - Lacquerware is a rare artifact for the western Zhou period though the TMQC cemetery yielded rather impressive amount with 214 items. They are mostly small containers and rarely more than one is found in a single grave.

Bone - A number of bone Artifacts were found in locus II graves, but due to their low number and amounts in each artifact category (many contain only one or two examples per category), they were not further divided into groups, but analyzed as a material type. Bone items mainly include arrowheads, rings, beads and some pendants.

Clam and shell- In contrast almost 10,000 clams and shells were interred in the graves of TMQC locus II. They include artifacts fashioned out of shell, mainly ornaments and pendants (numbering several hundred) and shells that were not local to the site were brought in from the ocean.

Basic statistical Analysis

Table 5-9 below presents a summary of artifact distribution overtime at the TMQC locus II cemetery. This table shows the great discrepancy between the periods represented at TMQC for the 1980-89 seasons.

	Bronze				**Stone**				**Jade**			
Period	**Median**	**Mean**	**Std Err**	**Max**	**Median**	**Mean**	**Std Err**	**Max**	**Median**	**Mean**	**Std Err**	**Max**
E	0	7.26	2.83	349	0	1.56	0.39	53	0	0.54	0.20	27
M	0	4.17	2.68	287	0	2.47	1.12	140	0	0.34	0.21	28
L	0	4.90	4.44	381	0	1.62	0.33	18	0	0.24	0.14	9
SA	0	0	0	0	0	0.79	0.36	7	0	0.17	0.13	3
	Age				**Grave volume**				**Ceramics**			
Period	**Median**	**Mean**	**Std Err**	**Max**	**Median**	**Mean**	**Std Err**	**Max**	**Median**	**Mean**	**Std Err**	**Max**
E	33	31.77	0.94	56	5.10	9.22	1.02	116.01	2	2.67	0.16	21
M	37	35.26	1.13	56	4.73	6.84	0.53	31.50	2	2.40	0.14	9
L	35	35.59	1.10	55	4.48	9.59	2.02	114.04	1	1.37	0.08	5
SA	31.50	32.60	2.16	45	2.99	4.87	1.12	20.36	1	1.13	0.07	2
	Lacquer				**Tin**				**Bone**			
Period	**Median**	**Mean**	**Std Err**	**Max**	**Median**	**Mean**	**Std Err**	**Max**	**Median**	**Mean**	**Std Err**	**Max**
E	0	0.69	0.13	20	0	0.04	0.01	2	0	0.34	0.16	35
M	0	0.33	0.09	8	0	0.10	0.03	2	0	0.09	0.03	2
L	0	0.10	0.06	5	0	0	0	0	0	0.13	0.08	6
SA	0	0	0	0	0	0	0	0	0	0	0	0
	Clam and shell artifacts				**Shells and clams**				**Total artifacts**			
Period	**Median**	**Mean**	**Std Err**	**Max**	**Median**	**Mean**	**Std Err**	**Max**	**Median**	**Mean**	**Std Err**	**Max**
E	0	0.97	0.33	54	13	32.64	5.30	962	4	13.09	3.25	405
M	0	0.67	0.16	10	13	42.32	9.50	992	3	9.91	2.96	299
L	0	0.76	0.62	53	0	4.08	1.09	46	2	8.36	4.66	400
SA	0	0	0	0	0	0.88	0.57	13	1	2.08	0.38	8

Table 5-9 - Basic artifact and grave properties by period from the TMQC Locus II graves

The lower numbers of Late Western Zhou and Early Springs and Autumns period graves remind us that they probably do not represent most faithfully these periods, as noted by Falkenhausen (2006: 82-83). A number of telling trends are worth pointing out here: For example the average age of the interred remains more or less constant throughout time, as do the number of ceramic vessels, stone or shell artifacts. This observation might in fact be an actual trend at the site and one that would be expected in the event that another several hundred graves for the later periods were excavated. The average size of the graves, noted by grave volume, drops in the Middle Western Zhou period and returns to those numbers seen in the Late Western Zhou.

The maximum number of artifacts found per grave changes trough time as well: bone artifacts, while low in number, seem to be popular only during the Early Western Zhou period. Jade artifacts are similar in number until the late western Zhou when they are found in much fewer numbers. In fact for many of the above categories the total number of artifacts is quite low, such as artifacts made of tin, where only eight items in total were found at the cemetery. A closer look at the number of rich graves, i.e. those graves that contained hundreds and even thousands of artifacts, affords a view of both these unique graves as well as the overall trends that existed at the site. A distribution plot for all graves by number of artifacts found in them reveals that still the vast majority of the graves contained between one and ten artifacts (75%) while a smaller, but not insignificant portion of the graves where accompanied by several dozens of artifacts (Figure 5-6).

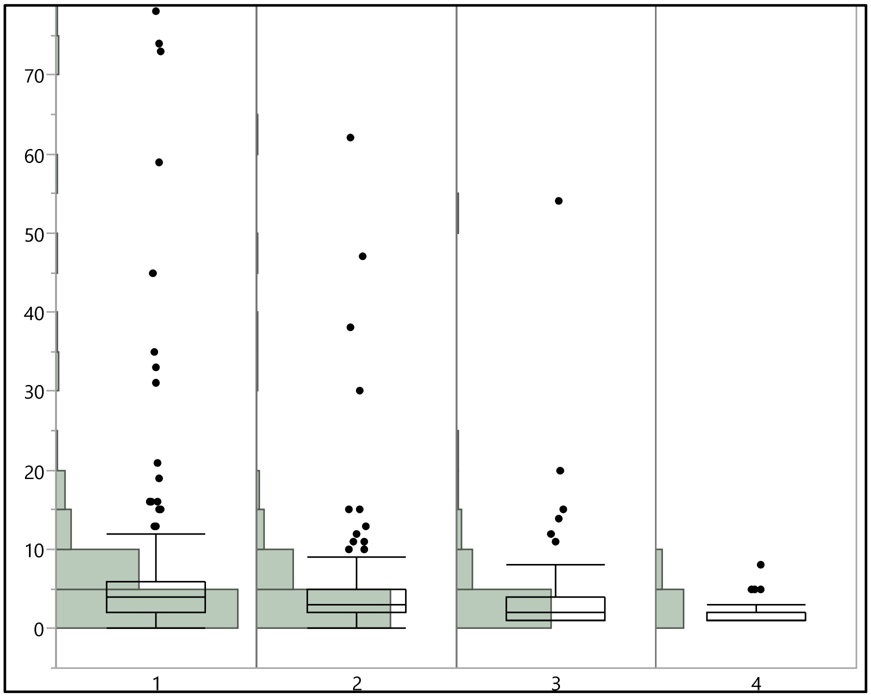


Figure 5-6 - Box and dot plot for total number of artifacts found at TMQC locus II graves by period

Looking at individual graves that contained well over 100 artifacts insight is gained into the richer portions of the TMQC society

Grave	Period	Age	Bronze	Stone	Jade	Volume	Ceramic	Lacquer	Bone	Shell artifacts	Shell	Total artifacts	total +shell
M 5189	3	30	381	5	9	114.03	1	0	4	1	0	400	401
M 6071	2	adult	235	1	2	25.76	0	2	0	0	59	240	299
M 6081	1	adult	338	28	11	100.61	1	20	3	0	11	401	412
M 6130	1	45	219	0	2	/	1	4	2	0	338	228	566
M 6210	1	56	323	0	3	82.16	0	4	3	0	165	333	498
M 6214	1	53	99	25	16	51.69	10	15	35	11	962	200	1173
M 6231	1	35	349	40	12	116.01	1	0	3	0	5	405	410
M 6384	2	.	287	2	5	31.50	1	2	2	6	992	299	1297
M 6490	2	56	0	140	1	14.2	4	0	0	0	81	146	227
Total /% or Average		**33.5/ 45.8**	**2231/ (83%)**	**241 (28%)**	**61/ (31%)**	**66.6/ 7.8**	**19/ (1%)**	**47/ (22%)**	**52/ (52%)**	**18/ (4%)**	**2613 (19%)**	**2652 (53%)**	**5283 (27%)**

Table 5-10 - Graves with over 100 aritafcts at TMQ locus II

Age of the deceased (for those individuals that could be aged) is quite older than the average age of 30 years or so for all periods. In fact some individuals were well in their 50s. The volume of these graves is also higher than the average observed for all periods at the graveyard (average of 8.3 and 4.9 median cubic meters), though the largest graves (M5189 and M6231), did not contain the most artifacts. The above graves contain 83% of all bronze artifacts found in the site as well as the highest amount of bronze artifacts found in a single grave (the exception being M6490 with no bronze artifacts at all, but 140 stone artifacts, which are the largest amount stone items found in a single grave).

In contrast these graves contain only 1% percent of all ceramic vessels found in the cemetery. Only M6214 contained the large amount of 10 vessels. Shells are also not popular within this group, though imported shell numbers are high with several hundred placed in each grave. The shell artifacts and ornaments only accounted for 19% of the total shells found at the site. Following the presentation of these findings for each period I move into evaluate these results in respect to those trends found in TMQC locus III and other traditions of the Zhou world.

Early Period

For the Early Western Zhou period 166 graves were preserved well enough to obtain measurements for grave size (i.e. volume). An additional 32 graves could be reconstructed as they were only lightly damaged while 22 were too badly damaged to be included here. These graves were omitted from the final analysis presented here. As a first step the graves were submitted to a Pearson correlation matrix, a test that finds the relationship strength between two variables and displays them on a -1 to +1 scale and where 0 reflects no correlation (Figure 5-7).

	棺+椁	音量	一共陶器	一共青铜器	石器	一共蚌器	一共海产	玉器	骨器	漆器	锡器	total artifactsa and shells
棺+椁	1.0000	0.4497	0.2071	0.2082	0.1176	0.2232	0.2968	0.2314	0.1560	0.3087	0.1471	0.3414
音量	0.4497	1.0000	0.1579	0.7841	0.4152	0.1266	0.3805	0.6292	0.3136	0.6039	0.0262	0.6649
一共陶器	0.2071	0.1579	1.0000	-0.0577	0.0958	0.0922	0.3204	0.2698	0.2107	0.1650	0.0813	0.2644
一共青铜器	0.2082	0.7841	-0.0577	1.0000	0.4677	0.0103	0.1936	0.4277	0.2914	0.5238	-0.0248	0.5967
石器	0.1176	0.4152	0.0958	0.4677	1.0000	0.0772	0.2191	0.2809	0.3127	0.3302	-0.0231	0.4341
一共蚌器	0.2232	0.1266	0.0922	0.0103	0.0772	1.0000	0.3137	0.1556	0.1550	0.2100	-0.0360	0.3012
一共海产	0.2968	0.3805	0.3204	0.1936	0.2191	0.3137	1.0000	0.5144	0.8251	0.5786	0.0055	0.8987
玉器	0.2314	0.6292	0.2698	0.4277	0.2809	0.1556	0.5144	1.0000	0.3952	0.5714	-0.0188	0.6306
骨器	0.1560	0.3136	0.2107	0.2914	0.3127	0.1550	0.8251	0.3952	1.0000	0.5489	-0.0157	0.8037
漆器	0.3087	0.6039	0.1650	0.5238	0.3302	0.2100	0.5786	0.5714	0.5489	1.0000	-0.0392	0.7189
锡器	0.1471	0.0262	0.0813	-0.0248	-0.0231	-0.0360	0.0055	-0.0188	-0.0157	-0.0392	1.0000	-0.0068
total artifactsa and shells	0.3414	0.6649	0.2644	0.5967	0.4341	0.3012	0.8987	0.6306	0.8037	0.7189	-0.0068	1.0000

Figure 5-7 - TMQC Early period correlation analysis between main artifact types and other elements.

Immediately a number of correlations can be seen between categories: Grave size is positively correlated with the total number of artifacts, total number of jade and lacquerware artifacts, but most strongly with bronze artifacts. Bone artifacts are strongly correlated with the total number of shells and with lacquerware artifacts to some extent. Other weaker connections are seen as well, as for example, tin vessels seem to not be correlated with any of these variables. In order to further explore the connections between these categories as groups and not only as pairs, the dataset was further explored with factor analysis as discussed in the previous section. Here the connections between a number of variables is explored in an effort to understand if there are common explaining factors that group together and the amount of variance each factor explains. These finds are summarized in Table 5-11 below:

	Factor 1(27%)	**Factor 2(26%)**	**Factor 3(9%)**
Shell and clam	**0.980041**	0.206596	0.001406
Total artifacts	**0.795886**	0.590393	0.147614
Bone tools	**0.786011**	0.278183	0.115116
Ceramic	0.330734	-0.013891	0.070482
Shell artifacts	0.300399	0.098244	0.035687
Coffins	0.254819	0.233510	0.013421
Bronze artifacts	-0.005136	**0.969687**	0.206340
Grave volume	0.224790	**0.785280**	0.167985
Lacquer	0.476576	0.551140	0.114284
Jade	0.427650	0.471073	0.098396
Stone	0.162891	0.288386	**0.920185**

Table 5-11- Common factor analysis on TMQC Early period graves with the percent of variation explained by each factor

Factor 1 finds a very strong, and unsurprising correlation between total number of shells and the total number of artifacts, as they amount for largest artifact type found at the cemetery. These categories were also positively correlated with bone artifacts. A moderate correlation with ceramic and shell artifacts, as well as a moderate correlation between both jade and lacquer items, is observed in this Factor as well. Jade and lacquer items were somewhat more of a contributing element of factor 2 where correlation between grave size and total number of bronze objects was the main component. Total numbers of artifacts is also a strong components in Factor 2 as bronze items, especially *pao* items, were found in great abundance. Factor 3 is dominated by stone artifacts uncorrelated and separated from the other factors. Finally the total number of coffins did not seem to be correlated with any other component. By saving the score value of each factor for individual graves they can be plotted to visually examine them in relationship to these Factors and highest scoring graves (Figure 5-8).

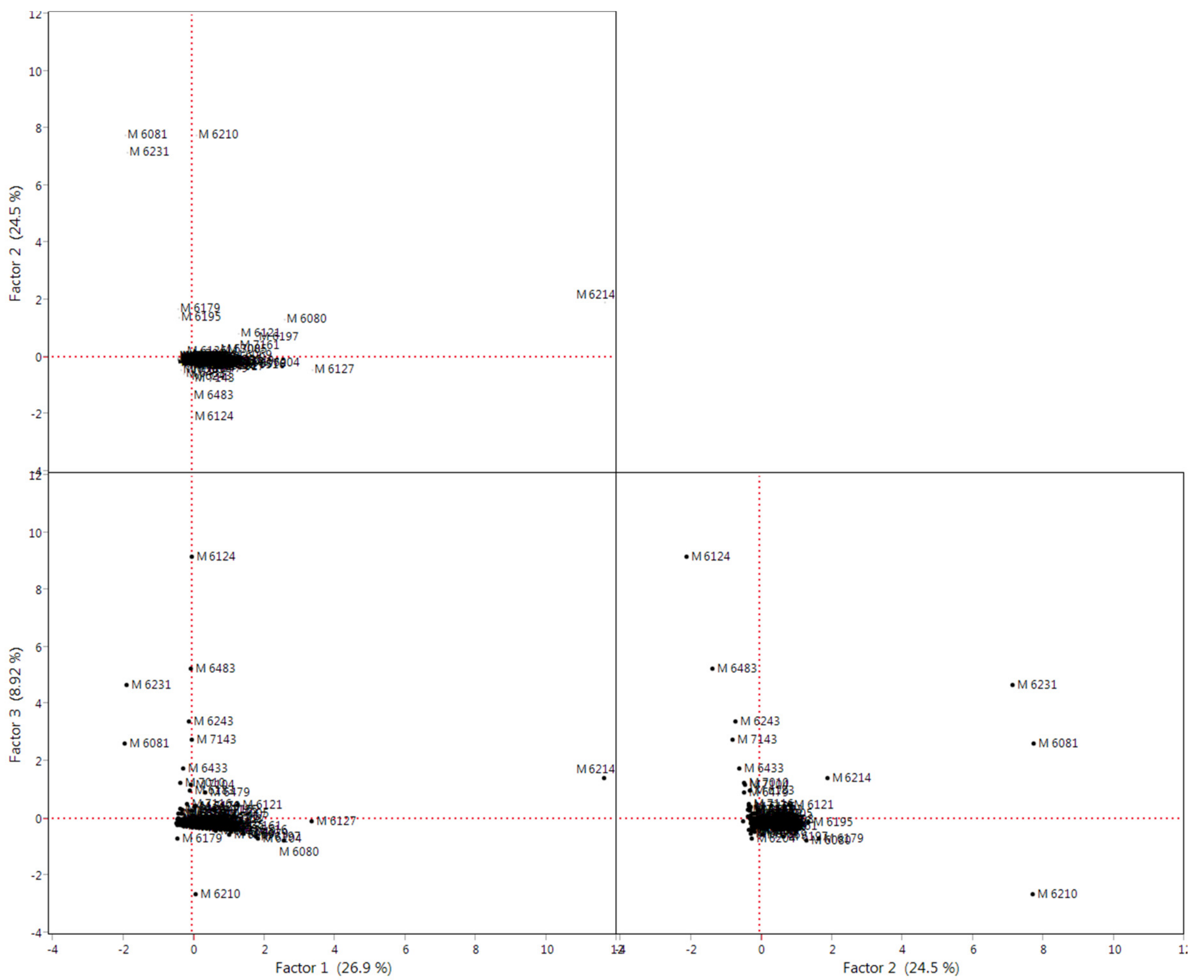


Figure 5-8 - Loading plot for TMQC locus II Ealry period first factor analysis

This loading plot plainly shows that while Factor 1 explained over 25% of the variance, only about 4 graves scored relatively high on it, while Factor 2 showed a higher participation rate from other grave occupants. Similarly Factor 3 explains only 9% of the variation among the graveyard. Looking at the high scoring graves from this first factor analysis (Table 5-12) a clear trend emerges: a single very strong factor dominates each of the graves alongside a somewhat lower score for the other factors (though only M6214 scored relatively highly on all factors). Thus while Factor 1 was not open to all members of the community, for those higher scoring graves factors were also not mutually exclusive categories of mortuary practices, though one or the other was more strongly followed by the tomb's inhabitant.

Grave	Factor1	Factor2	Factor3
M 6080	2.5994474722	1.3364309109	-0.765601945
M 6081	-1.909270394	**7.7853923618**	2.6223319112
M 6127	**3.4044904527**	-0.456318764	-0.117042966
M 6179	-0.407006388	1.6858076304	-0.71865582
M 6195	-0.383592468	1.3846810132	-0.153985258
M 6210	0.1081708851	**7.7626821478**	-2.641542364
M 6214	**11.713098032**	1.9439681863	1.397692448
M 6231	-1.863823184	**7.185630504**	**4.647597142**

Table 5-12 - High scoring graves of the Early period TMQC Locus II graves for first factor analysis

To better understand these combinations connections between different vessel function beyond the material they were made from, were further investigated. Here the categories discussed above for jade stone and bronze items were used. Results of this second factor analysis (Table 5-13):

	Factor 1 (27%)	Factor 2 (20%)	Factor 3 (10%)	Factor 4 (8%)
Riding	**0.904598**	0.124551	0.10928	-0.03662
Weapons	**0.827478**	-0.13791	0.05615	0.139618
Volume	**0.808826**	0.223565	0.349941	0.187657
Ritual	**0.794946**	0.328199	0.386854	0.128672
Bronze ornaments	**0.786978**	-0.07104	-0.19545	0.156023
Jade ornaments	0.592766	0.497435	0.152245	0.015378
Stone ornaments	0.568146	0.304681	-0.27768	-0.03303
Clam and shell	0.077809	**0.879239**	0.262401	0.207703
Bone tools	0.185587	**0.872028**	-0.00088	0.061496
Total artifacts	0.479799	**0.780371**	0.261927	0.183473
Lacquer	0.403808	0.555631	0.452131	0.008787
Ceramics	-0.10411	0.497707	0.064362	0.026717
Jade ritual	0.039405	0.128109	**0.735697**	-0.1101
Coffins	0.202623	0.176072	0.283381	0.242509
Stone ritual	0.054951	-0.07462	-0.04116	**0.802979**
Stone tools	0.171621	0.217929	-0.0326	0.499278
Clam artifacts	-0.08622	0.210798	0.402511	0.411181

Table 5-13 - Second common factor analysis on with percent of variance explained by each factor for the TMQC Locus II Early period graves

Several of the correlations observed before are maintained in the second factor analysis, such as the strong connection between bone, shell items and total number of artifacts, as well as the moderate connection with ceramic vessels in Factor 2 (explaining 20% of the variance), but now jade ornaments contribute to this factor as well. Factor 1 is dominated by the riding category of bronze artifacts along with weapons, grave size and ritual bronze vessels, as well as with bronze and stone ornaments, but not as strongly. Jade ritual artifacts represent the majority of Factor 3 along with shell artifacts. Lacquer seems to not be as important to any of the factors and may not have been a restricted or particularly prized material at TMQC. Factor 4 is dominated by stone ritual vessels and connect with stone tools and shell vessels. It is important to point out that very few categories are mutually exclusive and they do in fact integrate with many co-occurring elements. Weapons and bronze artifacts associated with riding are very strongly correlated and seem to be an exclusive object reserved for few individuals. As before graves were plotted by factor score (Figure 5-9):

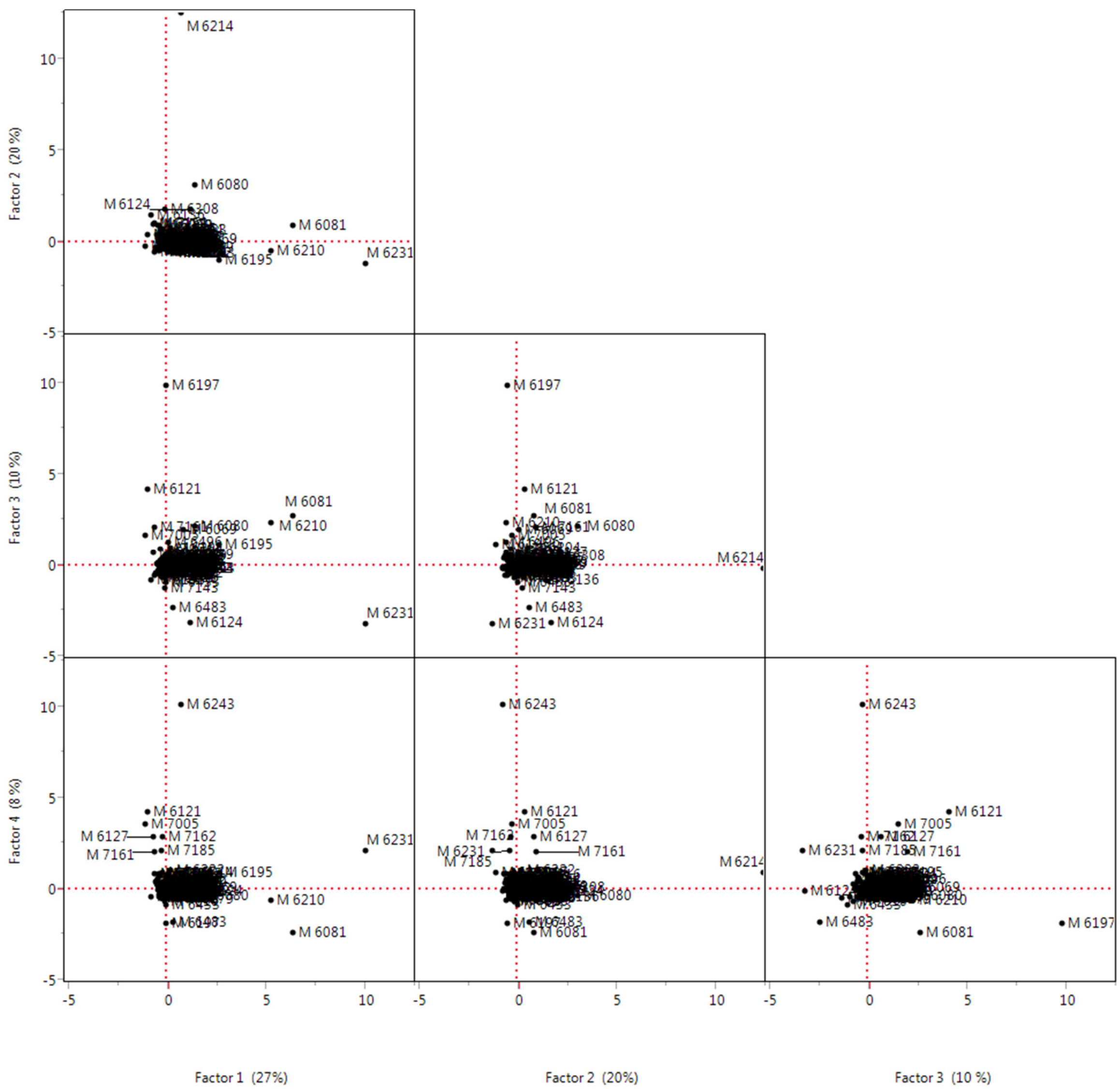


Figure 5-9 - Score plot for TMQC Early period graves against the 4 factors in second factor analysis

While most graves had a low score in respect to Factor 1, many graves scored modesty on Factors 2, 3 and 4. The combination of factors and the artifacts representing them reveal how mutually exclusive each artifact type was as well. Of note is the finding that ritual bronze vessels and grave size seem to appear in a number of other factors, but to a lesser extent (between 0.3 and 0.4 in strength) and might indicate that these artifacts and burial categories were not reserved for a single elite group in the way weapons and bronze artifacts associated with riding were. Thus, again, a situation where much of the wealth at the cemetery was aggregated in the graves of certain individuals is seen and one where certain components were off limits than elements of society. When the high scoring graves for each of the three factors are observed it become clear that only M6080, belonging to a young female of 15, scored highly on Factors 3 and 2, while other grave minimized their contact with these two factors when scoring highly on factors 1 or 2 (and see Table 5-14).

Grave	sex	Age	orientation	Factor1	Factor2	Factor3	Factor4
M 6080	F	15	5°	1.455576	3.104721	2.144029	-0.3689
M 6081	M	NA	0°	**6.454163**	0.904842	2.720251	-2.38087
M 6121	F	27	15°	-0.93045	0.399295	4.12946	4.209
M 6197	F	27	84°	0.013025	-0.44247	**9.863002**	-1.88395
M 6210	M	56	95°	**5.333009**	-0.53481	2.358798	-0.64178
M 6214	F	53	4°	0.752918	**12.4925**	-0.21419	0.89304
M 6231	M	35	355°	**10.10597**	-1.21405	-3.2614	2.101415
M 6243	M	17	3°	0.757188	-0.67225	-0.20672	**10.12081**
M 7005	F	50	26°	-1.02671	-0.23946	1.615687	3.556383

Table 5-14 - High scoring graves for second factor rotation of Early period graves

That being said, it is hard to explain these factors in groups defined by clear identity packages, as was the case at Liulihe where for example weapons could denote warrior class and high numbers of sacrifices (dog or human) with ceramic vessels were viewed as local or Shang style influences (Jaffe 2012). Instead what is gained is a better understanding of the vessel categories that were more or less restricted to lower levels of society, most notably horse and chariot fittings as well as weapons, while bronze vessels were not (the reverse case is seen at Beiyao and Liulihe and see below).

Middle Period

The Middle period sample at the TMQC graveyard is comprised of 138 graves. Of them nine were damaged and were omitted (as was done for the Early period analysis) and 30 graves were complete enough to reconstruct their size and volume. The sample was submitted to a Pearson Correlation matrix first (Figure 5-10)

	棺+椁	音量	一共陶器	一共青铜器	石器	一共蚌器	一共海产	玉器	骨器	漆器	锡器	total all
棺+椁	1.0000	0.4971	0.1975	0.1537	0.1468	0.1588	0.2799	0.2774	0.2225	0.1332	0.3183	0.2934
音量	0.4971	1.0000	0.2872	0.4832	0.1578	0.1258	0.5575	0.2654	0.4134	0.3433	0.2434	0.6029
一共陶器	0.1975	0.2872	1.0000	-0.1484	0.0692	0.2637	-0.0410	0.2687	-0.0357	0.0790	-0.0363	-0.0405
一共青铜器	0.1537	0.4832	-0.1484	1.0000	-0.0089	0.1687	0.5843	0.1679	0.3604	0.1887	-0.0128	0.7210
石器	0.1468	0.1578	0.0692	-0.0089	1.0000	0.0630	0.0438	0.0603	-0.0154	-0.0144	0.2041	0.1349
一共蚌器	0.1588	0.1258	0.2637	0.1687	0.0630	1.0000	0.2289	0.0024	0.1012	-0.0014	-0.0303	0.2517
一共海产	0.2799	0.5575	-0.0410	0.5843	0.0438	0.2289	1.0000	0.1991	0.3912	0.4725	0.0783	0.9772
玉器	0.2774	0.2654	0.2687	0.1679	0.0603	0.0024	0.1991	1.0000	0.0733	0.0797	-0.0241	0.2315
骨器	0.2225	0.4134	-0.0357	0.3604	-0.0154	0.1012	0.3912	0.0733	1.0000	0.0310	0.3118	0.4115
漆器	0.1332	0.3433	0.0790	0.1887	-0.0144	-0.0014	0.4725	0.0797	0.0310	1.0000	0.1250	0.4435
锡器	0.3183	0.2434	-0.0363	-0.0128	0.2041	-0.0303	0.0783	-0.0241	0.3118	0.1250	1.0000	0.0849
total all	0.2934	0.6029	-0.0405	0.7210	0.1349	0.2517	0.9772	0.2315	0.4115	0.4435	0.0849	1.0000

Figure 5-10 - Pearson correlation matrix on TMQC Locus II Middle period graves

Immediately evident is the fact that there are far fewer strong correlations between the categories in contrast to the Early period. Grave size is somewhat correlated with total number of artifacts, total number of shells and bronze artifacts, as are shell and bronze vessels. The two strong correlation, as with the Early period, are between bronze artifacts and imported shells and clams with total number of artifacts. Omitting the very low numbered categories of bone and tin material artifacts, the first factor analysis yielded the following results (Table 5-15):

	Factor 1(26%)	**Factor 2(14%)**	**Factor 3(12%)**
Clam and shell	**0.990438**	0.277628	-0.010678
Total artifacts	**0.918362**	0.461487	0.070854
Grave volume	0.498391	0.366995	0.182320
Lacquer	0.495500	0.029684	0.023532
Coffins	0.273164	0.099289	0.198373
Clam artifacts	0.212190	0.128250	0.183087
Bronze artifacts	0.369602	**0.941301**	-0.104443
Stone artifacts	0.037457	0.087790	**0.954778**
Ceramics	-0.005776	-0.126101	0.284075
Jade artifacts	0.176532	0.145670	0.230364

Table 5-15 - First factor analysis on TMQC Locus II Middle period graves with percent of variance explained by each factor

Here total number of imported shells is still the most strongly correlated with total number of artifacts found in a single grave, along with a moderate correlation to grave size and lacquer artifacts, comprising Factor 1. Bronze vessel are also correlated with total grave volume, but less so than before, accounting for Factor 2. Stone artifacts are still in a category of their own in factor 3. This model explains only 52% of the total variance in contrast with over 2/3 for the Early period, but denotes more of a separation between material types used to make mortuary artifacts and their use by community members. When graves are plotted by their factor scores a more robust difference between categories can be seen as well (Figure 5-11 & Table 5-16), where only one grave scored highly on more than one category (M6384). Thus A less inclusive burial custom emerges during the Middle Western Zhou period at the site where labor intensive artifacts were not accessible almost at all to the lower stratums of society.

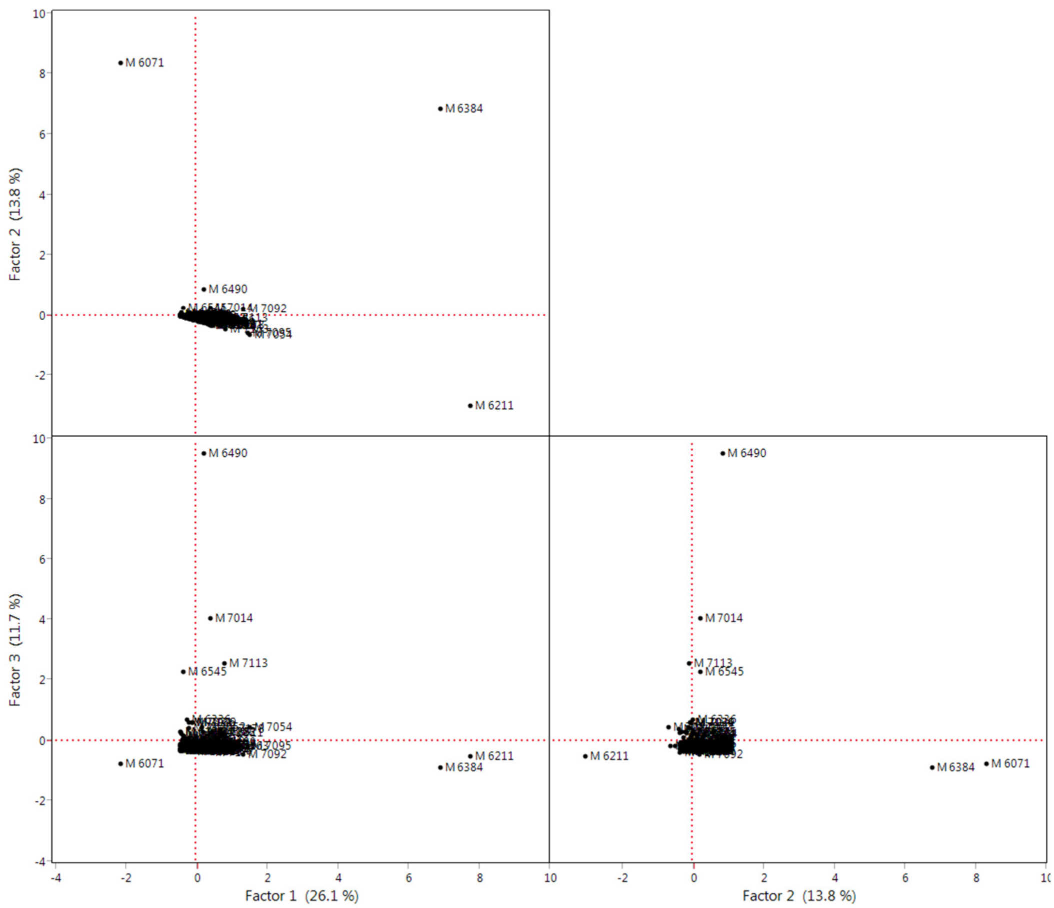


Figure 5-11 - Loading plot for TMQC Middle period first factor analysis

Grave	Sex	Age	Factor1	Factor2	Factor3
M 6071	NA	NA	**-2.111023401**	**8.3565202421**	-0.773400865
M 6211	F	40	7.**7903880504**	**-3.008716764**	-0.525071667
M 6384	M	NA	**6.9432062826**	**6.8240139538**	-0.888417574
M 6490	F	56	0.24240527	0.8665326937	**9.4889693508**
M 6545	F	45	-0.336067472	0.2331539627	**2.2472213334**
M 7014	M	25	0.4226417848	0.2322920747	**4.0123979555**

Table 5-16 - High scoring graves on first factor analysis for TMQC Middle periods

As was conducted on the Early period graves the Middle period grave categories were further divided and submitted to the factor analysis test with the following results in Table 5-17:

	Factor 1(23%)	Factor 2(18%)	Factor 3(12%)	Factor 4(7%)
Riding	**0.979033**	0.208706	-0.015542	0.006601
Weapons	**0.763660**	0.275263	0.113748	-0.030594
Bronze ritual	**0.731357**	0.448438	0.373938	-0.014432
Bronze ornaments	**0.729986**	0.507831	0.138866	-0.021569
Clam and shell	0.408190	**0.941430**	0.083873	0.013674
Total artifacts	0.567586	**0.844590**	0.120873	0.104194
Lacquer	0.115128	0.474238	0.083529	-0.038433
Grave size	0.420003	0.423341	0.271004	0.096356
Stone ritual	0.044414	0.035736	**0.626614**	0.084470
Jade ritual	0.145418	0.158974	0.535176	0.105802
Clam artifacts	0.144196	0.150079	0.531673	-0.057517
Ceramics	-0.134391	-0.034580	0.517469	0.005833
Jade ornaments	0.145207	0.073863	0.505906	0.012328
Coffins	0.125525	0.234387	0.277806	0.077746
Stone ornaments	-0.021492	0.016472	0.128258	**0.991438**

Table 5-17 - Second common factor analysis on with percent of variance explained by each for the TMQC Locus II Middle period graves

Factor 1 finds the continued importance of bronze vessels and the connection between weapons and riding gear is still strong, as is their exclusiveness. Grave size is no longer as important to this category, but shells do seem to be somewhat correlated with it. Factor 2 finds strong correlations between shells and total artifacts as well as ritual vessels, but lacquerware is no longer seen connected to this grouping as was the case for the Early period. A new factor, Factor 3, finds correlations between jade ornaments and jade ritual artifacts along with stone ritual items, shell artifacts, ceramic vessels and even bronze ritual vessels. Stone ornaments, comprising Factor 4, are now not as strongly correlated with other factors. These categories, as was the case for Early period, do not lend themselves to clear corresponding social identity markers, though they indicate community wide trends such as bronze, in all forms, was an exclusive material restricted to most members (even more so than during the Early period), while jade and stone ritual artifacts were less regulated. When the individual graves are plotted on an overly plots by factor score, a pattern emerges where Factors 1 and 2 are still quite exclusive while Factors 3 and 4 were open to the rest of society (Table 5-18 & Figure 5-12).

Grave	Orientation	Sex	Age	Factor_1	Factor_2	factor_3	factor_4
M 6071	100°	NA	NA	**8.1822087606**	**-3.114536656**	**-2.260931225**	0.4141899859
M 6211	81°	F	40	**-1.533628091**	**8.2201645917**	**-2.418612949**	0.0119318508
M 6384	13°	M	NA	**7.3872325879**	**5.9658673701**	**1.9125145632**	-0.27440671
M 6490	111°	F	56	-0.207903225	0.3016642857	0.17858935	**10.777331345**
M 6545	24°	F	45	-0.098394178	-0.292141994	-0.232772907	**2.7249343132**
M 7014	105°	M	25	0.0341416491	-0.129292415	**6.3156083067**	1.0130174675
M 7113	105°	F	20	-0.049771724	0.3363442149	**5.8159761665**	-0.428513783

Table 5-18 - High scoring graves from TMQC Locus II Middle period on second factor analysis

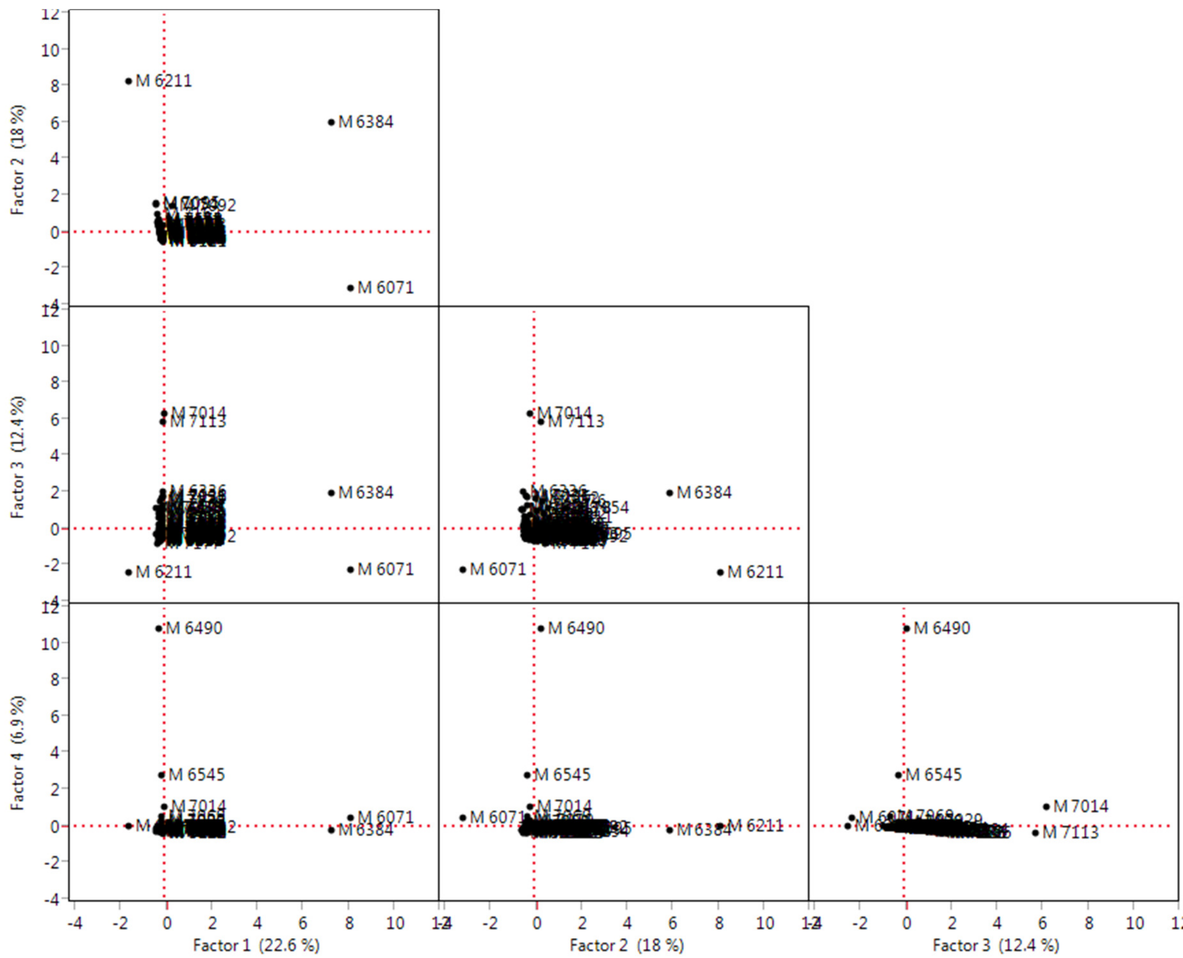


Figure 5-12 - Score plot for TMQC Locus II Middle period graves against the 4 factors in second factor analysis

Late Period

A total of 86 graves were dated to the Late Western Zhou period, of them seven were too badly damaged to be included and 27 were complete enough to be reconstructed and thus included in this analysis. The sample was submitted to a Pearson Correlation matrix first (Figure 5-13):

	棺+椁	音量	一共陶器	一共青铜器	石器	一共蚌器	一共海产	玉器	骨器	漆器	total artifactsa and shells
棺+椁	1.0000	0.2254	-0.1841	0.0712	-0.1203	-0.1499	-0.1130	0.0482	0.0443	0.0326	-0.1465
音量	0.2254	1.0000	-0.0498	0.8252	0.1296	0.1986	-0.0284	0.8216	-0.0450	0.7997	0.3833
一共陶器	-0.1841	-0.0498	1.0000	-0.0495	0.0519	0.2420	0.5664	-0.0056	-0.0370	-0.0062	0.5341
一共青铜器	0.0712	0.8252	-0.0495	1.0000	0.0917	0.0753	-0.0214	0.9720	-0.0162	0.9212	0.3952
石器	-0.1203	0.1296	0.0519	0.0917	1.0000	0.2675	-0.0329	0.1836	-0.0696	0.1797	0.3320
一共蚌器	-0.1499	0.1986	0.2420	0.0753	0.2675	1.0000	0.1115	0.1556	-0.0179	0.2569	0.5807
一共海产	-0.1130	-0.0284	0.5664	-0.0214	-0.0329	0.1115	1.0000	-0.0570	-0.0553	0.1249	0.7521
玉器	0.0482	0.8216	-0.0056	0.9720	0.1836	0.1556	-0.0570	1.0000	-0.0220	0.8898	0.4163
骨器	0.0443	-0.0450	-0.0370	-0.0162	-0.0696	-0.0179	-0.0553	-0.0220	1.0000	-0.0245	-0.0232
漆器	0.0326	0.7997	-0.0062	0.9212	0.1797	0.2569	0.1249	0.8898	-0.0245	1.0000	0.5657
total artifactsa and shells	-0.1465	0.3833	0.5341	0.3952	0.3320	0.5807	0.7521	0.4163	-0.0232	0.5657	1.0000

Figure 5-13 - Pearson correlation matrix on TMQC Locus II Late period graves

During the Late Wester Zhou period graves see a stronger correlation between size and the total number of bronze, jade and lacquer artifacts. A strong correlation can also be seen between total number of artifacts and shell, and a moderately strong connection with shell artifacts and ceramic vessels. Bone artifacts are not correlated with any other artifact type or category and the number of coffins – a far more important feature of tombs for this period is decoupled form any other items and categories as well. Omitting the very low numbered artifact categories of bone and tin material artifacts, factor analysis yielded the following results (Table 5-19):

	Factor 1(32%)	Factor 2(14%)	Factor 3(12%)
Bronze	**0.996094**	-0.065200	-0.049108
Total artifacts	**0.975278**	0.184770	0.120381
Jade	**0.801456**	-0.015259	0.058529
Grave size	**0.735212**	-0.019103	0.104460
Coffins	0.061932	-0.126315	-0.146720
Clam and shell	0.016084	**0.955729**	0.057751
Ceramics	-0.009084	**0.578803**	0.210886
Shell artifacts	0.063051	0.055038	**0.996495**
Stone	0.162515	0.173375	0.246988
Lacquer	0.098367	0.211213	0.239771

Table 5-19 - First common factor analysis on TMQC Locus II Late period graves with percent of variance explained by each factor

Total number of imported shells are no longer correlated with total number of artifacts as was the case for the Early and Middle periods. Instead Factor 1 is comprised of the total number of artifacts, bronze items, jade artifacts and the size of the grave. Factor 2 is dominated by shells and a moderately strong connection to ceramic vessels. Clam and shell artifacts are the main component of factor 3 and are not correlated well with other artifact types. Here stone and lacquerware are not strongly correlated with any factor, perhaps owing to their low numbers and total number of coffins seems uncorrelated to other elements either. Plotting graves by factor score is quite revealing (Figure 5-14) as single high scoring graves seems to be influencing the factor analysis results (M5189).

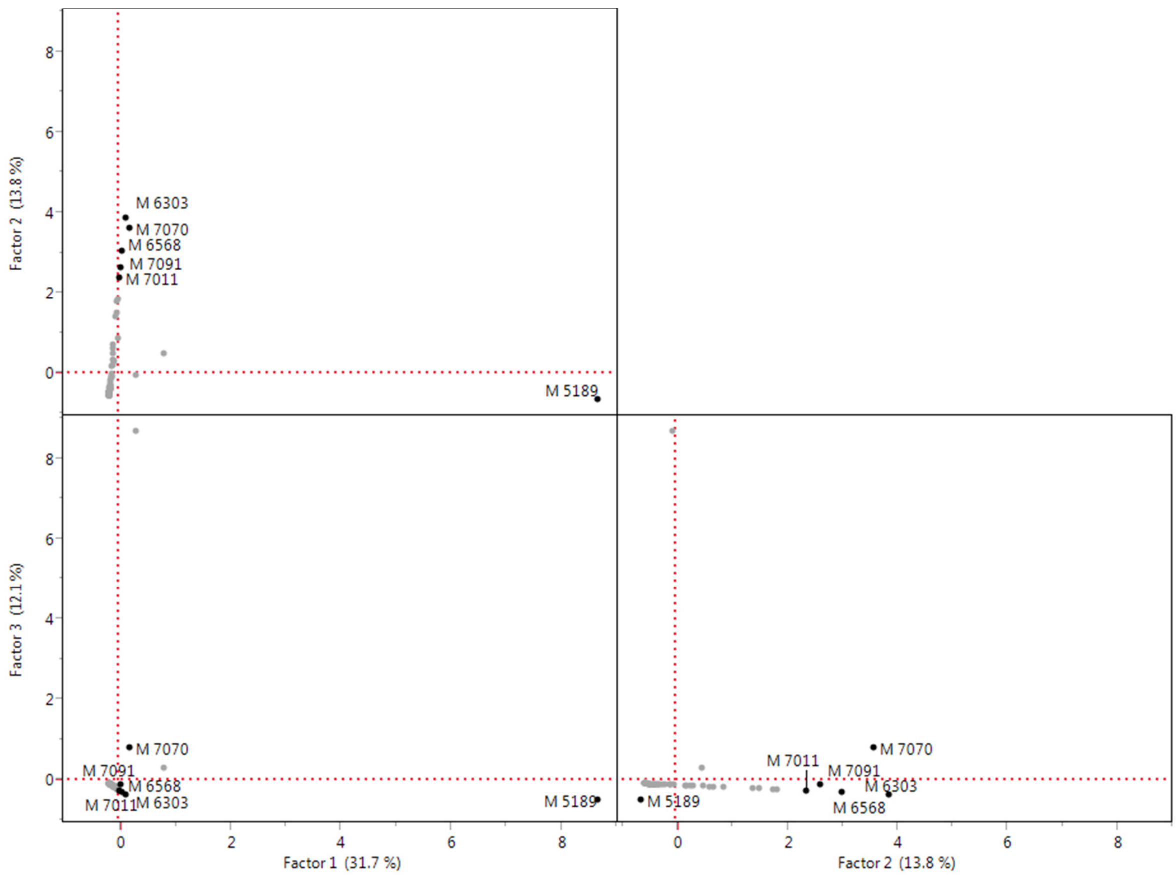


Figure 5-14 - Loading plot for TMQC Locus II Late period graves on first factor analysis

Of further note is that there are only two other graves with more than one bronze vessel in them: M7070 with 2 items: a weapon and ritual vessel and M5150 with 36 pieces, none associated with riding. This grave is strongly influencing the data and when omit produces the following results (Table 5-20):

	Factor 1(37%)	**Factor 2(19%)**	**Factor 3(9%)**
Bronze	**0.999405**	-0.007720	-0.033613
Jade	**0.978278**	-0.082705	0.190008
Lacquer	**0.924017**	0.214039	0.018870
Grave size	**0.825447**	0.009391	0.066521
Coffins	0.065315	-0.141454	-0.144095
Clam and Shell	-0.010311	**0.864573**	0.129853
Total artifacts	0.415488	**0.813860**	0.406265
Ceramics	-0.033565	0.494319	0.358768
Shell artifacts	0.095560	0.412011	0.506349
Stone artifacts	0.108253	0.122131	0.461941

Table 5-20- Common Factor analysis on TMQC Locus II Late period graves (without M5189)

Furthermore, most all parameters are still the same, but total artifact number is correlated again with shells, as with ceramics and shell tools. Factor 3 now denotes moderate connections between the total number of items ceramics shell artifacts and stone artifacts. When graves were plotted by factor score however, another single grave M5150 is the only highly scoring grave for Factor 1 (Figure 5-15).

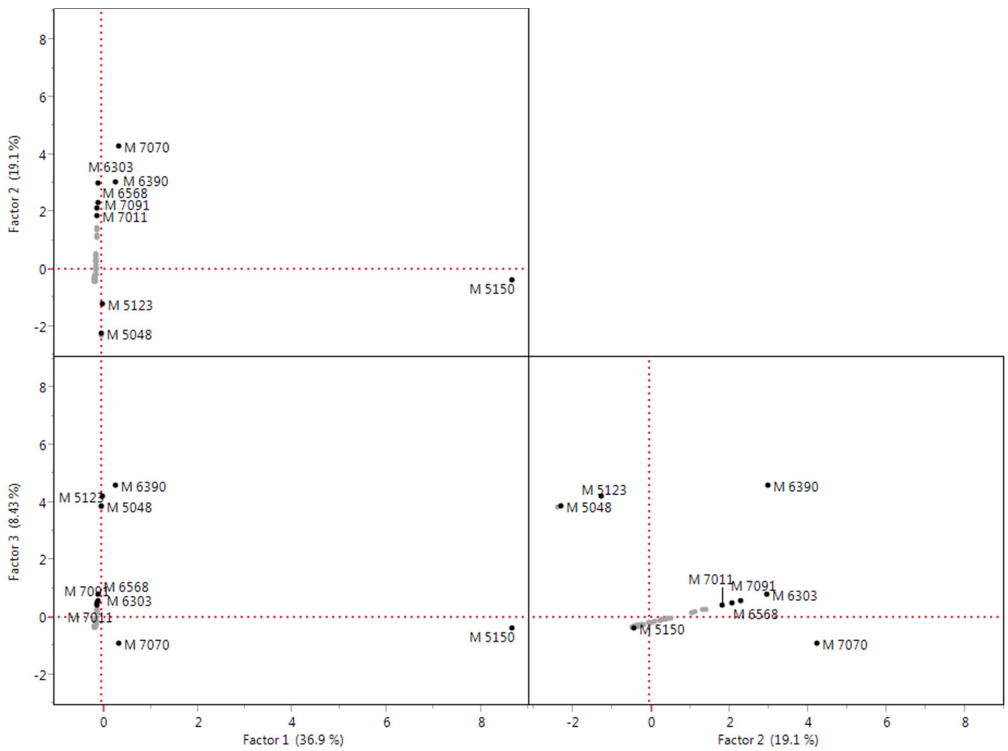


Figure 5-15 - Loading plot for TMQC Locus II Late period graves first factor analysis (without M5189)

Here both Factors 2 and 3 are open to almost all other levels of society and seem to even be connected in a linear fashion (i.e. a higher score on factor 2 translates into higher scoring factor 3 a well). Grave M5150 was not omitted for the second test of this nature, instead all Late period graves were submitted to the second factor analysis conducted for the other periods. The following results can be seen below (Table 5-21):

	Factor 1(25%)	Factor 2(16%)	Factor 3(15%)	Factor 4(10%)
Riding	**0.966026**	0.255875	-0.025327	-0.028943
Total items	**0.895998**	0.354194	0.146962	0.224376
Bronze ornaments	**0.890729**	0.452825	-0.008505	-0.035101
Jade ornaments	0.499946	0.080679	0.471552	0.043899
Stone tools	0.084112	0.001330	0.064431	0.072752
Jade ritual	0.263535	**0.810993**	0.028058	0.013640
Grave size	0.499028	**0.752297**	0.151761	-0.036870
Bronze ritual	**0.685527**	**0.688399**	0.198153	0.034964
Coffins	0.038802	0.100614	-0.137079	-0.137617
Shell artifacts	0.038467	-0.023575	**0.995201**	0.086787
Stone ornaments	0.168623	0.347714	**0.882828**	0.128526
Clam and shell	-0.013326	-0.022863	0.028088	**0.959412**
Ceramics	-0.013741	-0.067945	0.190253	0.588281
Stone ritual	0.060640	0.051276	-0.011323	0.226667

Table 5-21 - Second common factor analysis on with percent of variance explained by each factor for TMQC Locus II Late period graves

Factor 1 is dominated by total number of bronze ornaments and artifacts associated with riding. They are also moderately correlated with jade ornaments and grave size, as well as strongly correlated with ritual vessels. Ritual vessels are also important in Factor 2 where they are strongly correlated with grave size and jade ritual vessels. They are moderately associated with stone and bronze ornaments and total vessel numbers as well. Factor 3 finds strong correlation between shell artifacts and stone ornaments, and to some extent with jade ornaments. Factor 4 is dominated by total number of imported shells and somewhat strongly correlated with ceramic vessels.

When graves are plotted by their factor score a very interesting pattern emerges, were only a small number of graves score highly for Factors 1, 2 and 3, while Factor 4 is the factor were the over-whelming majority of all graves score, which was comprised of only imported clams, shells and ceramic articafts (Figure 5-16).

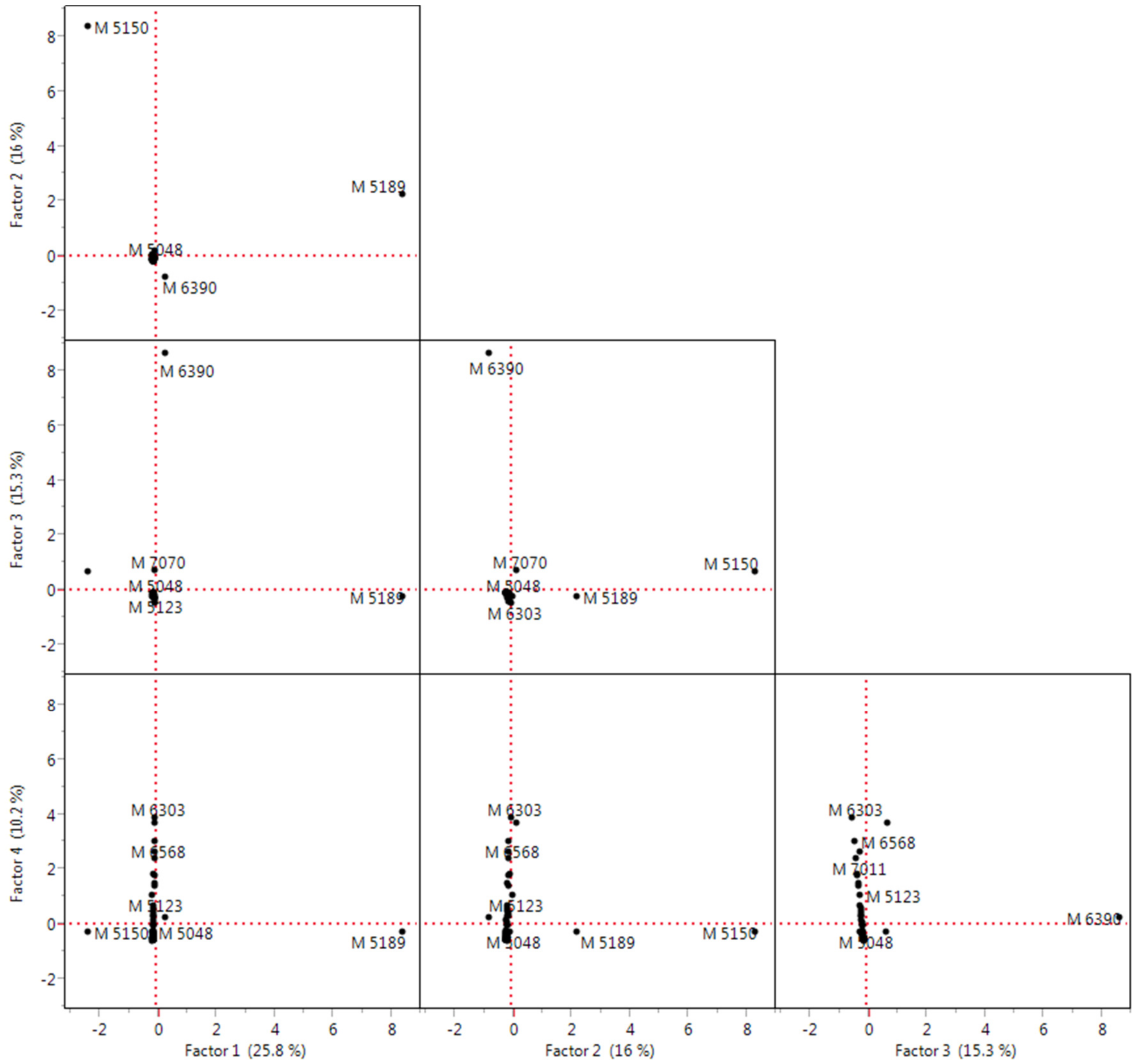


Figure 5-16 - Score plot for TMQC Locus II Late period graves in second factor analysis

When observing the highest scoring graves, internal wealth discrepancies become even more apparent as can be seen below (Table 5-22). Note the high amount of Females and several younger ages of those interred.

Grave #	orientation	sex	age	Factor 1	Factor 2	Factor 3	Factor 4
M 5150	10°	F	20	**-2.328043332**	**8.3862212113**	0.6773332378	-0.279016507
M 6303	107°	F	45	-0.019468716	0.0266563367	-0.474263939	**3.8788660955**
M 6390	107°	F	NA	0.3173193784	-0.749152338	**8.6742993323**	0.2527136396
M 6568	3°	F	45	-0.020737864	-0.059256598	-0.400985321	3.0151989872
M 7011	83°	M	45	-0.034846199	-0.071900385	-0.345903324	2.3859677185
M 7070	12°	M	55	-0.037882148	0.191463738	0.7187603621	3.6758704526
M 7091	10°	F	33	-0.016229862	-0.09884067	-0.202390493	2.6426938387
M 5189	7°	M	30	**8.4778327617**	2.2444295208	-0.222345211	-0.253450446

Table 5-22 - High scoring graves second factor analysis for TMQC Locus II Late period on second factors analysi

Only one grave scored somewhat highly on Factor 1 (M5189), which also scored quite highly on Factor 2. In addition only one other grave scored highly on Factor 2 noting an extreme case where Bronze and, for the first time, jade artifacts become an exclusive category not open to other levels of society, an observation that is in tandem with the importance associated with this artifact type. In other words, jade was an impotent material not only for ritual performance, but also as an ornate artifact adorning the body of the deceased, perhaps worn during his or her lifetime, yet one that the highest elites, buried in locus II, sought, but only few could afford. As mentioned above, the fact that only those artifacts comprising Factor 4 were found in the vast majority of TMQC Late period graves reflects a far less open society were fewer people enjoyed wealth to the extent that existed in the two earlier periods.

Summary and Discussion

Observations made from the rudimentary statistical analysis revealed some overarching trends at the TMQC cemetery: The average age of the interred remains more or less constant throughout time, as was the propensity for ceramic vessels, stone or shell artifacts. The average size of the graves, noted by grave volume, drops in the Middle Western Zhou period and returns to be an important element during the Late Western Zhou. The maximum number of artifacts found in each grave changes over time as well: bone artifacts, while low in number, seem to be popular only during the Early Western Zhou period. Jade artifacts are similar in number until the Late Western Zhou period when they are found in much fewer numbers.

The number of graves with over 10 artifacts declines noticeably from the Early to Middle Western Zhou period, and then again in the Late period. In other words, the amount of graves with a relatively high level of wealth, reflected in total material goods found in a given grave, became smaller over time at the cemetery, as did the graded differences among the TMQC society. It is important to note that this takes place when the TMQC locus III cemetery is established – during the Middle Western Zhou period (or terminal Early Western Zhou) – implying a connection between the physical separation of the Jin leaders from the rest of society, at least in death, and the growing social differentiation seen among this society as a whole. For all periods the age of the interred in the richest graves was considerably higher than the average of 31 years and their grave goods consisted of prestige items of bronze jade and stone and only a few ceramic vessels.

When factor analysis was run on the graveyard to better explore the relationships between the TMQC cemetery burial categories, a better understanding was reached in terms of the connections between artifact category types, mortuary ritual and elite preferences (even while these could not be further grouped into identity packages as was done elsewhere). During the Early Western Zhou period weapons and bronze artifacts associated with riding activities are very strongly correlated and are in fact an exclusive type of artifact reserved for few individuals. In contrast, bronze ritual vessels actually do exist in lower status graves, but only to a limited extent. Stone tools, ceramic vessels and items made of shell and clam were not restricted to the rest of society, but neither were jade ritual artifacts or lacquerwares, both categories as well as the total number of coffins found were quite prevalent among many graves. In contrast, both jade and stone ornaments were found only in the richest graves, while imported clams and shells were items sought after by all levels of society.

During the Middle Western Zhou period a continued importance of bronze vessels is seen as well as the exclusiveness of both weapons and riding gear. Grave size is no longer as important and lacquerware becomes even less restrictive. Jade ornaments and ritual artifacts are now two types of artifact groups found in the graves of many levels of society, as are shell artifacts and ceramic vessels. Stone ornaments are rarer and not found in many graves and seem to be of little interest (or accessible) to most. Bronze, as a material, becomes exclusive during this period, while imported clams and shells are prevalent and still favored by the upper and lower classes alike.

In the Late Western Zhou period a strong connection is found between grave size and the total number of bronze, jade and lacquer artifacts. Other connections are observed between stone and jade ornaments and for the first time jade, as a material, becomes an exclusive category not open to other levels of society – an observation that is in tandem with the importance associated with this material at the TMQC locus II burials. Additionally, only ceramics and imported shells and clams are found in non-elite graves, which comprise the vast majority of TMQC burials. In fact clams and imported shells, found quite abundantly in Early and Middle period rich graves, seem to have had little appeal to the few elite graves at locus II during the Late Western Zhou period.

It is important to note that the finding that bronze was largely a restricted material category at TMQC is not an obvious result, or one to necessary be expected from this analysis. At Liulihe, for example, bronze ritual vessels and ornaments were found in elite graves, whereas weapons were actually a separate category reserved for a lower military social component, signifying the lower status of warriors among the Yan society (Jaffe 2012: 58-62). At Beiyao, in contrast, weapons were found in many graves and were not restricted to richer or most important graves, again dissimilar to the situation at TMQC. In addition, the prevalence of bronzes associated with the riding category at Beiyao is astounding, as almost all graves contained at least a few bronze items from this category (Jaffe 2011: 66–69). Furthermore the fact that ritual bronze vessels were less restricted at TMQC is somewhat surprising, due to the importance and prominence of ritual bronzes in Zhou mortuary ritual and subsequently their restriction, one that was in fact seen at Beiyao and Liulihe. In addition, degrees of access to other ritual artifacts that were part of the Zhou burial rite, such as jade and stone tablets, are markedly different over time at TMQC: where jade and stone are non-restricted during the Early and Middle Western Zhou they will become out of the reach of all but the richest graves during the Late Western Zhou period.

In fact a number of other differences existed between these cemeteries as well and point to the tension between the overarching Zhou-style burial framework and the community specific manifestation of local agendas and preferences. To begin with, identity markers were displayed in a number different ways at Liulihe and Beiyao cemeteries: The prominent mortuary practices found at the Liulihe cemetery of human and dog sacrifices, as well as the placement of the deceased in wooden coffins are not known from the Beiyao cemetery and are almost non-existent at TMQC. Overall grave size appears to be an important difference between the two cemeteries, with a larger average grave size found at Beiyao (and not Liulihe). Ornaments do appear in a number of graves at Beiyao, yet their average number per containing grave is considerably less than that of the Liulihe graves (Jaffe 2012: 68-69).

In terms of local motivation, while at Liulihe the Zhou not only incorporated local styles and elements into their burial practices they allowed local non Zhou peoples to participate in their own and played down their military identity in (Jaffe 2012: 57). At Beiyao, or Chengzhou the eastern capital constructed in the aftermath of the remnant Shang rebels, weapons were found in many tombs, noting the military prowess of their owners, alongside the larger social access that was grated to obtaining charioting and horse riding paraphernalia, perhaps as a mixed strategy to rule an initially volatile society (Jaffe 2015: 13).

The TMQC cemetery, with its rich diachronic dataset allows for the observation of deepening social differentiation and the tighter control over ritual-related objects of bronze, jade and stone, as well as those that would have been associated with wealth, such as ornaments and overall investment in grave construction (but to a lesser extent with the number of coffins constructed). Additionally some objects change in importance, notably imported clams and shells, which were sought out by all member of the TMQC society during the Early and Middle Western Zhou periods, but not by the privileged few of the Late Western Zhou period. Finally, many of these changes, most notably the increasing wealth gap between the very rich and the rest of society are contemporaneous with the establishment of the Locus III cemetery. Yet how this explains elite motivation for excluded lower classes, beyond simply that they could, is less clear and remains open to interpretation.

That said the importance of this type of analysis and its findings is to present the community specific manifestation of social differentiation and rank that is not predicated on the existence of a single artifact type or category. In fact the TMQC final report is organized not by grave number, area or period, but by the amount of bronze ritual vessels that were found in it, taken to be the definitive marker of the social status at this community. Yet the above analysis found that ritual vessels were actually not restricted, or even important as other categories of weapons and charioting items.

Conversely, this type of analysis is able to highlight other important elements of the site such the changing attitude towards imported shell and bone products and rich and important graves for each of the different periods at the site, which might have been overlooked by traditional approaches. In addition, other ritual items that relate to the mortuary ceremony itself, made of jade and stone, were less restricted earlier on at the site and then suddenly were not open to most any community members but a small few.

This approach will be used in chapter 7 to delineate the community specific mortuary practices of a number of graveyards in the Western regions of the Zhou world, as well as provide a base line for the comparison and assessment of difference and similarities between Zhou graveyards.

Chapter 6 - Zhou in the West

Introduction

The Western Zhou center is traditionally placed in the Wei River Valley. Yet this core was by no means one big royal capital. A number of courtly cities functioned as the movable Zhou seat of power, which was complemented by additional religious centers. Royal farms, economically tied to the central court, dotted this landscape and provided for the Zhou kings and their courts. It is also in this Central Plains zone, known as the Zhouyuan 周原 or 'plains of Zhou', where many of the great aristocratic houses maintained their own individual lineage seats of power and presided over farming estates. Reconstructing the political system that existed in this central area, and subsequently the amount of power the Zhou kings held over these aristocratic lands, is no simple task. As discussed in chapter 2, for Li (2008) the Zhou presided over an organized bureaucratic (2008) system as sovereign rulers, and the subservient nobles were required to maintain a presence in the capital. In contrast for Khayutina (2008) no single capital existed where the Zhou court ruled their polity from. Instead, the kings moved between different royal residences to accommodate, host and appeal to the nobles of the Western Zhou world who they sought to control (but in realty could only influence to varying degrees of success). That said, it is possible that nobles, administrators and ministers of the Zhou government system served in specialized physical offices or even held residencies in the royal cites (Li 2008: 162-165), though we should not think of a single physical locus of power, which orchestrated Zhou politics and government. The Zhou center is best thought of as a complex political landscape of varying degrees of shared cultural paraphernalia, customs and traditions.

In fact the Zhou noble houses that inhabited this central Zhou region may not have been organized in a clear subordinate manner, as some would have us believe. In reality, it would be more accurate to view each noble house to have held a unique flavor of 'Zhouness' and to have been politically linked to the central court in varying ways (Falkenhausen 2006). The area of modern day Baoji 宝鸡, for example, commonly understood as the western limits of the Zhou royal domain, was home to a number of important Western Zhou aristocratic lineages: Jing 井, Guo 虢, Yu(弓旁魚), San 散, and Ze 矢. Not surprisingly, the region has produced an impressive number of inscribed Western Zhou bronzes (see in Li 2006: 48–49). The Yu lineage cemetery, perhaps the best known and documented of these houses, is comprised of three different loci in the villages of Zhifangtou, Zhuyuanguo and Rujiazhuang. The former are dated to the early Western Zhou period and the latter to the Middle Western Zhou. Only a small portion of these sites has been excavated and published, yet the finds have been quite substantial (the most impressive and complete corpus of material can be found in Lu and Hu 1988). The Yu lineage seemed to have participated in the larger Zhou socio-political system: They interacted freely with other Zhou lineages and married into their families, as is evidenced by names mentioned in inscriptions from tombs at these cemeteries (Lu and Hu 1988: 413-422). In contrast, however, several of their mortuary customs can be seen to differ from those found among the other noble houses. A number of scholars have also noted the amalgam of styles that appear on Yu lineage bronzes as well as the existence of mortuary practices that are not well known form other Zhou contexts, such as the interment of short swords with the dead (Lu and Hu 1988: 284). In a comparative study of the Baoji cemetery of the Yu lineage, the Guo lineage cemetery at Shangcunling and the Jin lineage at Tianma-Qucun, Falkenhausen found that at Baoji, uniquely, status was designated and symbolized through wealth, i.e. overall artifacts found in a given grave and not the graded bronze *lieding* system (Falkenhausen 2006: 100-5). Jessica Rawson (1999: 400–401) has pointed out that the Baoji region bronzes, stylistically, are dissimilar from Shang bronzes found further to the east, which would form the main style later adopted by the conquering Zhou.

These differences are understood in a variety of ways. Zhang Changshou (1980: 526–29) believes the Yu lineage cemetery might have been under the heavy influence of what are referred to in later historic texts as the Rong 戎 or Di 狄 tribes, or perhaps even that the Yu lineage was originally a non-Zhou ethnic group who had managed to become, through marriage, part of the Zhou world. In contrast, Li Feng has argued that the Western Zhou material does not overshadow other styles, thus highlighting the political and cultural complexity of this region. He has also criticized those who would argue that the Yu inhabitants were any less 'Zhou' than their contemporaries residing in the east (Li 20006: 183).

Beyond observations of artifact movement or the existence of stylistic influences[48], in order to comprehend the relationship between the Zhou polity and the region to the West of its center, an in depth discussion is needed, one that realizes the complexity of ethno-historic reconstructions not only of the Western Zhou, but also of those who came before and after. Firstly, the understanding of where the Zhou came from and how they settled in the Central Plains is a topic of much debate, and one where the regions to the West feature prominently. The actual demarcation of the West, where it begins and ends, is not a simple task, but most find it at the edges of the Wei river where the provinces of Gansu and Shanxi border (Li 2006: 30-36; Wang 2013).

Archeological work has shown that the Neolithic trajectory of development of this western region was largely an independent one (Wang 2012; Wang et al 2010), yet the impact the Zhou contact introduced is still debated. Following the Qijia culture demise (roughly 2200-1800 BCE and see Jaffe and Flad forthcoming) a number of cultures sprang up during the latter part of the Second and First Millennia BCE in the regions to the immediate west of the Central Plains. These include the Kayue 卡约 and Siba 四坝 in the northern parts of Gansu and Qinghai, and the Xindian 辛店 and Siwa 寺洼 cultures in the Center and Eastern parts of Gansu region.

[48] In fact Falkenhausen (2003: 221–222) has noted that there are significant connections with the lineages to the south of the Central Plains region as well. Two small figurines with enlarged as well as painted ceramic bowls have been found in this area.

Culture	Phase	Approximate Dates BCE
Yangshao		5000-3000
Majiayao		3300-2650
	Banshan	2800-2300
	Machang	2300-1950
Qijia		2200-1800
Siba		1950-1550
Kayue		1800-1500
Xindian		1600-600
Siwa		1300-500

Table 6-1 - Major arcaheological cultures in Gansu and their dates (afte Jaffe and Flad forthcoming; Li et al. 2010; Wang 2012)

The Siwa culture is found in the region directly west of the Central Palins and both pre and post-dates the period of the Western Zhou dynasty (Shui 1989). The nature of contacts between the Zhou and the Siwa is still a matter of debate and revolves around the connection of ceramic assemblages with ethnic groups, further influenced by the writings on this region in later historical texts. As the Zhou were eventually brought down by barbarian hoards from the West, this area has been identified as the home of these tribes. At the same time the debate on the Zhou origins – concerning the political entity that existed prior to the vanquishing of the Shang (also referred to as the Proto-Zhou and see below) – is believed by some, as we will see, to have come from this region or to have greatly been influenced by it. Others see the Siwa and the other groups inhabiting the regions to the West, as the Qiang 羌 people – prized captives frequently mentioned in oracle bone inscriptions that were sacrificed by the Shang (initially proposed by Xia Nai 1949 and see Shelach 1996: 9–11).

Indeed a significant amount of scholarship has been devoted to correlate these textually described peoples to the archaeological cultures in the region. Most of these debates revolve around the typological study of ceramic sequences and taxonomies in order to find stylistic similarities between regions and assemblages (Tao 2001; Xie 2002). As has been reviewed in chapter 3, this traditionalist culture history approach conflates technological and production tradition, mostly ceramic assemblages, with actual people and by doing so further complicates the reconstruction of history and the archaeology of this region.

An additional, and no less important, research topic in this region is the development and origins of the Qin 秦, who would reunite the Zhou world and create the first Chinese empire in 221 BCE. Qin was not, however, initially part of the Western Zhou world, at least not from its very beginnings; its family members were not related to the royal *Ji* lineage (in contrast to the Yu lineage of Baoji mentioned above), and their establishment and development were the direct result of the Early Western Zhou expansion. In fact, the Qin make their appearance only when they offer to reclaim the lands lost to the marauding Rong tribes in the aftermath of the destruction of the Western Zhou court in 771 BCE. How the Qin become part of the Zhou world is less then clear, yet they feature prominently in the discussion over the nature of interactions between centers: both as a Zhou presence or an 'other' needed to be dealt with by the Zhou court.

These topics will be the focus of the present chapter. Part 1 presents two main themes in the archaeology of the Zhou in this region: the Proto-Zhou[49], i.e., the question of Zhou origins and their identification in the material record (in Part 1a), with a similar discussion for the Qin state and how it came to be part of the Zhou world (in Part 1b). In part 2 I provide a study of the Siwa culture in relation to these themes (Part 2a), followed by an overview of the Western Zhou culture in this region and its influence on it (Part 2b). After these surveys and overviews, Chapter 7 presents a community-centered archaeological approach in an effort to better understand the relationship between East and West during the Zhou period. This is achieved through analysis conducted on a number of cemeteries from this period and their comparison.

[49] For the sake of clarity *Proto-Zhou* here denotes the study of those cultures that preceded and would become the Western Zhou, while *Pre-Zhou* is used to mark the period of time before that of the Western Zhou.

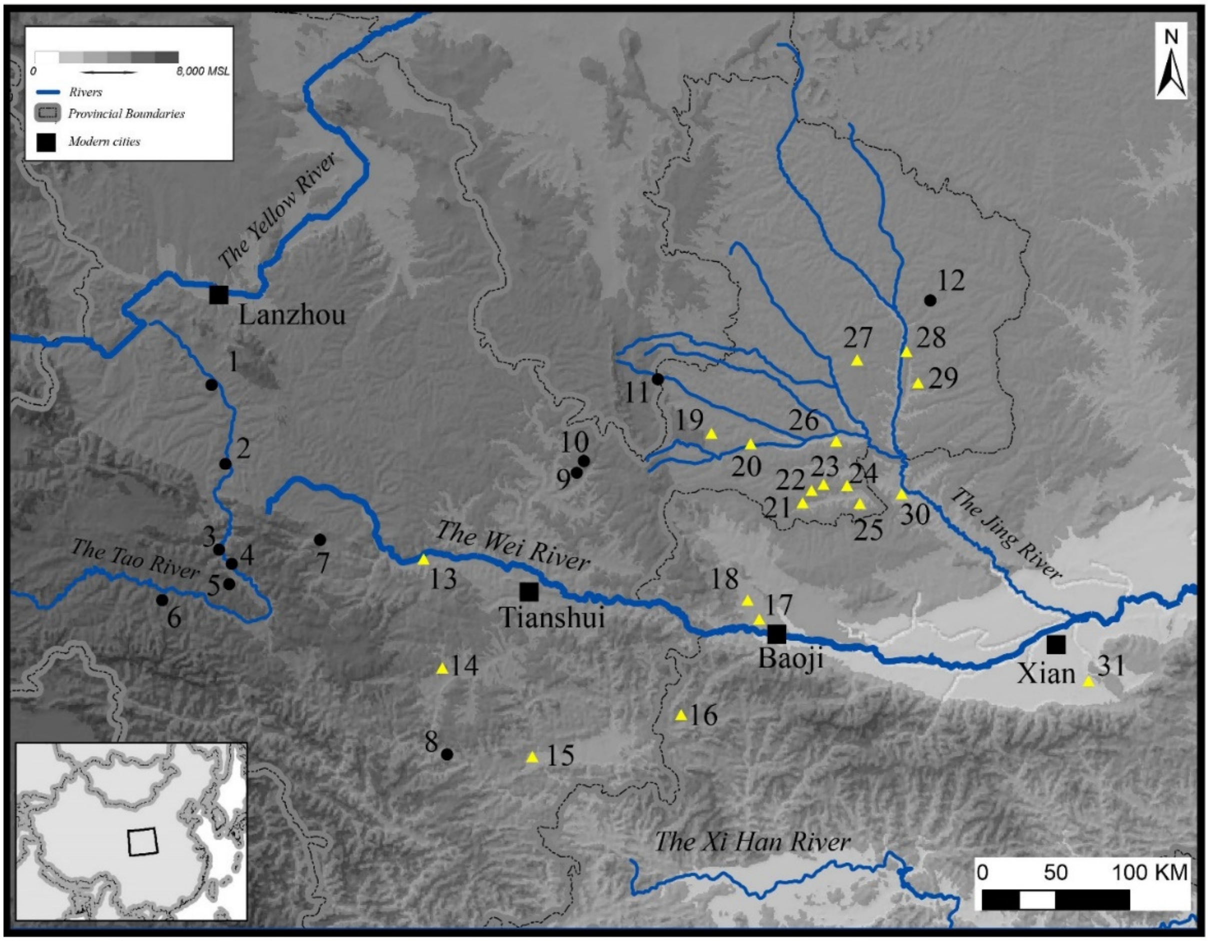


Figure 6-1 - Sites mentioned in the text: Siwa (2-12) and Zhou/Pre-Zhou(13-30) 1) Xindincun 2) Siwashan 3) Zhouni 4) Zhanqi 5) Mogou 6) Yaer 7) Wushan 8) Lanqiao 9) Lijia 10) Xujianian 11) Anguo 12) Jiuzhan 13) Maojiaping 14) Dabuzishan 15) 17) Doujitai 18) Liujia 19 Pingling Miaozhuang) 20)Yujiawan 21) Dongshan 22)Yajiahe 23) Baicaipo 24)Xiling 25)Sigou 26) Daduizhuang 27)Miaozui 28) Tuergou 29 Yucun 30) Nianzipo 31)Zhangjiapo

Part 1a - Zhou Origins and Ties to the West

Chinese archaeologists have invested a great deal of effort in both understanding the ceramic sequences of the Shang-Zhou transition, as well as in trying to identify the location of the Proto-Zhou culture and its connection to the post Shang period (Cao 2007: 62-65; Wang and Xu 2000; Zhongguo 2004: 18-20). The evidence mustered by the various camps is in the form of ceramic styles and types that can be related to the later, better established, Western Zhou ceramic sequences. The *li* vessel is the key ceramic type in this discussion. Two main types of *li* are identified: the *fendang li* 分档扁 where the three legs comprising the *li* vessel are separately made and then attached to the upper parts of the vessel, and the *liandang li* 联档扁 or attached-crotch *li*, where the vessel's legs are formed as part of the body. These main types are also referred to as the *daizu li* 袋足 鬲 (baggy legged *li*) and the *biedang li* 瘪档鬲 (shriveled leg *li*) (and see Figure 6-2)[50].

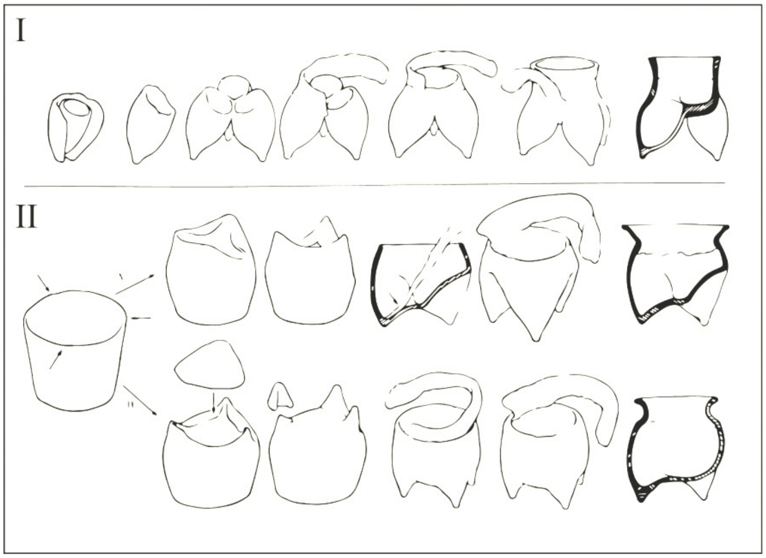


Figure 6-2 - The stages of manufacture of fendang (I) and Liedangli (II) after Kaogu (2006: 42)

Since the joined-leg *li* is commonly found during the Western Zhou period in the Central Plains regions, notably in the Zhangjiapo 张家坡 site cemetery (the type-site used to establish the Western Zhou ceramic sequences, as mentioned above), many scholars have viewed this tradition as reflecting the Proto-Zhou culture as well. Subsequently, the Zhou pre-conquest center is understood to be in the West, as most of the earlier examples of this *li* variety are found in Jing and Wei River valleys. The Nianzipo 碾子破 in Changwu 长武, Shaanxi is often viewed as the most distinctive example for this style (e.g., Hu 2005). The divided-leg *li* is more commonly found at the Western Edges of Shaanxi in Doujitai 斗鸡台 near Baoji, and while less prevalent in the later Western Zhou period, some scholars have noted that influences from this ceramic type contributed to the eventual Western Zhou ceramic

[50] Note the two types of *liandang li* (type II), corresponding to the Shang and Zhou styles (Falkenhuasnen 2006: 195)

style *(*and see discussion Rawson 1999: 377-382; Wang and Xu 2000: 283-284; Zhongguo 2004: 20-33*)*.

Another, less accepted, theory points to the Fen River valley to the East as the locus of the Zhou people's origins – an argument also based on ceramic styles (e.g., Zou 1980, who also promptly connected this find to the TMQC site) – while others find influences in all these ceramic types as coming together to create the Zhou ceramic style (For further discussion see Li 2006: 40-41; Liu 2003; For an updated and extensive overview of this discussion see Lei 2010).

As is the case for much of Chinese archaeology, there is no shortage of cases of archaeological slippage when typology and people are involved: ceramic styles, ethnicity and archaeological cultures are all effortlessly conflated in the literature on the Proto-Zhou. It is not uncommon, for example, to group ceramic assemblages by geographic distribution first in order to detonate an archaeological culture and then to view it as reflecting actual peoples who used and made these vessels. Many archaeologists are quite vague in their discussions of inter-cultural contact and conclude articles with statements such as: 'there were connections between regions', thus avoiding the prickly matter of explaining the nature of these connections. For those bent on finding the Zhou homelands to the West of the Central Plains, the abundant finds of the *fendang li* (divided leg *li*), in the Gansu region, play a key role. This group is collectivity known as the Liujia culture 刘家 and extends from Baoji, in the Western parts of Shaanxi, to the Gansu province, in what is now the municipality of Tianshui (Liu 1994; Yin and Ren 1984). The type site of the Liujia culture is situated to the north of Baoji in Western Shaanxi (Shaanxi 1984). Ceramic typological studies have suggested that this form derived from Qijia types further West; Li Shuicheng, ror example, has discussed strong influences reflecting a Gansu Lanzhou region origin for this ceramic style (Li 1998).

As the Liujia culture is seen as providing a complementary Pre-Zhou period sequence that existed in the West, it promptly fits into the discussion of the Proto-Zhou people and their origins (Liu 1994; Cheng 1996). The Liujia culture dates span Erligang phase 2 to late Yinxu IV (i.e., the late Shang period, roughly 1400-1050 BCE) and is seen to contribute a number of stylistic aspects of what will become the dominant Zhou tradition – the Zhagjiapo style (Li 1994: 53-60). However, because this *li* style, in its Liujia form, will not become the dominant Zhou style, it is not uncommon for scholars to identify the Liujia culture itself not as the proto-Zhou culture, but as the Qiang – the captive group mentioned in the Shang texts (Shaanxi 1984: 26-29; Zhao 1989). Liu (1994) has even suggested to view the Liujia culture as a local variant of the Xindian culture in this region, and the catacomb tombs found in the Western Zhou period Zhangjiapo cemetery as their direct influence, if not reflecting actual peoples that intermarried with the Zhou locals (but see Falkenhausen 2006: 207-213, 240 for a more nuanced interpretation of the role and place of these catacomb tombs and their occupants among this society).

In any case, pots that were originally understood as Xindian style vessels imported from the west (or even brought there by Xindian peoples e.g., Shaanxi 1984), are now seen as local developments that continued into the Western Zhou period sites of Baoji, even if their creation was influenced by styles originating in the West (Cheng 1996; Li 1994; but c.f. Lu 1985 and Zhang and Liang 1989 who trace the pre-Zhou to Doujitai in Baoji and see the Liujia site still as a variant of Xindian culture).

These questions are far from resolved and will certainly not be solved here, partly in an appreciation of the difficulty of clearly demarcating a specific political or ethnic group by a ceramic agglomeration alone (even if the Zhou, Xindian or Siwa could be considered one). Finally, as all scholars accept the prevalent *li* of the Western Zhou period, regardless of the precise location it came from, to have been one that combined a number of styles, we must account for the fact that these two styles came together to form a later prevalent production tradition of the Western Zhou (and I suspect that most scholars find it easier to accept a Shang-to-other or Zhou-to-other directionality of influence when talking about these matters). Thus whether the Liujia, or the other ceramic production traditions they came from, are taken to be the Proto-Zhou or not, they do present insights into culture contact between the Wei River valley and the West.

The actual Pre-Zhou sites in the West, mostly the Eastern part of modern-day Gansu province are infrequent and usually relate to what excavators see as either Shang sites (many times not denoting the people, but rather the period, i.e. Pre-Zhou) or sites that can be identified as Proto-Zhou (which do denote Zhou ethnicity). For example, at Miaozui 庙 嘴, a single grave with a number of bronze vessels and weapons dating to either the late Shang or early Western Zhou, was unearthed (Qingyang 1985). At Qingyang Bajiaju 庆阳巴家咀 and Miao'er 兔儿 Pre-Zhou *li* vessels, similar to those found in Doujitai, are equally taken to reflect this early Zhou connection (Xu and Liu 1987). At Pingling Miaozhuang 平凉庙庄 surface collections contained both Pre-Zhou period ceramics and bronzes similar to those found in Doujitai (Shui 2001: 259-265). At Chongxin Yujiawan 崇信于家湾(Gansu 1986) 16 graves and two chariot pits contained both Pre-Zhou and Zhou period ceramics and bronzes[51].

Continuity is the largest contributing factor in the identification of cultures as 'Proto-Zhou' since it is based on similarities to later Zhou styles. At other single period sites mentioned above these issues are even harder to assess, and ascertaining whether or not a given site was Proto-Zhou, Pre-Zhou or connected to local people using Zhou-like material (the later almost never favored), is near impossible to verify. This is further complicated by the fact that quantities of ceramic types and styles or their

[51] The Yujiwan site will be the target of an investigation in chapter 7. For now it is worth pointing out that the pre-Zhou dates of this site preclude its establishment as part of the Early Western Zhou expansion, yet the lack of residential stratigraphy makes it hard to evaluate this claim properly. Interestingly, graves from this site contain both the *fendang li* and *liandang li* during the pre-Zhou period.

relative percentage among total acquired assemblages at any of these sites is never reported. Scholars are content with noting the existence of certain styles and linking them with Zhou peoples, probably since they will be the foci of power in the period that follows (at least in the traditional sense of the place the Zhou held in Chinese historiography discussed earlier in this work). As we will see, this is certainly the case for a number of Siwa culture sites where Zhou material was found alongside local material assemblages. I hold off further discussion of these site here until later and turn first to look at Qin state origins.

Part 1b - The Qin State - Zhou Prima or After the Fact?

After centuries of war and internal strife, the Qin would eventually unite the feuding Chinese states that quarreled among themselves in the centuries that followed the fall of the Western Zhou court. The Qin state would draw heavily on the notion of a unified Zhou culture to unite all under heaven and create the first Chinese empire in 221 BCE; During the Western Zhou period, however, the Qin were still fighting to be recognized as part of the Huaxia. Their ruling elites were not part of the royal *Ji* lineage and came from a separate Ying嬴 lineage. They would become part of the Zhou world only after the fall of the Western Zhou court, when the Qin state vanquished the invading Rong tribes and were granted the royal Zhou territories of the Wei river valley (though only nominally and after the fact, see in Pines et al. 2013: 11–13). In fact the Qin are often presented in a less than complementary manner in the writings of the Eastern Zhou period. They were looked down upon and likened to barbarian tribes that know nothing of ritual propriety and virtuous behavior (Pines 2005: 88).

Like the Zhou, their origin is a matter of much debate and similarly revolves around the connection of vessel types and stylistic elements to later periods of the more securely acknowledged sites and material culture of the Eastern Zhou period Qin state. The debate is mainly divided between the Eastern and Western Schools, the former seeing a connection to Shang origins in Henan (and even as far east as Shandong) and their move westward after their defeat at the hands of the Western Zhou, while the second school viewing a more endemic western development of Qin culture in the region of modern day Gansu (see in Falkenhausen 2006: 233-235 and Li 2006: 262-268). As with the Proto-Zhou the key is to connect earlier ceramic assemblages and styles to the later Qin state. In Gansu, the large site of Dabuzishan大堡子山 dated to the very terminal years of the Late Western Zhou (an early date not agreed upon by all scholars (disagreements are related directly to the discussion of Zhou origins presented above), is one of the earliest sites that can be securely identified as Qin, since several bronze inscriptions from its later occupation phases clearly denote their owners and users to be Qin aristocrats. Located on the north bank of the Xihan river in Lixian county, the site's wall surrounded 55 hectares of residential areas and initial surveys have estimated the cemetery to have contained over 400 tombs and roughly 25 large rammed earth structures (Zhao 2013: 59–62). The Dabuzishan rulers seem to have adopted the orthodox Late Western Zhou rituals in their elite tombs, reflecting an inauguration, acceptance or emulation of hegemonic Western Zhou practices (Falkenhausen and Shelach 2013: 40–45; Jaffe 2015: 17–18).

The earliest possible remains of the Qin have been identified in the site of Maojiaping 毛家坪, located 60 km northwest of the modern city of Tianshui on the southern bank of the Wei River. The earliest levels of Maojiaping have been dated by some to the early Shang period (see in Teng 2013). This is not widely accepted, however, and most scholars see the earliest phases as dating to the later Western Zhou period. Excavations conducted in the early 1980s have revealed a long occupation at the site begging at the Late Western Zhou and continuing into the Warring States period, and yielding the remains of a number of house foundations and dozens of ash pits and graves (Gansu and Beijing 1987). Based on ceramic analysis the excavators identified two main types of ceramic traditions to have existed at the site: Type A ceramics, dated to the Western Zhou period, are found in the cemeteries and residential site and are derivative of the standard Western Zhou ceramics known from the Wei River valley (exemplified by the joined- leg *li*). While Type B, found in the later periods of the site, are comprised of non-Zhou type ceramics derived perhaps from the Siwa culture (dominated by the separated-crotch *li*; Gansu and Beijing 1987: 392; Falkenhausen 2006: 236).

Since Type A ceramics contribute to the development of what is recognized as Eastern Zhou period Qin ceramics (notably those found at Dabuzishan), the remains of this site are taken to reflect the Proto-Qin culture. In contrast, Type B ceramics, existing only in the residential sites of the later periods, are taken to reflect an alien non-Qin group that resided at the site but was not permitted to participate in the burial practice by the dominant Qin[52]. This Type B ceramic style is understood by many scholars as connected or derived from Siwa style ceramics (and see in Falkenhausen 2006: 235-238) Li Feng (2006: 264-265) has noted that Type A ceramics represent a simpler form of Western Zhou ceramics than that seen in the Wei River valley (mainly in the sense that prevalent Central Plains forms do not appear at Maojiaping), but this is taken by many scholars to exemplify the unique Qin culture variant that existed even during its earliest periods. Similarly while the Western Zhou graves found in the Zhouyuan region adhere, mostly, to the burial style of upright supine placement of the body, as was the case for TMQC discussed in chapter 5, the graves of the Maojiaping cemetery are flexed and face the side of the grave, a practice seen to be the norm in the Eastern Zhou period (Zhao 2013: 66).

The recently published Xihan survey sheds some light on the socio-political organization of this region. The survey yielded 11 sites belonging to the early western Zhou and 25 to the late Western Zhou and later Eastern Zhou periods (Gansu et al. 2008 283-285). Sites of the Springs and Autumns period (during which the Qin polity emerged) can be dived into those larger than 20,000 square meters (three

[52] For those holding this view it is not clear whether or not these non-Qin people could be buried in the site's cemetery if they followed Qin custom or whether they were required to bury their dead in a separate graveyard. In any case this is different than the scenario found at Zhangjiapo, mentioned above, where a separate tradition, catacomb tombs, existed alongside the local tomb construction custom and are taken to reflect an alien ethnic element.

sites in total), those of 10-20,000 square meters (also three sites in total), and 10 sites smaller than one hectare in size. The settlement hierarchy of the Western Zhou period is comparatively quite different. During this time only a single walled site dated to the Middle Western period was found, which might have functioned as a local stronghold (Gansu et al. 2008: 57-60). When discussing the studies of eminent scholars of Qin history, it is rather hard to separate Qin culture remains from Western Zhou relics. This is to say that the Zhou-style remains in the regions around Tianshui or the Xihan River are seen as that of proto-Qin or, in fact, Qin (e.g., Teng 2013: 73-4), while others see the Western Zhou finds from the vicinity of Tianshui or Qingshui county, as simply belonging to Western Zhou people and not necessarily connected to the Qin (e.g Mao et al. 2006)

This issue illustrates again the problems and difficulty of ascribing ethnic differences to these cultures as opposed to viewing them as stylistic influences or technological traditions. As Falkenhausen and Shelach (2013: 38-40) note, the Qin culture is "a difficult beast to tame" and as such scholars should not be too eager to conflate this assemblage with a pristine Qin ethnic or political group. That said, the remains at Maojiaping, and the results of the Han river survey, provide evidence for some of the earliest cases of the spread of Zhou-like culture and influence in this region or even the possible choice of local people (taken as Proto-Qin) to emulate their Zhou neighbors. Instead of attempting to link these finds to specific ethnic groups by style alone, we should be looking to local variations in the way vessels were used and how they shaped social practices.

Part 2a - The Discovery and Study of the Siwa Culture

The Siwa culture was first identified near the village of Siwashan 寺洼山 in Lintao County when Johan Gunnar Andersson excavated eight graves containing a unique double-handled, saddle-shaped mouth jar *Ma'ankou taoguan* 马鞍口陶罐 (Andersson 1925; Figure 6-3). Based on this unique artifact type, Andersson identified the remains at Siwashan as representing a separate archaeological culture and placed it, chronologically, as the 5th culture phase in his six period prehistoric sequence of the region (Andersson 1943: 179–185).

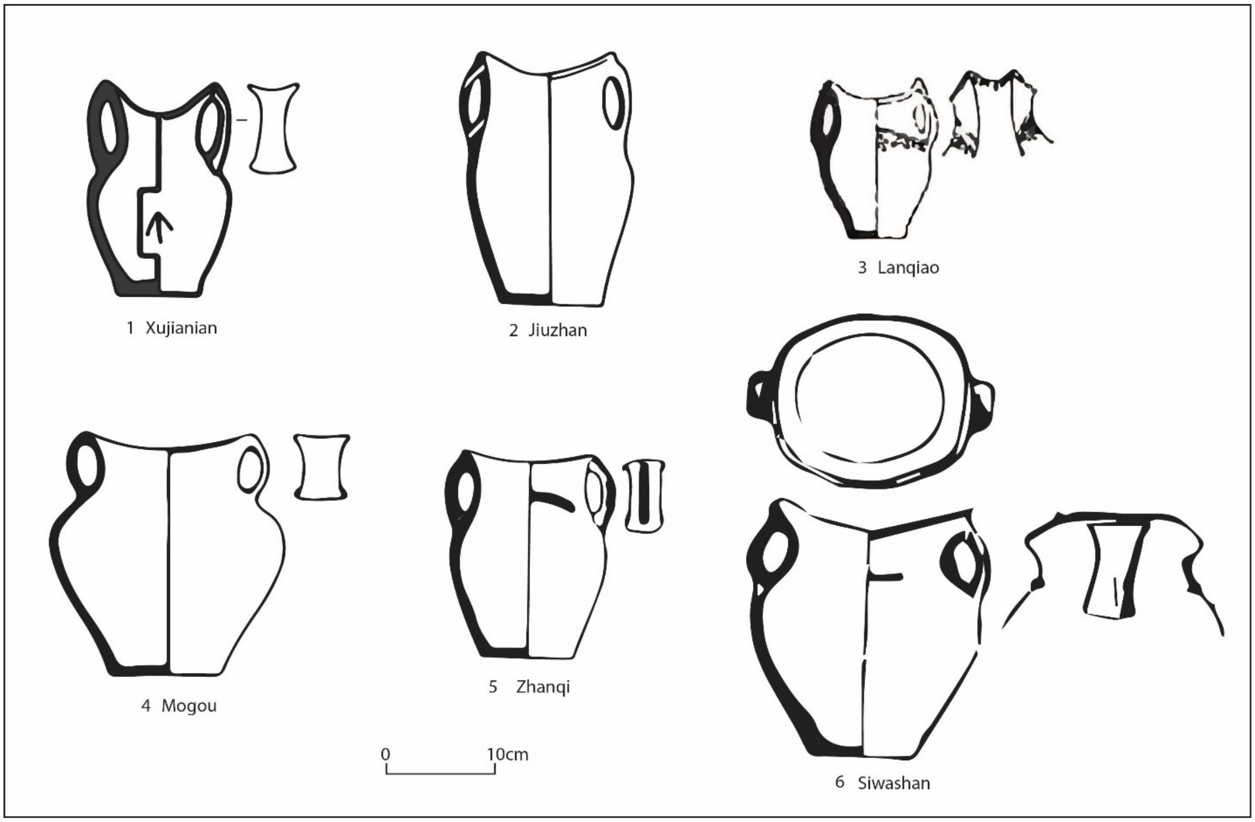


Figure 6-3 - A variety of Ma'an jar types: 1) Xujianian M14:6 (Kaogu 2006: 53) 2) Jiuzhan M14:6 (Wang and Shui 1997:427) 3) Lanqiao M9:10 (Gansu et al 1987: 685) 4) Mogou M720: A1 (Gansu and Xibei 2014: 32) 5) Zhanqi M25:7 (Gansu 2012: 43) 6) Siwashan (Xia 1949: 112)

Subsequnet excavations at the site of Siwashan in the 1940s by Xia Nai, revealed six more graves and two ceramic vessels that contained cremated human remains. As mentioned above, Xia Nai (1949) viewed the unique remains as good evidence that these were the barbarian tribes mentioned in texts: the Di 氐 and Qiang 羌. They were identified as barbarian outsiders in part because, at the time, most known Neolithic mortuary remains from the Yellow River valley were of interment, not cremation. Xia Nai's Ceramic studies in the region lead him to the conclusion that the Siwa Culture was endemic to Gansu, and that the saddle-shaped mouth jar was a development of Machang 马厂 and Banshan

半山 phases of the Northwest Painted Pottery Majiaoyao 马家窑 culture, combined with Xindian influences.

A number of small surveys have extended the occupation areas of Siwa Culture materials. Examples include a group of ceramic scatters found near Yanjing County at Wushan 武山县盐井乡 (Gansu 1959). A large scale survey headed by the Gansu provincial museum in the 1950s (Gansu 1960) set out to test Andersson's chronological sequence and provide new information on the Western region's past. The survey was conducted throughout the entire province and found over 800 Neolithic and Bronze Age sites, providing information on ceramic sequences and dating, which greatly questioned Andersson's six stage chronological sequence. The Siwa Culture itself was further separated into two variants as ceramic sherds collected in the Anguo Township 安国镇 in the Eastern part of Gansu displayed some unique characteristics and yielded the new 'Anguo style' pottery type (Gansu 1960: 22). Subsequent work has maintained this distinction, though many scholars simply refer to the culture that inhabited this region collectively as Siwa.

Most all Siwa style pottery is coarse reddish-brown or gray in color, with large sand, mica and grog pieces used as temper. The majority of pottery is plainware, unpolished and undecorated, but some added plastic ornamentation (appliquè) is known as well. Several vessels are decorated with inlaid stones and beads. Painted ceramics are very rare, in contrast with the Xindian culture in the same region, which involves black or white patterns added to finished vessels (Shui 2001: 220-221). Pottery was made by slow wheel and often bases, necks and handles were added to a worked vessel (Xie 2002: 193-4). Clay composition and kneading traditions resulted in highly porous ceramic materials, which decreased fraying, but the surface is often spotted with color imperfections such as spots of black. These fire-clouds, the result of organic material combustion during the firing process, are discussed in my usewear study of the Mogou 磨沟 ceramics in Appendix A).

The main vessel types are: the double-handled saddle-shaped mouth jars, *ding, li, hu,* and *guan*, though other vessels types such as cups and bowls are known as well (Figure 6-4). The *Ma'an* vessel type accounts for the vast majority of all vessels found at Siwashan and Anguo sites, and is still the definitive feature of all Siwa material (Xie 2002: 193).

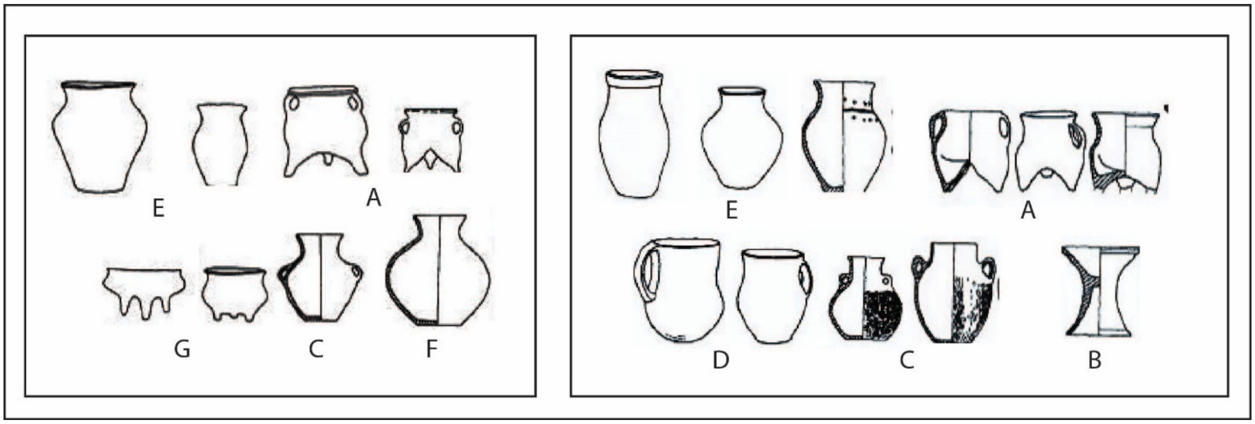


Figure 6-4 -Siwa ceramic style from Jiuzhan (left) and Xujianian (right): A) li B) dou C) double handled guan D) single handled guan E) hu f) guan (redrawn after Shui 2001: 223-224)

Siwashan-type ceramics are distinguished by stylistic elements of vessels such as the placement of handles on vessel bodies, while a higher percentage of corrugation marks and grey ware is found in the Anguo type. Another difference is that certain vessel styles are limited to one type and not the other. For example, *ding* tripods with a lid are found in Siwashan groups and *gui* or footed *dou* are more prevalent in Anguo assemblages (Xie 2002: 194). Li and Nan (1987) further divide the Siwa *li* vessels into two types: 1) In one style the *li* legs are made separate and then combined, after which the vessel is built on top of them, while 2) the second style is made from a single ceramic mold where the legs are combined by folding the base of one side over another (Nan and Guo1987: 27-28; and see Figure 6-5).

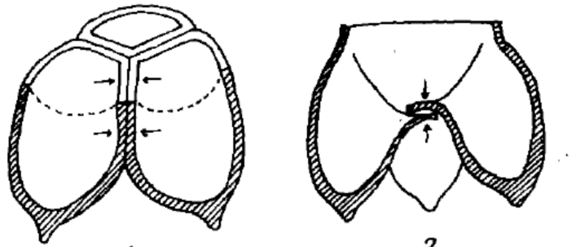


Figure 6-5 - Two li construction methods (redrawn after Nan and Guo 1987: 27).

These two separate traditions are connected by some to Zhou influences to the West (Nan and Guo 1987:33-34), but, as we saw above, the actual Proto-Zhou type is far from agreed upon. Instead it would be best to view these two production traditions as co-existing in the greater Central Plains and adjacent regions, and used to varying extents by different communities. That being said, there are a number of sub-regional differences between the Siwa type, Anguo and Siwashan, as presented next.

<u>The Siwashan</u> type is mainly found in the Tao river valley 桃河 regions and around the modern day Gansu province capital city of Lanzhou 兰州. As is the case with so many other Chinese archaeological cultures, Siwashan sites are mostly graveyards and cemeteries. Excavations have revealed an apparent lack of uniform mortuary practices associated with the Siwa culture. In fact the non-uniform mortuary practices in this region are taken by some as a particular development of Siwa culture (Hu 1980: 113): Firstly, as noted above, the Siwashan site exhibited signs of cremation burial practices alongside inhumation. At the Mogou cemetery (better known for its Qijia period burials), excavations in 2009 found 21 Siwa period graves (Xibei and Gansu 2014). Unlike the nicely arranged Qijia graves, the Siwa tombs are scattered throughout the graveyard, some cutting into earlier Qijia tombs. These Siwa tombs contained large variations in their shape and form, the number of grave goods, types, their style and the number of individuals interred in them, as well as variation in how individuals of different age and gender where treated. For example, while 19 graves were constructed as rectangular pits, two others were chamber pits. In addition only half of all graves found contained wooden coffins[53]. Metal artifacts are quite rare and are limited to ornaments such as earrings and bracelets. Ornaments are also made of stone and bone (Xibei and Gansu 2014: 34-38).

In contrast, at Zhanqi 占旗, only a few kilometers north up the Tao River, 66 graves were unearthed with more uniform burial patterns (Gansu 2012). All graves are rectangular in shape, most have a stepped platform *ercengtai* ledge with artifacts placed on them, and some graves are fashioned with niches directly above the head of the interred. Most all graves are oriented on an east-west axis, while some are placed on a north-south axis. The vast majority of tombs are single graves where the deceased are placed on their backs and their bodies extended. Many skeletons are dismembered, reflating a situation where secondary burial practices might have been common. Bronze artifacts, including ornaments and many weapons such as *ge* axes, swords, knives of steppe style, *mao* spears and halberds, were placed to the side of the deceased denoting the importance of military status for the elites of this Siwa community (Gansu 2012: 37)[54].

At Zhanqi two structures have also been unearthed: F1 is a rounded semi-subterranean structure with a hearth and several post holes. The doorway faces north and is roughly 1m wide at the base, with a large stone slab adorning it. The earthen floor is tightly packed and might have been created by the rammed-earth technique (Gansu 2012: 39). Structure F2 is not as well preserved and is irregular in shape. There is a single post hole that survived, and the floor yielded remains of textile and pottery patterns pounded into its surface (unfortunately no image has been published). Along with 10 waste pits, two ritual installations were found at the residential part of the site as well: 1) a circular platform two meters in diameter that contained a large stone slab where a number of ceramic vessels were

[53] Thus I remain puzzled as to why Chen Honghai 2013: 109-110 has noted that "since the burial style seems to not have changed these Siwa period people must have descended from the local Qijia community".
[54] The excavators do not provide a stylistic identification of these bronzes, but they appear to be of Shang and not Zhou styles, an observation that would seem to fit with the dating of Siwashan Siwa type, the earlier phase of this culture.

found and in them animal bones and burned earth, and 2) a platform with burned earth and a number of ceramic jars with bones and ash found in them (Gansu 2012: 40).

At Ya'er 苞儿 in Zhuoni 卓尼, two large trash pits containing Siwa material provide some of the best preserved residential material of the Siwa culture (Gansu 1994). Alongside a large number of ceramic vessel sherds several bone tools were unearthed including elaborate shovels, awls, needles, ploughs, adzes, chisels. Stone tools were mainly polished axes, hammers, knives and scrapers. Larger tools include grinding stones, plough and mortars. No bronze artifacts were found, but evidence for fabric and cloth production is also evidenced by ceramic and stone spindle whorls. Three scapula bones used for scapulimancy were found as well (Gansu 1994: 21). Work done in the early 1960s found an additional single grave in the village of Lijia 柳家 村 in Zhungliang 庄浪 with ceramic vessels and a large metal drum, the only one of its kind ever found (Gansu 1963).

Anguo type remains are quite extensive and are found in the areas of the Jing 泾 River, the Western Han River, and the upper reaches of the Bailong 白龙 River. Important excavated sites include Xujianian 徐家碾, Lanqiao 栏桥, and Jiuzhan 九站. Originally identified in a survey of the Tianshui region in the early 1980s as a place where a number of Ma'an jars were found (Zhonguo 1983), excavations at Lanqiao revealed nine fairly rich graves. Occupants where interred with 14-55 items including metal artifacts, ceramics and stone tools. The graves were placed side by side on the slope and were aligned at 60-80^0 along the east-west axis (Gansu et al 1987). The graves are rectangular pits with *ercengtai* ledges occupied by a single individual. The dead were found in various degrees of preservation: Some bones had eroded while others seemed to have been intentionally removed – their skulls or upper limbs were missing – leading the excavators to speculate on the importance of secondary burial practices for this community. Several white stones were found in the upper fill of these graves, which might have been placed there by the mourners as graves markers (Gansu et al

1987: 670). Most all burial remains were ceramic vessels that were placed on the *ercengtai* next to or on the deceased, and a large amount of vessels have marks on them (Gansu et al 1987: 682-683). A bronze *ge* axe (of unclear style) and two *pao* bronze ornaments as well stone beads were found among the grave goods as well. A number of unique carvings, found mostly on *dou* and Ma'an jars have prompted research on their origin and possible connection to Chinese script. Tang Lan has observed some similarities to characters used at the Xiaotun of the Yinxu site of the Late Shang Dynasty capital (Gansu et al 1987: 682).

The Xujianian site, first discovered in 1980 when a new water pipe was installed to the north of the village with the same name (Zhongguo 1982: 584), is located on the Western Bank of Shuiluo North river 水洛 北河, 3.5 km southeast from the county seat of Zhuanglang 庄浪 County. The habitation portion of the site, covered at least 10,000 square meters and consists of mainly broken and damaged ash pits found under houses in the modern village and thus were not excavated (Zhongguo 2006: 3-8). The abundant graveyard remains of the site were excavated and will be discussed in chapter 7.

The Jiuzhan site is perhaps the best known Siwa site. It is located on the upper tributaries of the Jing River in Heshui prefecture, Gansu. The site was first documented in the 1958 survey of Gansu Province, when it was identified as the Anguo type[55] (Gansu 1960) and fully excavated in 1984 by a joint Beijing University and Gansu Provincial Institute expedition (Wang and Shui 1997). The residential units are located to the south of the site, mainly on the north slope of the river. A number of exploration trenches were opened up and eight garbage pits were found averaging about 1 X 0.5 m. These contained surprisingly few artifacts (mostly of ceramic, bone and stone). A short part of a stone slab-lined ditch was unearthed as well of 1.8 X 40 m width and 0.20 m tall (Wang and Shui 1997: 310).

[55] It is worth pointing out that some scholars, such as Shui Tao (2001), have viewed Jiuzhan as a separate ceramic tradition of the Siwa Culture, though others do not.

Three residential units were unearthed at the site where a number of incomplete living surfaces with post holes were found. Structure F1 – the best preserved of the three, is semicircular and measures at around 30 square meters in size. Its floor is a well-constructed layer of 30cm of thick tamped earth. Two post holes in the northern part and a small 90 X 65 cm hearth are the only remaining features found in this structure (Wang and Shui 1997: 309-311). Other, smaller houses contained agricultural stone tools such as hammers, axes and knives and one ceramic vessel base contained an imprint of grains. A number of sheep, goat, horse and cow bones were found as well in waste pits (Wang and Shui 1997: 333-334), pointing to a sedentary and agricultural economic preoccupation of the residents. Four ceramic kilns were excavated, as were stone and ceramic spindle whorls and bone awls, reflecting textile production (Wang and Shui 1997: 334-336). The ceramic assemblage is quite extensive with two main traditions: 1) vessels made of brownish-yellow coarse material with uneven color throughout the vessel. The main vessel types are the *Ma'an* jar and detached-crotch *li*.Tthe other is 2) greyware and s*hengwen* with attached-crotch *li*, handle-less guan and *dou,* all identified as Western Zhou types (Wang and Shui 1997: 326). While the former is far more prevalent, the latter exists to such an extent, even in the later Eastern Zhou period, that it has become a definitive marker of the Jiuzhan site (Wang and Shui 1997: 339). The Jiuzhan graveyard is where most of the efforts have been concentrated and, like the Xujianian site, will be discussed in chapter 7 in conjunction with other cemetery analysis.

Part 2b - Dating of the Siwa Culture and its Significance in the Cultural Development of the West/Gan-Qing Region

Both Xindian and Siwa are believed to have derived from the Qijia Culture and influenced each other over time (e.g., Nan 1989). Shui Tao separates the Siwa culture into four main periods and six sub-phases: the site of Siwashan is the earliest, with three phases spanning the first three stages of the Siwa period. The site of Xujianin and Jiuzhan both date to the three last phases of the Siwa period and Lanqiao's two phases date to the last two (Shui 2001: 227). Interestingly, as important as the *Ma'an* jar is to the Siwa Culture there seems to be little work that has been done to establish an internal chronology on their basis beyond the regional distinctions presented above. In fact, Carbon 14 samples taken from Jiuzhan have been used to date the culture to a time period that spans 1400-700 BCE, yet only 15 of the Jiuzhan graves have been more securely dated in the larger 700 year span, as these graves they contained non-Siwa materials in them (Wand and Tao 1997: 445-446; and see below). The residential part of the Jiuzhan site was divided into three periods spanning Early and Late Western Zhou and the third to one spanning the entire Eastern Zhou period (Wang and Tao 1997: 337-339). The Lanqiao site is dated to terminal Shang period or Early Western Zhou based on similarities to Xijianian (Gansu et al. 1987: 692). Several sites are not dated and are only identified as Siwashan or Anguo type, as is the case for the Zhanqi site (Gansu 2012: 37). Nevertheless the standard view is to see the earlier Siwa tradition to have originated in the Tao River valley area, i.e. the Siwashan type and later the Anguo phase, which derived from it, as roughly contemporaries with the Western Zhou (Wang 2012: 230).

While internally diverse and spanning at least 700 years (and in doing so also surviving the turmoil of the Chinese polities to its East of both the Shang and Zhou periods) the nature of interaction between the Siwa and their neighbors is surprisingly viewed as mostly uniform and consistent. As with the many archaeological cultures inhabiting the Gansu region in the second and first millennia BCE, two main, complementary, elements influence the understanding of these cultures and the nature of their interaction with their neighbors to the West. Firstly, the region is considered as peripheral to the formation of Chinese civilization (e.g., Shui 2001; Xu 2009). Secondly, as the Siwa are also linked to the tribes who will eventually bring down the Western Zhou, the earlier Siwashan variant is viewed as the Qiang while the Anguo period as the Rong (e.g., Hu 1980: 123-124; Kaogu 2006: 96; Qian 1985;).

What further feeds into this view, and even demands that the Siwa be considered as an 'Other' to their Chinese counterparts (Zhou or Shang), is the notion that the inhabitants of these regions practiced pastoralism as an important economic activity. Pastoralism is believed to have replaced the rain-fed agriculture as the dominant mode of subsistence between 3600 and 2000 cal yr B.P. (Zhao, 1997). The Siwa Culture is observed as inhabiting the relatively high part of southwest Gansu and to have been associated with people who practiced a mostly animal husbandry economic subsistence (Xu 1988). These arguments are not predicated upon archaeological finds that can be used to show this; indeed as we have seen, very little residential material has been excavated and what does exist actually points to an established agriculture-based subsistence pattern (Xie 2002: 192). Instead they are a product of what has been discussed in chapter 3, namely the projection of the more recent historical periods onto the deeper past: pastoralism is what characterized the economy of people inhabiting these region during later periods, such as the Xiongnu, the mortal enemies of the Han, who did, in fact, practice pastoralism, and whose mobility was a defining factor of their social and cultural organization and characteristics. Not only do these models uncritically project later historical realties onto the deeper past, they also structure the nature of interaction between these societies as they extend the dichotomy between the Steppe and the Sown where, except for military prowess, technological innovation and cultural refinement are the properties of Chinese powers and ones which their neighbors will forever attempt to attain, but can never fully possess (and discussed in Beckwith 2009; Bunker et al. 1997; Di Cosmo 2002; Shelach 2009).

In recent years, these arguments have been bolstered by environmental studies that connect climatic events in the late 3rd millennium BCE and their aftermath to archaeological cultures. Linking the ~4000 cal. yr BP climatic event, as it is known worldwide (i.e. 4.2 ka event), to cultural changes is a recurring theme in the reconstruction of socio-cultural change in ancient China (An et al. 2004; Gao et al. 2007; Stanley et al. 1999; Wu and Liu 2004; Zhang et al. 1997). In the regions of Northern China, Inner Mongolia, Qinghai and Gansu, the added aridity this climatic event resulted in (in an already semiarid environment) is believed to have caused not only the collapse of many of the exiting societies, but also the eventual transition from agriculture to pastoral or agro-pastoral communities (An et al. 2005; Hou et al 2009; Tian and Tang 2001; Zheng and Yao 2004). Inhabiting a region characterized by a semiarid climate with high internal variability, dry farming would have been more susceptible to fluctuating climatic conditions – the prolonged effects of which would have been catastrophic, even to a relatively cold and drought resistant crop such as millet (Wu and Liu 2004).

Indeed the collapse of the Qijia Culture has been attributed to the events of ~4000 cal. yr BP as has the replacement of dry farming with pastoral subsistence practices by the cultures that followed (Mo et al. 1996; Shui 2000; 2001). The problematic dating of the Qijia Culture and period leads, however, to differing views on when and to what extent, this culture collapsed. For An et al. (2005) the Qijia culture is dated to 4300-3900 cal BP, thus, while the society flourishes early on, marked by the development of sophisticated technologies and higher site numbers and regional distribution, it collapses quite quickly after the ~4000 cal. yr BP event. Liu and Feng (2012), place the Qijia dates at 4000–3800 cal. yr BP and equally find an initial prosperity of the Qijia culture. This takes place during the early phases of the Qijia period, but breaks down soon after by the continued effects of this climatic event. They are succeeded, after an additional hiatus of 200 years, by a number of different cultures, each more sparsely occupying their respective zones and exhibiting cultural atavism or the reversal of the advances of the preceding culture. Liu et al (2010) extend the duration of the Qijia culture from 4000 to 3600 BP and noted the more severe climatic influences (extremely low temperatures), which existed in the region 300 years after the event. Here the prolonged effects of the climatic event are seen to have slowly chipped away at the Qijia society until it collapsed, inevitably, around 3600 BP. In this model the turn to an increased emphasis on pastoral economic practices occurred to varying degrees and was shaped by the environmental zone of those cultures that succeeded it: from pastoral nomadism of the Kayue in Qinghai, the mixed agro-pastoral economy of the Siwa culture in the higher altitudes of Southwest Gansu and the survival of farming in the Xindian culture, occupying the moderately warmer climate of the Yellow River valley.

Part 2c - Zhou in the West and Their Contacts with the Siwa Culture

The above discussion presents the problems with directly relating single climatic events with specific archaeological cultures or single points in time. Furthermore there are no shortage of problems when attributing clear-cut strategies and reactions of human societies to specific climatic events, e.g., increased mobility or a complete turn to pastoralism as a response to decreasing temperatures (and see in Meltzer 2015). Indeed, in Northeastern China the ~4000 cal. yr BP event was followed by a distinct flourishing of society during the Lower Xiajidian 夏家店下层 period, when the region was densely populated by stable and large communities practicing subsistence agriculture (Chifeng 2011; Shelach 2009).

Nevertheless, the pastoral aspect of the Siwa Culture (and indeed this same understanding for most all other cultures inhabiting the Western region during the second millennium) has contributed to the way in which scholars have understood the interaction between them as well (Fitzgerald - Huber 1995; Shelach 2009). In this construct the Siwa 'Other' assumes a position of inferiority. Militarily competent as they were (which, for scholars who view them as those who brought down the Western Zhou, they must have been), the people inhabiting the Western regions were on the fringes of civilization. Even while gaining the upper hand in battle, technologies, finished goods and fineries are believed to have moved (and then received), almost solely, from the Central Plains people to their neighbors[56].

During the Early Western Zhou period a large amount of Zhou material appears in the Jing River valley. This is identified as a Western Zhou presence and taken to be an expansion of Zhou influence.

[56] This model is not unique to China and is no different than the ways in which many civilization viewed their others, especially when the dichotomy of steppe and sown was involved (e.g., Beckwith 2009; Kohl 2007; Potts 1999).

Yet many of these sites are simply the finding of single graves with burial artifacts in them comprised of Zhou ceramics and bronzes (for a very comprehensive survey of these finds see Lu 2013). For example at Tu'ergou 兔儿沟, a grave with a number of Western Zhou style ceramics has been unearthed (Xu and li 1987). Nearby at Yucun 宇村 more than 20 Zhou-style bronze ritual vessels were found in a single grave. These include unique artifacts, such as an exquisite short sword and three bronze tiger figurines, perhaps of the Late Western Zhou period (Xu and Lu 1985)[57]. Li Feng (2006: 180-183) has noted that only two ritual Western Zhou vessels, a *lu* and *xu,* are not Northern steppe in style. Nonetheless Li takes this to reflect a situation where Luobo, the individual mentioned in the bronze inscriptions as the owner of these artifacts, adopted Zhou mannerisms or obtained, somehow, Western Zhou bronzes and buried them with himself, the latter a more likely scenario in my mind.

Another cluster of Zhou sites has been found in the upper reaches of the Daxi 达奚 River, a tributary of the Jing River to the West. Many of these finds are infrequent and cannot be securely related to specific settlements and, as such, are hard to assess with respect to their larger sociopolitical context. For example, at Daduizhuang 大队庄 a single early Western Zhou Bronze *li* was discovered in a survey without much contextual information (Jingchuan and Liu 1977). Many Zhou artifacts originate from single graves seemingly disconnected from any other context. The Xiling 西岭 grave contained several bronze artifacts such as bells and ritual *gui* and *ding* vessels, but no weapons or ceramics. At Dongshan 洞山 a male placed stretched on his back was entombed in an inner and outer coffin. Surrounding the grave was an *ercengtai* with two *ding*, one *zun*, several *pao* and two *ge* axes, as well as cowrie shells (Gansu and Lingtai 1976: 42-3). At Bailisigou 百里寺沟, two graves with Western Zhou ceramics and bronzes dated to Early Western Zhou were unearthed (Liu 1981). At Yaojiahe 姚家河

[57] This grave also contained a Liujia type baggy-footed *li,* noting that this type continues into the Western Zhou period (Gansu et al 2007: 278)

in Lingtai County five graves dating to the Early Western Zhou were excavated with ceramics similar to those found at Zhangjiapo. One grave, M1, was somewhat larger than the other tombs and contained a number of bronze ritual vessels, bells, and weapons of Western Zhou style (Gansu and Lingtai 1976: 39-42).

The most well-known of these Western Zhou sites is Baicaopo 白草破, where excavations yielded eight graves and one chariot pit. Inscriptions found in tombs 1 and 2 mention the occupants as Heibo 潶伯, who lived during the reign of king Kang, and Yuanbo 㥜伯 dated to the reign of king Zhao. The graves are dated to the Middle Western Zhou on the basis of their stylistic elements, though most all grave goods are limited to Heibo's tombs whereas other tombs contained notably fewer artifacts (Gansu 1977: 106-112). Shui Tao has commented that based on the many Shang-style vessels and weapons it is very likely that these were Shang people that were assimilated into the Zhou world (Shui 2001:262 and image on page 263). In fact a number of weapons are of Northern style, such as a beak-like axe, leading Li to argue that this local lord must have been granted the noble title *bo* and been incorporated into the Zhou administration system – perhaps as a military leader (Li 2006: 50).

Based on the arguments presented above many scholars have viewed the nature of interaction between the Zhou and local groups as unidirectional, where an encroaching Zhou presence subdued and assimilated or even was able to control local groups. Zou Heng (1980) and Zhao Huacheng (1989) have argued that the relatively low numbers of *liandang li* (joined-crotch *li*) found at Siwa sites points to their foreign origins and, that when they are found, the inhabitant there must have been under the direct influence of the Zhou (a claim still echoed in more recent scholarship (e.g., Jun 2005: 85; Xie 2002: 197-198). The same argument is made for the vast majority of bronze weapons found in Siwa contexts: that they must have originated from Zhou sites, the product of trade or war (Hu 1980). Li Feng (2006: 176) sees the ceramic evidence, characterized by a paste fired at low temperatures and confined to a small repertoire of vessel types, to be indicative of underdeveloped society and thus inferior to the Zhou (for some reason the relatively few polished stone tools at Siwa sites contribute to this argument as well). Recently, a survey by Lu Guoquan (2013) of over 50 sites (mostly single graves with Western Zhou materials or un-contextualized artifacts) in the Jing and Western parts of the Wei Rivers has led him to conclude that the Western Zhou maintained a firm influence in this region, mostly in the form of forceful settlement and political control. In a rare attempt to understand the nature of these contacts, Lu suggests that salt mining resources might have prompted the Zhou to seek to expand their control in this region. Evidence for this claim are scarce, but salt has been continually mined in the Li county region from at least the Qin period, and still is today (Lu 2013: 52)

Finally when combined with the discussions on the proto-Zhou and the Qin origins, as well as the desire to trace clear archaeological assemblage developments through vessel types and ascribe them to bounded ethnic groups (and whenever possible peoples mentioned in later historical texts), the understanding of the relationship between the Western Zhou polity and the regions to the West becomes quite a loaded topic. Wang Hui's (2012) survey of the cultural development of the Tao River valley is a prime example: prior to the 2nd millennium BCE, or the three dynasties period, Wang refers to the Neolithic cultures inhabiting this region as a variant of early Chinese culture, while in the 2nd millennium, with the Xia, Shang and Zhou firmly placed in the Central Plains region, those archaeological cultures in the West are not considered part of the ancient Chinese civilization. They will become part of the greater Huxia, once again, when the Qin conquest brings them under Chinese rule, a task completed more fully by the Han dynasties in the later part first millenniums CE. Shui Tao (2001) has seen a more complex development of the Siwa culture and its change over time. Shui notes that the early contact with the Xindian and Qijia cultures in the north and Tao River valley region were the primary influencing sources for the Siwashan culture, while in the south (the Xiha and Ji River area) the Western Zhou influence might have been stronger. The Siwa were never conquered, but their influence mitigated to allow for the development of the Qin state that would form in the 8th century BCE (Shui 2001: 283-28). Shui (2001: 276-283) also warns that we should not attempt to view the Siwa as the Qiang or Rong barbarians, and that these terms were generic enthnonyms in the sense that they were used to describe the multitude of peoples that existed to the West of the Zhou sphere (and thus should include the Xindian, Kayue and other contemporary archaeological cultures).

Furthermore, control and power, as have been discussed above, should not be automatically assumed when Zhou-style materials are found. In fact even Li (2006: 183-188) points to a number of sites with Zhou materials that may have held considerable power in their dealings with Western Zhou, as is evidenced by the contents of the bronze-vessel inscriptions found at them. Whether or not these sites where initially established by the Zhou, were developments of earlier Proto-Zhou sites, or the late Shang period who all adopted Zhou materials (the first favored by Li himself), is near impossible to ascertain (Lu 2013: 50; Shui 2001: 257-267).

Clearly artifacts and peoples moved between these regions. On top of the examples presented above, we must remember the Siwa Type B ceramics that where found at Maojiping and the fact that the Siwashan period Zhanqi site residing hundreds of kilometers to the west of the Zhou core, yielded several Zhou-style bronze weapons. Even though it is hard to confidently ascribe ethnic identity on the basis of these materials, why these should permanently be seen as reflecting Zhou peoples on the basis of Zhou style objects, is unclear to me. In fact elsewhere I (Jaffe 2016) have argued that the ways in which the Western Zhou style bronzes were used in areas outside the main Zhou settlement should be taken as evidence for local appropriations of these objects by indigenous groups. Rawson (2015) too has recently provided an in depth analysis on the fluidity of Bronze weapons between the Zhou and the 'Northern Arc' cultures, which comprised her neighbors in these regions. Her conclusion is that the movement of the items was so great that a single style, Zhou, Northern, Shang or other, can hardly be attributed to a single ethnic or political group.

Indeed the movement of goods was not limited to Zhou-style objects. Artifacts of Western or Gansu cultures' style are also found in the Central Plains. Firstly, the *Ma'an* jar was not limited to the Gansu region. In the village of Longkou 龙口 in Feng County, Shaanxi province (Shaanxi 1956), and Baoji Doutaiji (Zhang and Liang 1989) a number of *Ma'an* jars were found. The excavations at Baoji found a number of these vessels in the Western Zhou period cemeteries as well (Lu and Hu 1988: 292). Whether or not these were exotic foreign objects, placed in tombs of dignitaries, is unclear, though it remains a plausible interpretation. At the Xindian site of Jijiachuan 姬家川 a single Ma'an jar was unearthed (Xie 2002: 198). In fact one of the *li* vessel types at this site is precisely the same as that found in Baoji (Zhongguo 1980: 212). Rawson (2013) has similarly discussed the multiple influences and imports that arrived from the Arc to adorn the graves of the Yu lineage aristocrats in Baoji.

With this in mind I turn now to investigate sites from the West in order to observe, bottom up, the outcomes of their contact with the Zhou. Rather than, a priori, assume a certain manner in which contact unfolded and the outcome it resulted in, Siwa and Zhou graveyards are first analyzed separately and then compared to ascertain the level of impact of the Zhou.

Chapter 7 - Mortuary Analysis in the West

Before I dive into the analysis, it is important to remember that the West is a vast region and thus the uneven developments it underwent during these periods, should not be underplayed by blanket statements about one type of cultural influence or interaction. A more focused approach that accounts for local circumstances is needed to untie us from clustering the Siwa culture into a single political entity and further aids us, in turn, in understanding the differing factors affecting individual communities. Li Feng (2006: 142-174) has focused on the Jing River valley – to the northwest of the Zhou center – and documents the wars between the Xianyun 獫狁 and Western Zhou dynasty (note that these accounts are mostly based on reading bronze inscriptions and matching them to the later historical texts in attempt to identify their location). The Xihan archaeological survey (Gansu et al. 2013) is another example of a focused study of single sub region in this greater Western region.

As was proposed above, I suggest an approach that looks at specific communities and their cultural practices to gauge the measure of change and interaction between them during this time. Indeed this discussion has shown the many differences that existed for the Siwa sites and community-specific mortuary practices that were followed[58]. Since excavated residential sites for the Western Zhou periods (and the periods that directly preceded it) are almost nonexistent, I focus here on mortuary analysis of three sites in this region: Xujianian, attributed to Zhou peoples, and Yujiawan and Jiuzhan of the Siwa culture. The distance between Yujiawan and Xujiannian is less than 100 km and they are somewhat contemporaneous, both dated to the Early and Middle Western Zhou period, and consequently it is quite possible the inhabitants of each community where aware of the other. Indeed the authors of

[58] Chan et al 2014 make a similar argument for the Dian culture of the Yunnan region in their analysis of the Yangfutou Cemetery.

Zhongguo (1982) believe the Zhou and Siwa cultures maintained close connections as evidence by the exchange of goods, such as single-handle *guan* or large *gui* vessels for serving food.

The Jiuzhan site is located 130 kilometers to the Northeast of Yujiawan, along the upper reaches of the Jing River valley, though the topographic situation would have made contacts between these sites less likely. The site features promptly when discussing the nature of Siwa-Zhou contacts and as such merits attention here, even though its dating is no simple task and was discussed in the previous chapter. I begin by presenting the data from the Xujianian and Yujiawan sites and the basic statistical analysis performed on them, followed by the results of multivariate statistical examination using the methodology discussed in chapter 5. Siwa and Western Zhou sites do share some common features, notably supine upright burials, placing objects on *ercengtai,* as well as the interment of some similar ceramic vessels (Lu and Hu 1987). These customs are not, however, universally shared or adhered to. Instead, by looking at the mortuary practices as a whole I aim to describe more community-specific preferences that outweigh a simple equivalence of pots or single artifacts to ethnic or social identities.

After this discussion I move to analyze the Jiuzhan site in a similar way and combine this analysis with that of the Xujianian and Yujiawan sites to provide an additional discussion of Siwa communities in this region and the placement of the Jiuzhan material in their larger context. Finally, I incorporate the TMQC data in order to assess both the impact the Zhou culture may have had on this region and as well as its similarly to the Zhou presence at Yujiawan.

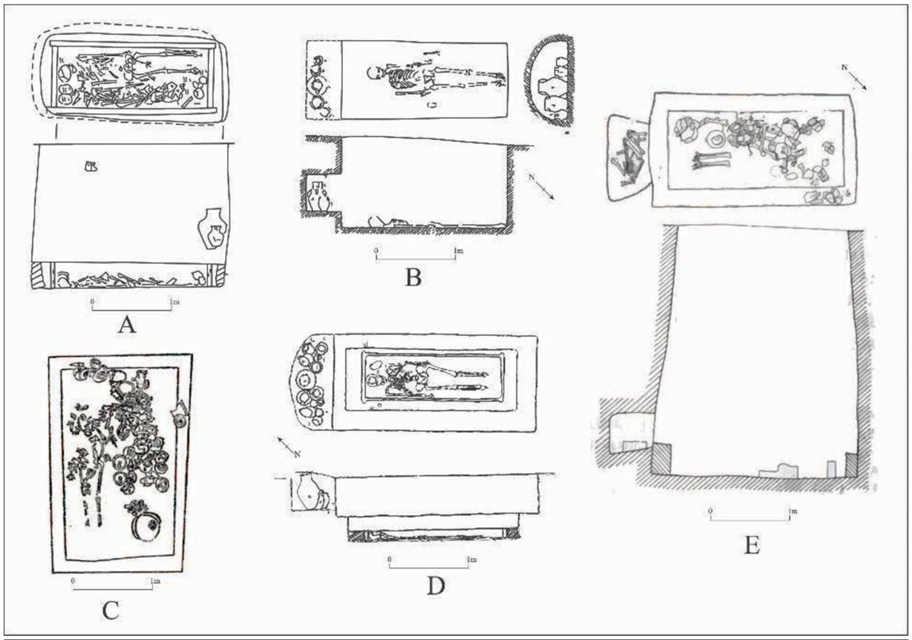


Figure 7-1 - Burial examples for Siwa sites mentioned in the text: A. Mogou M649 (after Gansu and Xibei 2014: 27) B. Zhanqi M49 (after Gansu 2012: 40) C. Lanqiao M6 (after Gansu et al 1987: 681) D. Jiuzhan M42 (after Wang and Shui 1997: 351) E. Xujianian M 41(after Zhongguo 2006: 124)

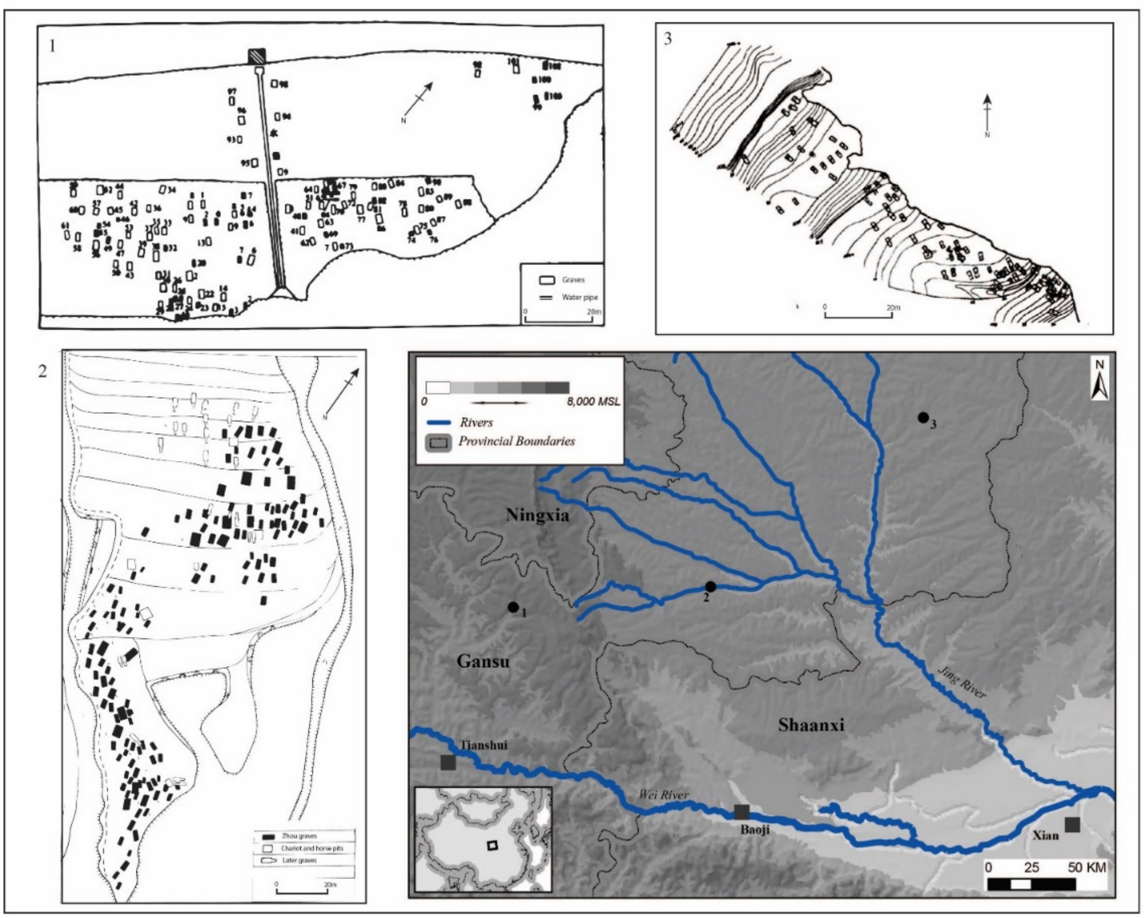


Figure 7-2 - Location and layout of 1) Yujiawan 2) Xujianian 3) Jiuzhan cemeteries

The Xujianian Cemetery

The Xujianian site (hereafter XJN) is located on the Western Bank of Shuiluo North river 水洛北河, 3.5 km southeast from the county seat of Zhuanglang 庄浪 County. The cemetery is 45 meters further up the hill to the north overlooking the settlement. While several of the tombs have been damaged they are have not been looted and their excavated contents can be taken to represent the tomb contents at the time of interment (Kaogu 2006: 10). Over 100 graves have been excavated along with two horse and chariot pits.

Apart from the fact that all the graves are oriented to the northwest, the burial practices at the site were far from uniform, as was the case observed at other Siwa culture sites (Kaogu 2006: 150-1). Tombs were shaped like a bell (where the top portion or opening smaller than the bottom or vice versa) alongside simple rectangular pits, some of them very shallow in depth. The interred were placed mostly in an extended supine or prone position and the body was treated in a variety of ways including secondary burial, some including the remains of several individuals. In multiple graves (five in total: M37, 50, 51, 86, 96) two individuals were placed side by side with grave goods surrounding them. Of the 104 graves, five were badly damaged (graves M4, M20, M27, M35 and 74; see Kaogu 2006: 21)[59]. Eight graves contained the skeletal remains of what might have been human sacrifices or simply other members of the community that died with or were connected to the dead. For example, in grave M49 a 25 year old male was buried with a child no older than 12 months, and in tomb M59 accompanying a female in her early 20s was a three year old child (Kaogu 2006:38-39). The children were placed in the fill piled on top of the burial chambers where the deceased were laid to rest (Kaogu 2006: 126-128). In contrast, tomb M70, a fairly rich tomb, contained a separate niche dug out to the foot of the grave where a child was placed. M63 is unique in that it is a single grave that contained two burials,

[59] This second group (damaged) will not be included in the factor analysis below

one in which a single man was interred and the second containing a female who was placed in a space above the male. It is possible of course that the upper interment might be a separate burial unrelated to the grave below. This two-level structure may be a case where the deceased was interred with personal belongings in the lower chamber, while the upper level was reserved for funerary ritual practices or later revisiting of the graves and sacrifices. Animal bones were placed in a *gui* vessel, perhaps as part of the mortuary ritual or as provisions for the afterlife (Kaogu 2006: 136-138)

Over 2/3 of the cemetery's population has been confidently sexed, with a similar number of males and females comprising this cemetery. The average age of those interred was 30 years, and a single male over 60 years of age is the oldest individual of the cemetery (Kaogu 2006: 214-216). Graves contained a range of artifacts and materials of bone, metal and stone, but ceramic vessels were by far the most prevalent. Most graves contained at least a few ceramics vessels, with an average of 15-20 artifacts per grave. The largest amount of ceramic vessels found in a single grave number 46 in total (M94) and the least contained just one (M91 and M36). Apart from the standard Siwa vessel assemblage – *Ma'an* jars, *li* cooking vessels, single-handled *guan* and *hu* vessels – 21 Zhou-style vessels were found at this site as well. Among these, 14 *guan* and 7 *gui* (Kaogu 2006: 40, 69-76) were found in tombs, and a number of possibly Xindian culture *guan* were recovered as well (Kaogu 2006: 51,58). Other artifacts do exist, but apart from a number of beads and clam shells worked into necklace ornaments, a prevalent feature of Xujianian graves, they are quite rare. Jade is extremely rare, with only six pieces found in five graves. Bronze artifacts do exist and comprise mainly ornaments such as buttons and other emblems, which could be sown to clothes or used to make other jewelry (Kaogu 2006: 103) as well as bells. As discussed in Chapter 5, *pao* ornaments are a generic term for bubble-shaped bronze artifacts that were used as chariot ornaments, jewelry or parts of suits of armor. At Xujianian, *pao* are found on or next to the body of the deceased and thus are taken to reflect ornaments stitched to clothing (Kaogu 2006: 111:114 and see Figure 7-3).

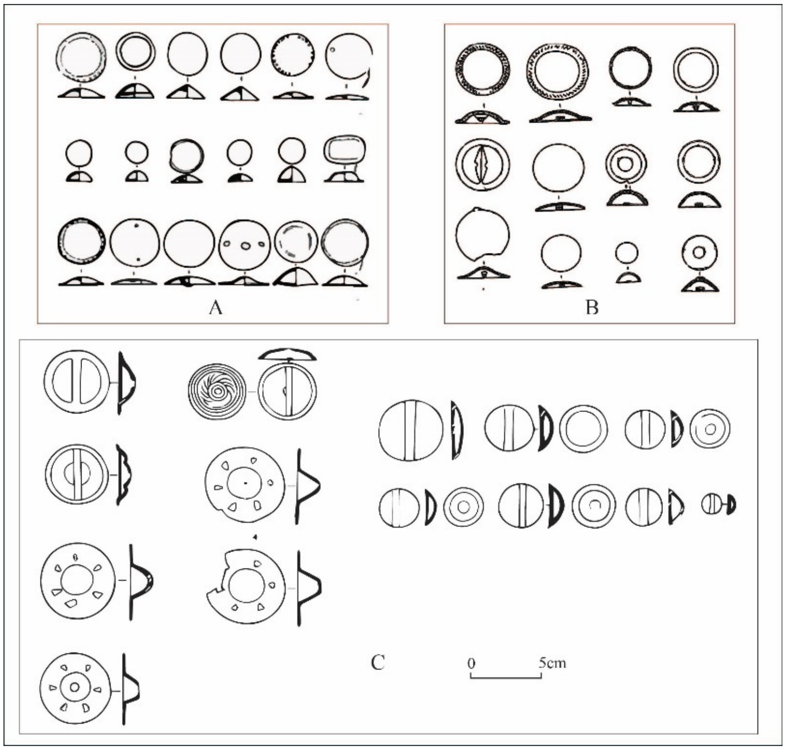


Figure 7-3 - Pao ornaments from the graves at: A) Jiuzhan (after Wang and Shui 1997:438) B) Xujianian (after Kaogu 2006: 113) and C) Yujiawan (Left are pao associated with charioting and right with ornamentation after Gansu 2009: 99-99)

A number of Zhou style weapons have been found including *mao* spears and *ge* axe alongside indistinct northern style bronze daggers that were interred in M17 and M20 (Kaogu 2006: 89- 95).

Ceramic vessels					All artifacts					Grave volume m³				Age				Sex		
Sum	Mean	Std Err	Std Dev	Max	Sum	Mean	Std Err	Std Dev	Max	Mean	Std Err	Std Dev	Max	Mean	Std Err	Std Dev	Max	F	M	NA
1470	14.85	0.97	9.67	46	2331	23.55	2.26	22.45	143	4.29	0.36	3.57	17.65	33.1	1.24	10.4	60	30	31	38

	棺 guan	椁 guo	Stepped ledge	Human Sacrifice	Zhou style ceramics	Bronze artifacts	Bronze weapons	Bronze vessels	Bronze ridding	Bronze ornaments	stone tools	cowries & clams	bone beads	animal bones
Total	39	22	55	8	21	69	14	5	2	48	1	214	502	27

Table 7-1- Basic artifact and grave properties by period for the XJN graveyard

Based on the ceramic and bronze vessels assemblages the site is dated to the transitional Western Zhou or very early Western Zhou period. The excavators take up the view that Siwa Culture sites were in fact the Rong people, and that these tribes melded with other Proto-Zhou elements remaining in contact with the later Western Zhou polity (Kaogu 2006: 148). Similar to carvings found at Lanqiao, over 60 Chinese-style characters have been identified on ceramic vessels. Shang or Zhou influence aside, as these are single characters they are taken to represent potter marks or indications of personal belongings (Kaogu 2006: 114-119). Western Zhou ceramic vessels and *ercengtai* stepped ledges are seen to represent influences from Western Zhou people, alongside the many different local Rong traditions such as multiple burials Zhou (Kaogu 2006: 153-156).

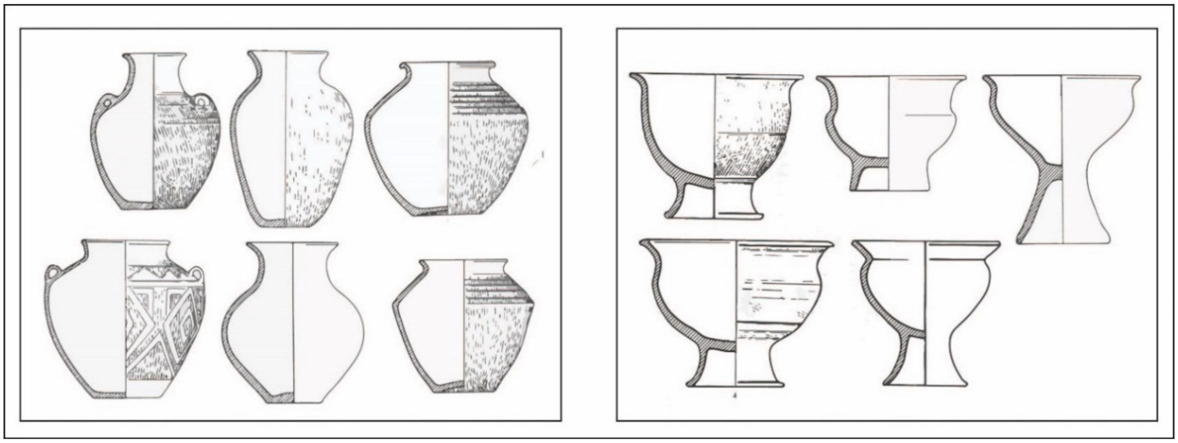


Figure 7-4 - Zhou style ceramics found at XJN guan (right) and gui (left) after Zhongguo (2006: 153-156)

The metallurgical artifacts are either Zhou or local, but are considered inferior metallurgical work, either emulated poorly by the local metalsmiths or specific goods traded with the Zhou neighbors, who kept premium merchandise for themselves (Kaogu 2006: 209-213). The chariots found at the site were not well preserved and only parts of animal skeletons survived, tough enough to indicat a chariot drawn by a team of two horses. The existence of chariots known from the Shang and Zhou regions is puzzling and the implications are unclear. Are these evidence of Zhou or Shang military overlords or local adoptions of these mannerisms? As is the case with most chariot burials, the excavators attempt to connect the chariot to a single owner burial such as graves that displayed other military paraphernalia: M95 and M79 (Kaogu 2006: 145-147).

The Yujiawan Cemetery

The Yujiawan cemetery (hereinafter YJW) is located near the town of Yujiawan, three km northeast of the Chongxin 崇信 county seat in Eastern Gansu and situated on the slope between two gullies. No adjacent residential area has been found as of yet. Initial work conducted by the Gansu province archaeological team in the 1980s was published in a short report in 1986 and contained the details of the first 16 graves and two chariot pits excavated. The vast majority of the graves belong to the early Western Zhou period, with a total of 138 tombs and six horse and chariot pits (Gansu 2009).

Most graves are rectangular and oriented along a north-south axis. Some are straight shaft tombs, while others are bell-shaped, having either a larger or smaller opening than the bottom part of the tombs. Based on tomb size, the excavators have divided the graves into three groups: small, medium and large. Not unlike other Zhou cemeteries found elsewhere, the excavators understand these size groupings to have held social meaning, noting that larger tombs were reserved for high nobles, medium sized for lesser nobles and the smaller ones for commoners (Gansu 2009: 19).

Unfortunately the vast majority of the graves have been disturbed or robbed (>80%). This very possibly may reflect early disturbance, since the cemetery yielded a number of Jin and 16 dynasty period graves, several of them cutting through the earlier graves (Gansu 2009: 10-11). The vast majority of these disturbances were not severe, however, and are limited to a number of small robber trenches that left the overall tomb structures and belongings intact (Gansu 2009: 34). In general most graves had *ercengtai* ledges and several had niches constructed over the head of the interred for the placement of burial goods (Gansu 2009: 7). Of interest is the fact that only two graves had waist pits or *yaokeng* (Gansu 2009: 12-13). Many of the skeletal remains were not well preserved. The few burials containing intact skeletons displayed extended supine burials commonly associated with the Western Zhou style (Gansu 2009: 14). Ritual sacrifices did not seem to follow the known patterns of the Shang or Zhou, but included bones from horse, sheep, goat, cow, chickens and pig. Dogs were found, but they were not placed in waist pits, instead they were butchered and their bones placed with the other animal sacrifices. Only one grave (M66) contained a human sacrifice (Gansu 2009: 18).

On the basis of artifact styles and types, the graveyard has been dated to the pre-Zhou through the Middle Western Zhou periods. However, only 64 graves could be dated to more specific periods: 13 pre-Zhou, 44 Early Western Zhou, and seven to the Middle Western Zhou. Graves were dated by either ceramic remains or bronze artifacts and those graves that could not be dated contained none of either artifact type, or much else for that matter. While these could be the genuine remains of poorly furnished graves belonging to any of these periods (indeed a number of graves that were not disturbed contained no artifacts at all) they could also be rich graves that were looted, as a number of these graves were disturbed. Only a small amount of individuals were sexed: six females and 12 males. Ages at death are mostly recorded as either adult or child, though around 30% of the interred were noted to be over 45.

Graves contained a mixture of artifacts made of ceramic, bronze, bone, jade and clam-shell. Ceramic vessels include *li* and *zun,* thou they are not very prevalent (see figure). Both aforementioned *li* vessels types exist at the site (Gansu 2009: 22-28 Figure 7-5).

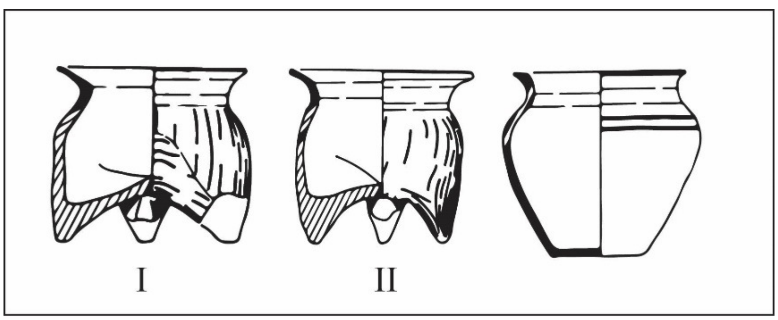


Figure 7-5 - YJW ceramic types: I biedang li (M20:2) II Fandang li (M50:1) and zun (M50:2) after Gansu (2009: 17).

Jade artifacts are quite rare as well, with 14 artifacts in total, mostly in shapes of pendants with holes bored in them to serve as ornaments (Gansu 2009: 104). Clam and shell items, in contrast, are quite plentiful, numbering well over 1000 pieces. These were fashioned into ornamental shapes and beads that were most probably sown on to garments or fashioned into necklaces (Gansu 2009: 108-113).

Only three tombs contained lacquer artifacts such as small containers and one very impressive bowl (Gansu 2009: 113-115 Figure 7-6).

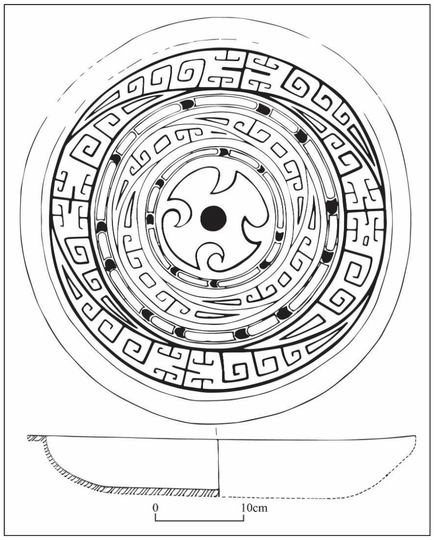


Figure 7-6 - Lacquerware example from M1491 (after Gansu 2009: 114)

Bronze artifacts for charioting and horse riding, mostly horse bits and bells, alongside rings, earrings and amulets were found placed near the deceased (Gansu 2009: 82-95). The Yujiawan burials contained 195 *pao* pecies, most are round and some have niches in the back to be stitched to clothes. Some were used for armor and some are related to charioting (Gansu 2009 95-100 and see Figure 7-3)[60]. The vast majority of ritual bronze vessels and chariot related artifacts date to the Early Western Zhou period (Gansu 2009: 130-132), while weapons, mainly *ge* axe heads, appear prominently during the Pre-Zhou and early Zhou period; Late Western Zhou graves yielded very few of these artifact types (Gansu 2009: 135-138)

[60] Here I paid special attention to how the excavators note the differences and I followed Cao bin (2013) in order to differentiate between their uses.

	Grave status		guan	Gguo	*ercengtai*	total ceramics	total bronze	Jade	pearl/clam	total all
period	**no**	**robbed**	**Sum**	**Sum**	**Sum**	**Sum**	**Sum**	**Sum**	**Sum**	**Sum**
Pre	5	8	6	1	6	8	41	0	74	198
Early	11	33	41	16	36	32	195	12	1021	2298
Middle	2	5	7	2	6	7	40	6	229	481

	Ceramics			Weapons			Vessels			Ridding			Ornaments			grave volume		
period	**Std Dev**	**Mean**	**Max**	**Std Dev**	**Mean**	**Max**	**Std Dev**	**Mean**	**Max**	**Std Dev**	**Mean**	**Max**	**Std Dev**	**Mean**	**Max**	**Std Dev**	**Mean**	**Max**
Pre	0.65	0.62	2.00	1.6	0.61	6	0.00	0.00	0.00	9.15	2.53	33	0	0	0	1.24	1.99	4.38
Early	0.69	0.73	2.00	0.89	0.43	4	0.80	0.32	4.00	6.61	3.31	36	1.58	0.36	10	24	21.3	97.8
Middle	1.5	1.0	3.00	0.78	0.42	2	1.83	1.00	5.00	5.50	4	13	0.75	0.28	2	7.70	9.60	21

Table 7-2 - Basic artifact and grave properties by period for the YJN graveyard

Horse and chariot pits along with grave size differentiation are taken as good indicators of Zhou peoples inhabiting this site by the excavators, but they further note that there are a number of different types of *li* vessels even while the joint-crotch *li* is the most common (55%) for all periods at the site (Gansu 2009: 126-128). This find is taken by the excavators to express the complexity of assigning ethnic ascription on the basis of material culture finds alone in the Gansu region during the Shang and Zhou periods, but at the same time continue to note the large amounts of Zhou cultural remains in the Eastern Regions of Gansu so as to not preclude the possibly of viewing it as a Western Zhou site (Gansu 2009: 4-5). Indeed, the explanation for the lack of Late Western Zhou occupation i.e. why the site does not continue after the Middle Western Zhou period, is clarified along historical lines, notably that the power of the Zhou court dwindled during that period (Gansu 2009: 146). Whether or not this site was a Zhou outpost remains unclear, especially when we remember that Pre-Zhou stratums existed at the site, thus precluding a scenario where this site was setup by a Western Zhou royal decree during the early expansionary phases. Liu (2013: 53-55) has revisited the site's internal three level group hierarchy and noted the lack of correlation between ceramic assemblages and types among the cemetery levels. In contrast bronze items, ritual vessels and charioting items, do seem to be correlated, as well as their number and types of coffins. Noting differences between more commonly Zhou remains at other cemeteries and those absent at YJW, she finds a strong similarity to Zhou practices in the Central Plains and assumes tighter control during the Early Western Zhou and then diminishing power later on (Liu 2013: 57).

Unlike the commonly smelted bronze vessels of the Western Zhou world, eight *pen* vessels were forged through a process of heating and hammering. Their walls are incredibly thin: ca. 0.5 -1.5cm (Gansu 2009: 180-195). These bronzes are perhaps the earliest of their kind in China and could indicate that the elites at this site were cut off from the Central Plains where other aristocrats were bequeathed with ritual vessels by the Zhou kings. Alternatively, perhapsthey felt comfortable enough to venture out on their own to make their own unique bronze ritual vessels.

Multivariate Analyses on Yujiawan and Xujianian

The initial stage of the multivariate analysis was to use a Pearson Correlation matrix to compare the two graveyards using the same process conducted on the TMQC data. The results can be seen in Figure 7-7 & Figure 7-8.

	ercengtai	grave volume	total ceramic	weapons	vessels	ridding	ornaments	玉	bone beads	total artifacts	pearl clam	棺+椁
ercengtai	1.0000	0.4129	0.5190	0.2263	0.0251	0.1338	0.1039	0.1304	0.0294	0.3218	0.1367	0.8044
grave volume	0.4129	1.0000	0.6527	0.2563	0.1227	0.1787	0.1501	0.3423	0.0637	0.4331	0.2058	0.4421
total ceramic	0.5190	0.6527	1.0000	0.3597	0.2851	0.0710	0.2500	0.3178	0.2268	0.6913	0.2044	0.6305
weapons	0.2263	0.2563	0.3597	1.0000	0.2587	-0.0412	0.0880	0.2327	0.1074	0.2619	0.0017	0.2048
vessels	0.0251	0.1227	0.2851	0.2587	1.0000	-0.0278	0.1358	-0.0422	0.0351	0.1553	-0.0247	0.1380
ridding	0.1338	0.1787	0.0710	-0.0412	-0.0278	1.0000	-0.0637	0.2272	-0.0522	0.2503	0.5968	0.1024
ornaments	0.1039	0.1501	0.2500	0.0880	0.1358	-0.0637	1.0000	0.3893	0.1126	0.2781	0.0938	0.0956
玉	0.1304	0.3423	0.3178	0.2327	-0.0422	0.2272	0.3893	1.0000	-0.0220	0.2734	0.2678	0.0863
bone beads	0.0294	0.0637	0.2268	0.1074	0.0351	-0.0522	0.1126	-0.0220	1.0000	0.7351	-0.0143	0.1558
total artifacts	0.3218	0.4331	0.6913	0.2619	0.1553	0.2503	0.2781	0.2734	0.7351	1.0000	0.5002	0.4409
pearl clam	0.1367	0.2058	0.2044	0.0017	-0.0247	0.5968	0.0938	0.2678	-0.0143	0.5002	1.0000	0.1228
棺+椁	0.8044	0.4421	0.6305	0.2048	0.1380	0.1024	0.0956	0.0863	0.1558	0.4409	0.1228	1.0000

Figure 7-7 - Pearson correlation matrix on XJN graveyard

A very strong correlation can be seen between the *ercengtai* and the number of coffins at XJN. As noted in chapter 3, at most Western Zhou sites inner coffins were commonplace among all but the lowest levels of society, while the *guo* was rarer. In contrast in the greater western regions many archaeologists report on the internal construction of the coffins as either *guo* or *guan*, depending on the shape and their training background (Cao 2009). Here I add up the total number of coffins (some graves had none) for this analysis. Also related to this category, although less strongly, are the number of ceramic vessels found in a single grave and the overall size of the grave. Both of these features are more strongly connected to each other. Other relatively strong connections are those seen between the total number of artifacts and bone beads as well as ceramic vessels.

At XJN fewer strong correlations are seen between the different components. There is a moderately strong connection between number of coffins and grave volume. The artifact type most strongly contributing to the overall artifact numbers is pearl and clam shells, similar to the situation found at TMQC. Grave volume is also moderately connected with the number of jade objects and overall number of artifacts. Interesting as these finds are they do not afford much insight into the difference between the cemeteries.

	ercengtai	grave volume	total ceramics	weapons	vessels	ridding	ornaments	玉	bone beads	pearl/clam	total all	椁+馆
ercengtai	1.0000	0.2501	0.2049	-0.1115	-0.0328	0.1635	-0.0882	0.1634	0.0000	0.0830	0.0809	0.2861
grave volume	0.2501	1.0000	-0.1851	0.0987	0.0327	0.2005	0.2222	0.4729	0.0000	0.3848	0.4047	0.6865
total ceramics	0.2049	-0.1851	1.0000	-0.2518	-0.0181	-0.0984	-0.1862	-0.1066	0.0000	-0.2878	-0.2934	-0.0283
weapons	-0.1115	0.0987	-0.2518	1.0000	0.1213	0.3601	0.3769	-0.1502	0.0000	0.1280	0.1714	0.2086
vessels	-0.0328	0.0327	-0.0181	0.1213	1.0000	0.2822	-0.0434	-0.1039	0.0000	0.3263	0.3238	0.1769
ridding	0.1635	0.2005	-0.0984	0.3601	0.2822	1.0000	0.2240	-0.0316	0.0000	0.3648	0.3989	0.2503
ornaments	-0.0882	0.2222	-0.1862	0.3769	-0.0434	0.2240	1.0000	-0.1119	0.0000	0.2902	0.3608	0.3022
玉	0.1634	0.4729	-0.1066	-0.1502	-0.1039	-0.0316	-0.1119	1.0000	0.0000	0.1782	0.1716	0.1626
bone beads	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000
pearl/clam	0.0830	0.3848	-0.2878	0.1280	0.3263	0.3648	0.2902	0.1782	0.0000	1.0000	0.9945	0.3804
total all	0.0809	0.4047	-0.2934	0.1714	0.3238	0.3989	0.3608	0.1716	0.0000	0.9945	1.0000	0.4093
椁+馆	0.2861	0.6865	-0.0283	0.2086	0.1769	0.2503	0.3022	0.1626	0.0000	0.3804	0.4093	1.0000

Figure 7-8 - Pearson correlation matrix on the Xujianian graveyard

The next stage was to submit them together to a factor analysis test. Here the data from both grave yards were combined and they were submitted to the factor analysis test.

	Factor 1 (26%)	Factor 2 (22%)	Factor 3(11%)	Factor 4(9.4%)
Pearl/clam	**0.99685**	-0.04601	-0.00172	-0.07837
Total goods	**0.98937**	0.03849	0.19302	0.17088
Vessels	0.32922	0.05464	-0.11296	-0.04795
Coffins	0.08724	**0.65560**	0.08740	-0.07159
Ornaments	0.05011	0.58387	-0.10175	0.15583
Weapons	-0.06559	0.52605	-0.02468	0.06938
Grave volume	0.17929	0.50694	-0.10443	-0.08426
Stepped ledge	-0.01522	0.43176	0.19923	-0.16338
Riding	0.22105	0.38911	-0.16203	0.00885
Total ceramics	0.02597	-0.02179	**0.98463**	0.13580
Bone beads	0.01245	0.04638	0.11742	**0.93341**

Table 7-3 - Common factor analysis on YJW and XJN graves with percent of variance explained by each fctor

Factor 1, which explains 26% percent of the variability, finds very strong connections between the amounts of shells and the total amount of artifacts found in a given grave. This is not surprising, but the addition of Zhou style ritual vessels is, even though this is a weak contribution. When this Factor (1), was separated from the other factors, it is not mutually exclusive, and in fact those graves that do score highly on Factor 1 also score highly for Factor 2, as can be seen when the high scoring graves from each graveyard are observed (Table 7-4). Factor 2, explains almost as much of the variation (22%) through a strong connection between the amount of coffins, ornaments and weapons as well as the grave's volume, and to some extent stepped ledges and bronze artifacts associated with riding. This factor can be taken to indicate personal wealth, where no single artifact was more important than any other (though this was clearly not the case at TMQC, where bronze weapons and ornaments related to riding were the most exclusive artifacts types) and prestige was displayed by 'more of everything'. Factor 3 is dominated by ceramic vessels and Factor 4 with bone beads each explaining roughly another 10%. These factors are separated from Factors 1&2 and are found almost exclusively at XJN.

Grave	GY	Factor 1	Factor 2	Factor 3	Factor 4
M42	XJN	0.121265	-0.71433	0.22034	4.321477
M45	XJN	0.403057	0.820886	1.013879	8.030905
M60	XJN	-0.02781	-0.7713	0.149784	4.852397
M85	XJN	-0.39709	0.231599	2.899222	-0.58823
M94	XJN	1.016656	0.577132	3.636963	-0.44713
M95	XJN	-0.39561	0.357046	3.106803	-0.64719
M60	YJW	1.849037	4.359382	-1.01751	0.944144
M63	YJW	1.649896	4.735271	-0.92069	1.053663
M104	YJW	4.981234	2.616353	-0.9859	-0.16367
M128	YJW	2.511451	2.731312	-0.91319	-0.20011
M130	YJW	7.360103	1.873065	-1.02524	-0.45263
M144	YJW	0.615492	2.640152	-0.73252	-0.44903

Table 7-4 - High scoring graves of the XJN & YJW cemeteries

When the graves from both graveyards are plotted by their factor scores very interesting patterns emerge (Figure 7-9): Factors 1 and 2 are dominated by the YJW Zhou site and find an almost linear correlation between the two factors. In other words, large graves with high Factor 1 values have high value 2 Factor scores as well. Note that a number of XJN graves score highly on Factor 2 as well, but most of them are bunched up at a score of 0 on Factor 1. When other factors are observed the XJN graves score highly on factor 3, dominated by ceramic vessels and bone beads the most prevalent artifact type found at the site. Interestingly there is a liner correlation between Factor 3 and Factor 2 at XJN, indicating their connection but not one see for Factors 4&3, which are almost entirely dominated by XJN and not YJW graves. Chronologically, at YJW there seems to be little change over time except for more graves scoring highly for Factor 4 (bone beads) during the Early Western Zhou period a local and seemingly non-Zhou practice. This analysis does find that overall the XJN and YJW cemeteries differed quite a bit. It is interesting to note that those XJN graves that contained Zhou ceramics did not cluster together or score in any different way than the other graves. These graves did not score highly on what where the YJW components, namely Factors 1&2 precluding a situation in my mind of whole sale adoption of Zhou mannerism, but indicate instead to a scenario of sporadic and opportunistic placement of burial goods in the funerary procession. Furthermore, the types of Zhou ceramics found XJN are similar to the handle-less guan, but do not include the *li* found at XJN and, moreover, include types not found at XJN.

Grave	GY	ECT	Grave volume	Sex	Age	Body Placement	Coffins	Zhou ceramic	Total ceramics	Total bronze
M42	XJN	0	4.06	F	30	secondary	0	0	18	0
M45	XJN	1	7.48	M	35;30;7	upright extended	2	1	31	2
M60	XJN	0	3.64	F	35	upright extended	0	0	18	0
M85	XJN	1	7.78	M	40	upright extended	1	1	38	1
M94	XJN	1	12.1	M	40	secondary	1	0	46	4
M95	XJN	1	17.65	M	40	secondary	1	1	40	1
M60	YJW	0	3.96	M	45	upright extended	2	0	0	39
M63	YJW	1	59.93	NA	8	NA	2	0	1	37
M104	YJW	1	19.74	M	45	upright extended	2	0	0	20
M128	YJW	1	53.21	NA	45	NA	2	0	0	17
M130	YJW	1	34.5	F	45	upright extended	2	0	0	12
M144	YJW	1	66.73	NA	NA	NA	2	0	1	13

Grave	GY	Weapons	Riding	Ornaments	Vessels	Jade	Bone beads	Pearl/ clam	Total artifacts
M42	XJN	0	0	0	0	2	53	5	83
M45	XJN	1	0	1	0	1	104	3	145
M60	XJN	0	0	0	0	0	60	0	79
M85	XJN	1	0	0	0	0	0	0	39
M94	XJN	0	0	4	0	2	0	37	126
M95	XJN	1	0	0	0	0	0	0	41
M60	YJW	6	5	30	0	0	0	52	143
M63	YJW	0	5	36	0	5	0	46	135
M104	YJW	2	14	0	5	0	0	140	300
M128	YJW	2	8	6	1	0	0	74	166
M130	YJW	0	2	10	0	3	0	205	425
M144	YJW	4	1	7	1	0	0	24	62

Table 7-5 - High scoring graves of the XJN & YJW cemeteries

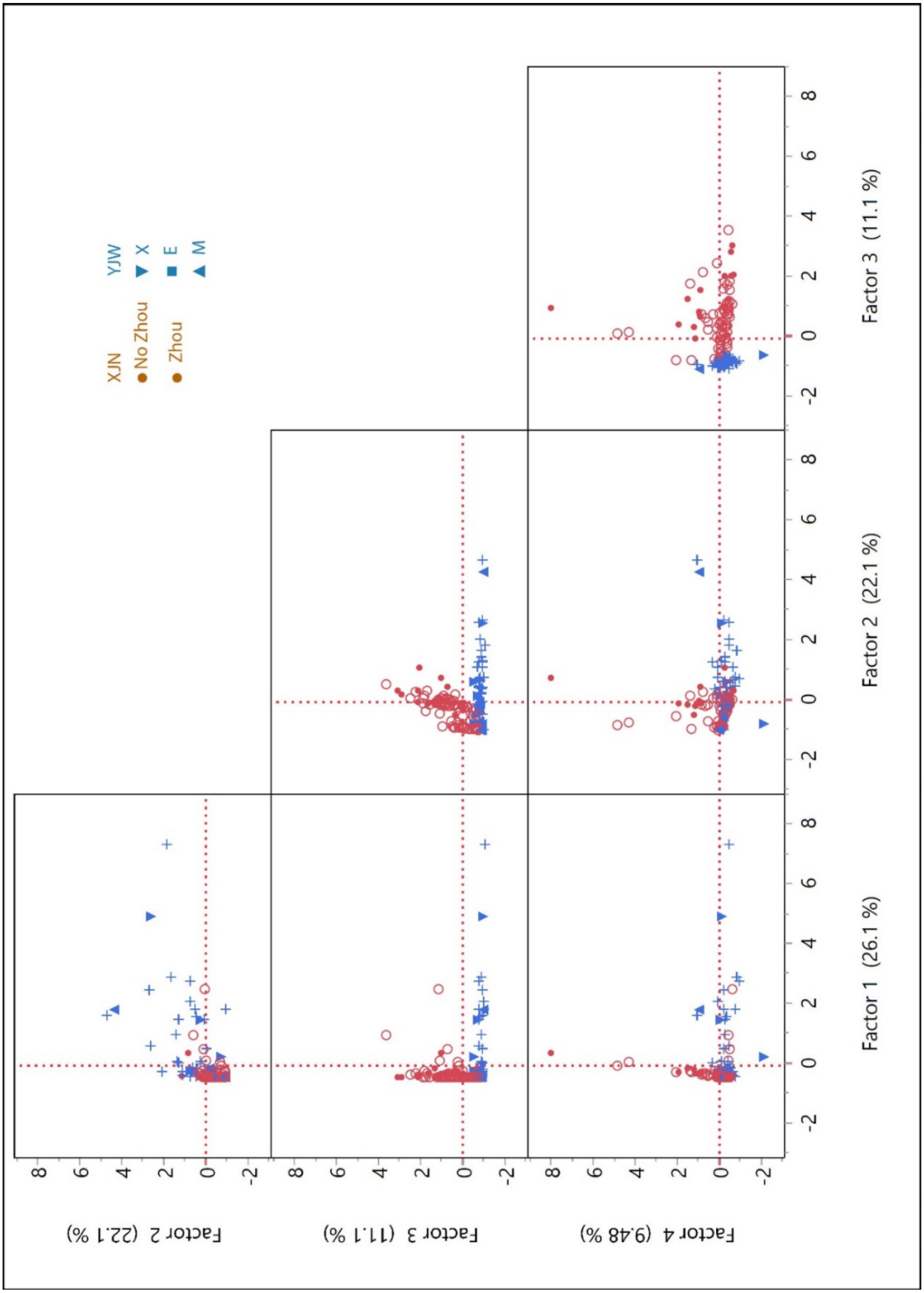


Figure 7-9 - Score plot for YJW & XJN graves against the 4 factors

The Jiuzhan Cemetery and its Relationship to Xujianian and Yujiawan

The Jiuzhan site has already been presented in the previous chapter. The cemetery, where most of the excavation efforts since the 1980s have been concentrated, revealed 80 graves in total. While the cemetery spanned several hundreds of years (1400-700 BCE) a somewhat uniform burial style can be observed where 75 graves were oriented along a north/south axis and only five along east/west. In addition, all except three graves were single burials, most all graves contained burial coffins and all were rectangular shallow graves. The *ercengtai* stepped ledge or niches, cut in the shorter side of the grave where the head would be and vessels were placed in it (over 90% of all graves had both). Only three graves contained sacrificed victims (Wang and Shui 1997:374-6). Variation and possible social stratification can be observed at the site, manifested most clearly in the amount and quality of graves goods such as bronzes, ceramics and bone artifacts accompanying the deceased.

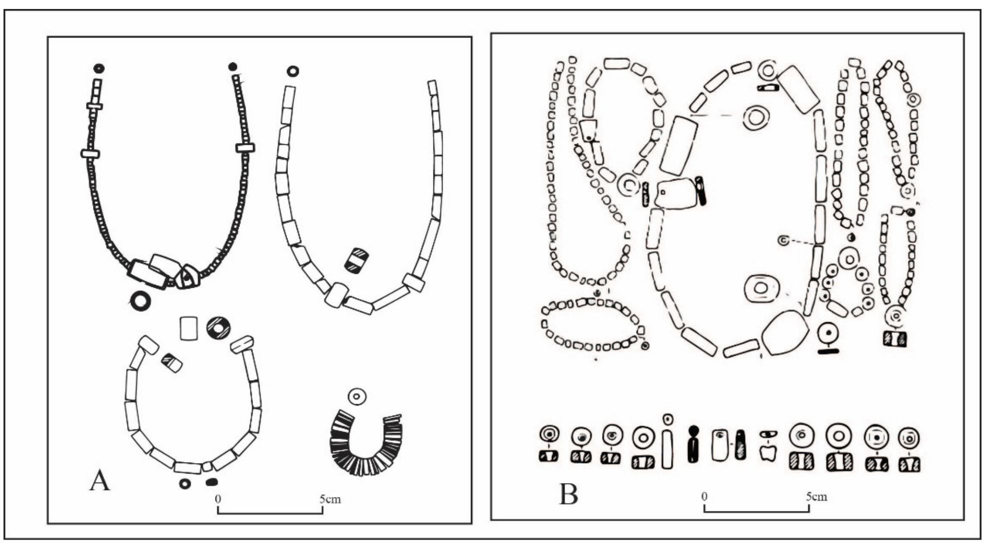


Figure 7-10 - Bone beads and necklaces from A) XJN (after Kaogu 2006: 108) B) Jiuzhan (after Wang and Shui 1997: 443)

The vast majority of grave goods were ceramics, predominately of Siwa style (including *ma'an* jars, *li* cooking vessels, *hu, dou* and *guan*), but three Western Zhou vessels were found as well (Wang and Shui 1997: 376). Over 50 bronze artifacts were unearthed, of them four are weapons (two of which are Zhou style) and the rest ornaments and bracelets (Wang and Shui 1997: 437-440).

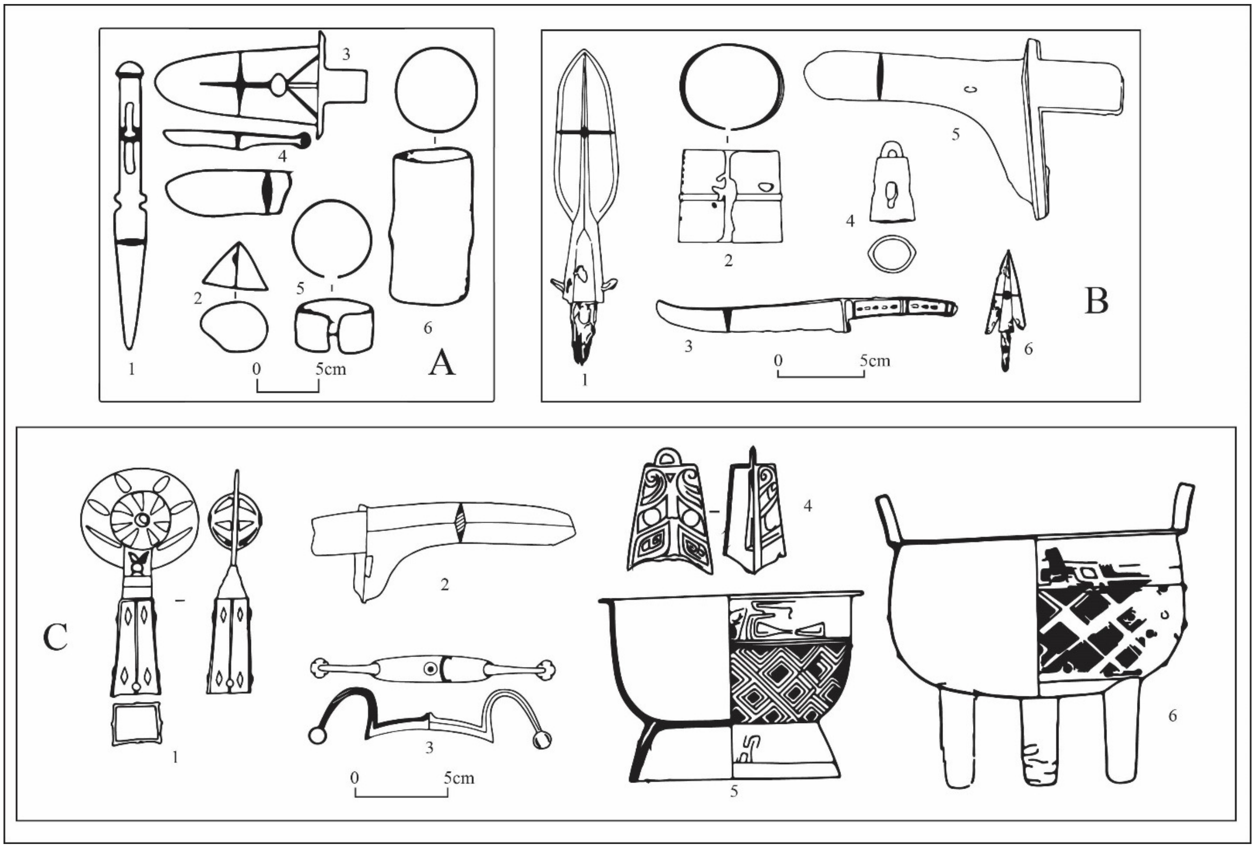


Figure 7-11 - Bronze artifacts found at A) Jiuzhan (1- sword 2- ge axe 3- northern style dagger 4- bell 5-6 braceltes after Wang and Shui 1997: 437) B) Xujianian (1- Mao spear 2- bracelt 3- northern style dagger 4- bell 5- ge axe 6- arrow head after Zhongguo 2006: 92-95) C) Yujiawan (1 - cahriot bell 2- ge axe 3- bow (弓) shaped artifact 4- bell 5- gui 6 - ding (after Gansu 2009: 16;77;82;85).

The *pao* ornaments are taken by the excavators to be ornaments sewn to clothing (Wang and Shui 1997: 338-340) and adhere to Cao's (2009) typology. No bronze artifacts associated with riding or ritual vessels were found. A number of stone artifacts were found as well as well as shell and bead necklaces. Stone tools are mostly stone hand axes or adzes and spindle whorls.

Coffins			**Niche**			**Stepped ledge**		**Number of interred**			**Sacrifices**		**Orientation**	
0	1	2	yes	no	NA	yes	No	1	2	NA	yes	No	North-south	Other
7	71	2	61	15	4	72	8	70	2	8	3	77	75	5

Grave volume			**Total ceramics**			**Total bronze**			**Weapons**		**Vessels**		**Ridding**		**Ornaments**		
Std Err	**Mean**	**Max**	**Mean**	**Std Err**	**Max**	**Mean**	**Std Err**	**Max**	**Mean**	**Max**	**Mean**	**Max**	**Mean**	**Max**	**Mean**	**Std Err**	**Max**
0.43	4.32	19.31	8.07	0.74	35	0.69	0.19	7	0.06	1	0	0	0	0	0.63	0.18	7

Stone tool			**Jade**			**Bone beads**			**Shell/clam**			**Total goods**		
Std Err	**Mean**	**Max**	**Std Err**	**Mean**	**Max**	**Std Err**	**Mean**	**Max**	**Std Err**	**Mean**	**Max**	**Std Err**	**Mean**	**Max**
0.06	0.35	1	0.03	0.07	1	0.73	1.80	28	1.11	1.58	77	1.67	12.5	95

Table 7-6 - Basic artifact and grave properties by period for the Jiuzhan graveyard

A number of indicative vessels have been used to differentiate four phases among the Jiuzhan burials (and are somewhat latter than those found with the aid of C14 dates from the residential sites). The four periods at this site are: 1) the turn of the Pre-Zhou to Early Zhou 2) Late Western Zhou 3) Springs and Autumns 4) Warring States (Wang and Shui 1997: 338-339). Yet other than a small amount of graves, very few could be dated with greater certainty[61]. The five graves distinctly oriented east/west, were not considered part of the Siwa culture, they each cut into earlier period graves and might be considered Qin style graves (Wang and Shui 1997: 445). Of the remaining graves less than 10 could be secularly dated (Wang and Shui 1997: 445-446). These are M82=Western Zhou late period. M72=Middle Western Zhou. M17 had a Yinxu III-IV style *li* and is dated to Pre-Zhou. M71 had a late Yinxu *guan* and is also dated to Pre-Zhou. M55 has an early Western Zhou guan, M66 has a Middle western Zhou pan and M71 a warring states grave on the basis of its bronze artifacts.

Despite these issues, the graveyard in its entirety was submitted to multivariate analysis in order to observe its site-specific differences with other sites. A Pearson correlation matrix (Figure 7-12) finds only moderate connections between the different burials components, and these connections are mostly related to the relative strength between each category and the total amount of artifacts found, the strongest being between total clams and pearls as well as ceramics and ornaments.

	grave volume	total ceramics	weapons	玉	bone beads	pearl/clam	total toal	棺+椁	ornaments 2
grave volume	1.0000	0.3193	0.1664	0.0665	-0.1112	-0.0047	0.1221	0.4772	0.1382
total ceramics	0.3193	1.0000	0.0175	-0.0241	0.0445	0.1122	0.5838	0.2207	0.2515
weapons	0.1664	0.0175	1.0000	0.1510	0.3485	-0.0313	0.1902	0.1302	0.3921
玉	0.0665	-0.0241	0.1510	1.0000	0.1278	0.3696	0.3158	0.1616	0.1185
bone beads	-0.1112	0.0445	0.3485	0.1278	1.0000	-0.0265	0.4457	0.0112	0.1956
pearl/clam	-0.0047	0.1122	-0.0313	0.3696	-0.0265	1.0000	0.7344	0.1021	0.3300
total toal	0.1221	0.5838	0.1902	0.3158	0.4457	0.7344	1.0000	0.2011	0.5250
棺+椁	0.4772	0.2207	0.1302	0.1616	0.0112	0.1021	0.2011	1.0000	0.2071
ornaments 2	0.1382	0.2515	0.3921	0.1185	0.1956	0.3300	0.5250	0.2071	1.0000

Figure 7-12 - Pearson correlation matrix on Jiuzhan graveyard

[61] An MA thesis by Zhou (2006) has proposed an internal chronology, but discussions with Li Shuicheng have dissuaded me from accepting its proposals. The author's methodology was to try and find differences via published ceramic data, yet as has been discussed in chapter 6, internal stylistic changes among Siwa ceramics has been unrevealing and does not present clear patterns as of yet.

When combined with the cemeteries of XJN and YJW Factor analysis provided almost identical results with only the amounts of variance explained by each factor slightly differently.

	Factor 1(27%)	Factor 2 (21%)	Factor 3(11%)	Factor 4(8.8%)
Pearl/clam	**0.99745**	-0.08243	-0.01661	-0.11619
Total artifacts	**0.97049**	0.03710	0.15730	0.14337
Vessels	0.32051	0.07954	-0.11387	-0.02513
Jade	0.28853	0.15727	-0.01387	0.12192
Weapons	-0.10717	0.57326	0.01359	0.02969
Ornaments	0.03677	0.56251	-0.04803	0.07243
Coffins	0.09714	0.52871	0.12995	-0.10190
Grave volume	0.16455	0.49820	-0.05746	-0.09911
Riding 2	0.19395	0.41337	-0.13885	-0.01128
Ceramics	0.03202	0.03261	**0.99756**	0.03808
Bone beads	0.02640	-0.03163	0.03241	**0.88487**

Table 7-7 - Factor analysis for the XJN, YJW and JZ cemeteries

When the individual graves are loaded by their factor score a clear trend can be seen where the Siwa graves of JZ and XJN cluster together while those of YJW cluster among themselves. Several high scoring graves from both JZ and XJN graveyards score highly on Factor 1, which is dominated by total artifacts placed in graves and shell beads, and to a lesser extent ritual bronze vessels). Graves from XJN, scored higher on Factor 3, dominated by ceramic vessels as well as Factor 4, or the number of bone ornaments. A number of XJN graves also scored somewhat highly on Factor 2, as has been observed above, whereas no JZ graves scored highly on this factor. Even while it would appear that Siwa communities sought to incorporate, to a limited extent, Zhou or "Eastern" materials into their repertoire, this did not seem to be the case for the YJW cemetery. Interestingly these overall trends both predate and postdate the Western Zhou period leading me to conclude that interaction exited among communities during this period, but no assimilation or significantly different burial practice were instigated by the Zhou contact: At Jiuzhan there is relatively little difference between periods (no cluster was seen or any that pattern could be correlated a those few graves that were dated) and only three Zhou ceramics were found in the cemetery even though they existed at the residential part of the site. At XJN those burials that did contain Western Zhou ceramics did not differ in other respect from the other cemetery occupants.

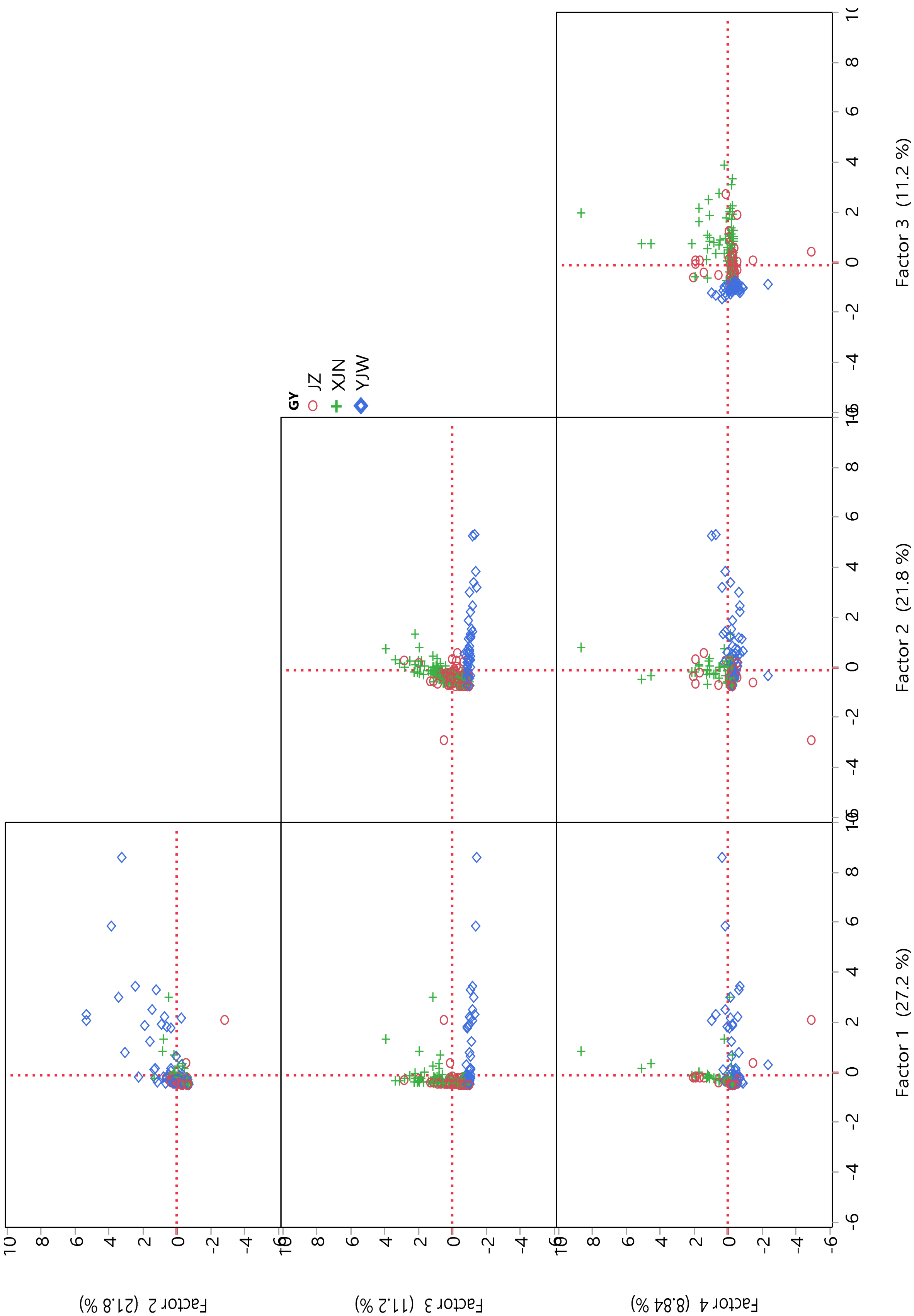


Figure 7-13 - Loading plot for YJW, XJN and JZ graves by factor analysis score

Comparison of Gansu Cemeteries with the TMQC Graveyard

Finally, the date from the four graveyards were combined and submitted to a common factor analysis (results in Table 7-8). Here the main connections seen above are maintained, where bronze artifacts, grave volume, and, to some extent, jade artifacts are connected in Factor 1, whereas pearl and clam items along with the total number of artifacts are grouped together in Factor 2. The number of ceramic vessels and bone beads comprise Factor 3.

Component	**Factor 1 (33.5%)**	**Factor 2 (26.8)**	**Factor 3 (6.11)**
Riding	**0.88234**	0.03710	0.06161
Vessels	**0.72864**	0.22181	-0.11774
Grave volume	0.69982	0.04815	-0.09699
Weapons	0.67400	-0.07710	-0.09404
Ornaments	0.61190	-0.09936	0.18590
Jade	0.39364	0.22266	-0.03417
Pearl/clam	-0.13372	**0.99876**	0.02024
Total artifacts	0.28188	**0.84819**	0.17502
Coffins	0.15465	0.17543	-0.22578
Ceramics	0.00211	-0.00880	0.52844
Bone beads	0.03161	0.10055	0.51138

Table 7-8 - Common factor analysis results on JZ, XJN, YJW and TMQC

When the individual graves are plotted by factor score, their clustering by graveyard is not as readily seen (Figure 7-14). On average the TMQC and YJW graves score highly on the first two factors and the Siwa graves on Factor 3. The YJW graves also scored higher on Factor 3 than did the TMQC graveyard tombs. This is not to say that there is a preference for bone beads at YJW, indeed none were found at the graveyard, but that the other components that make up this factor did, namely ceramic vessels. When the YJW and TMQC graveyard are submitted to a common factor analysis, the internal differences between these two communities can be further observed. Here, as with the sites of Beiyao and Liulihe discussed in Jaffe (2011) and briefly in chapter 3, the common categories were observed and factor analysis run on the graveyard as whole.

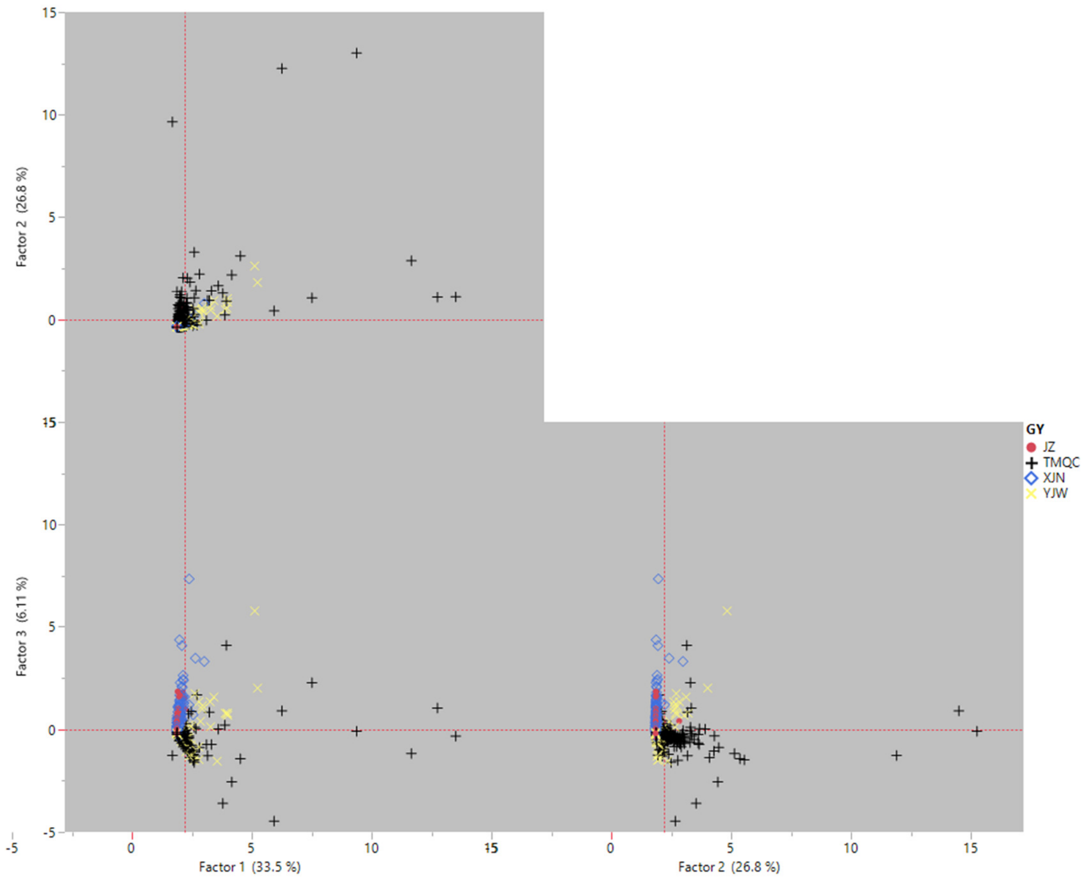


Figure 7-14 - Score polot for JZ, YJW, XJN and TMQC cemteries fator analysis results

The result of this factor analysis reveals a different relationship among variables than that observed before. Factor 1 finds a very strong connection between bronze riding and weapon artifacts as well as a strong connection with bronze vessels, ornaments and overall grave volume. Factor 2 finds the very strong connection between shells and the overall number of artifacts found in a grave, while Factor 3 finds strong connection between grave volume the number of coffins and jade objects

	Factor 1 33%	Factor 2 27%	Factor 3 19%
Riding	**0.933685**	0.192005	-0.191189
Weapons	**0.737300**	-0.059816	0.009750
Vessels	0.696267	0.195390	0.206297
Ornaments	0.509590	0.077880	0.065861
Pearl/clam	-0.046622	**0.988338**	0.032787
Total artifacts	0.285806	**0.859685**	0.036632
Grave volume	0.551280	-0.121171	0.612363
Coffins	0.083541	0.048362	0.480426
Jade	0.261492	0.097472	0.433769
Total ceramics	-0.148674	0.077569	0.272660

Table 7-9 - Factor analysis for the YJW and TMQC cemeteries and percent of variance explained by each factor

When the individual graves are loaded onto a scoring matrix an interesting pattern emerges. The vast majority of both YJW and XJN graves do score highly on Factor 1, which as we saw at TMQC was a scenario taken to denote the exclusion of these artifacts and mortuary groupings for a limited group within the society. In contrast, all graves seem to score more highly on Factors 2 and 3 (comprised of clams, shells, jade, grave volume and total number of coffins coffins) suggesting that these elements were accessible to the majority of individuals of both societies. That being said, while at YJW the wealthier and higher class individuals were not separated from the rest of their society, as can be seen by the overall grouping and linear trajectory and relationships between factors, at TMQC, the higher elites, i.e., those allowed to be buried with Factor 1 goods, were markedly separated from the rest of their community members. This is noted by a single cluster for YJW burials and up to three for TMQC.

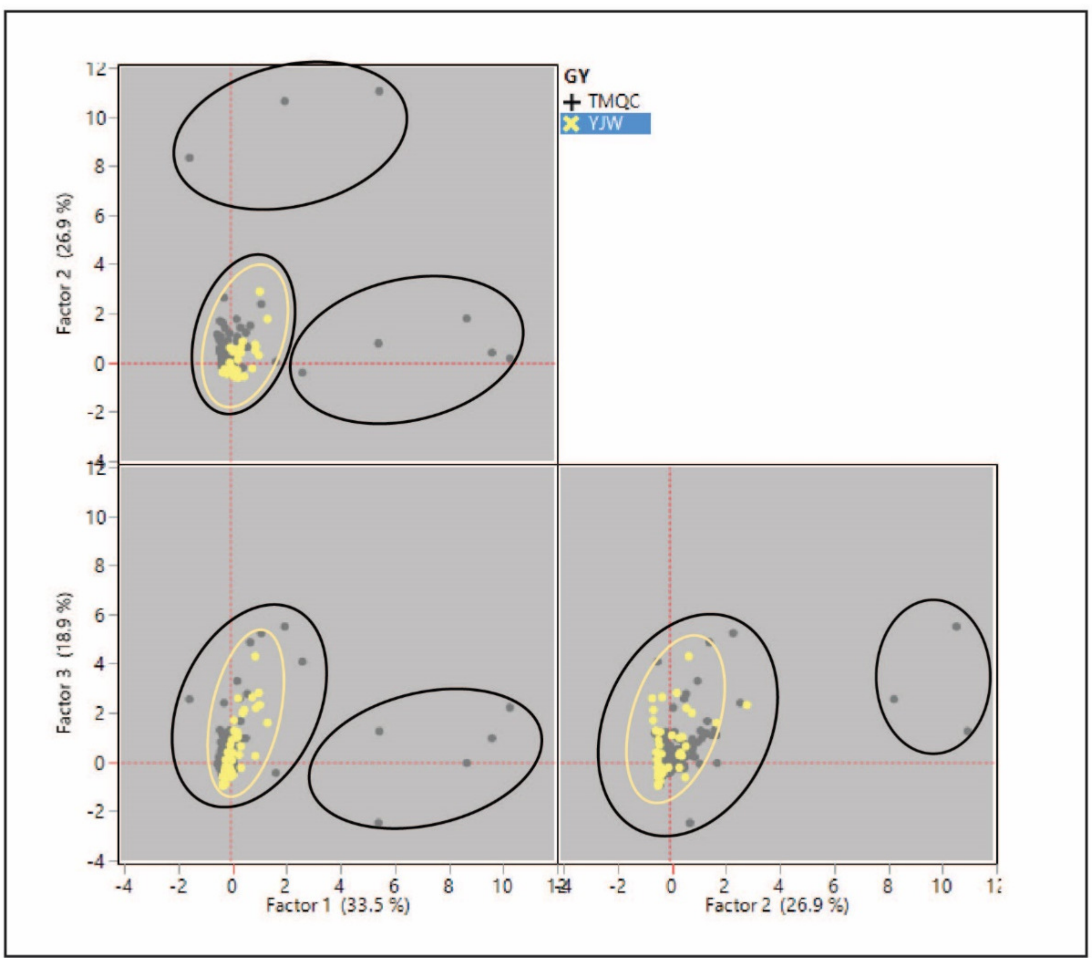


Figure 7-15 – Loading plot for YJW and TMQC graveyard on common factor analysis score

Summary of Findings

The analysis conducted in this chapter has been geared towards revealing community specific social practices, mortuary here, as a way to observe the nature of connections between the Zhou and their neighbors to the West, archaeologically known as the Siwa culture. Rather than accept a framework predicated on unilateral Zhou influences and power, or a Siwa culture that was underdeveloped and thus accommodating and submissive, mortuary customs were observed first on a community level and only where cemeteries compared.

At XJN the finding of Zhou style ceramic vessels and bronze items were taken as a Zhou influence along with the practice of constructing an *ercengtai* for the placement of burial goods. The latter can hardly be the influence of the Zhou contact alone as it has been observed at other Siwa graveyards – even those predating this period goods, as was found at Zhanqi and Lanqiao. In fact the Siwa burial custom can be best characterized by a variety of practices that differed on a site specific and community basis. Zhou style ceramics found at these sites too reflect a more complex incorporation of foreign goods and influences, as other Zhou graveyards, certainly the neighboring community of YJW, did not favor ceramics at all and left them for the lower classes. In addition, the fact that those XJN graves that sported these artifacts did not differ from the larger practices at the graveyard as a whole, should be seen to indicate a no-less Siwa (or XJN local-specific) burials style of these graves.

The XJN and YJW graveyard did differ in respect to preference for ceramics and bone beads (XJN) and bronze items, grave volume along with clam and shell beads (YJW). This is not to say that individuals at XJN did not appreciate larger graves, bronze ornaments or weapons. In fact those that did, simply added them to the larger shared propensity for greater numbers of ceramics and necklaces of bone beads, perhaps as they could afford both, but where not offended by the prospect of including foreign material. At YJW, in contrast, members of the community seemed uninterested in including local Siwa materials to their assemblages prior to or after the Zhou period (something that didn't seem to bother the Zhou at many other sites who incorporated Siwa, Liujia and Xindian materials discussed in chapter 5, and seen at Liulihe and other sites in Shandong and see chapter 10).

JZ mortuary practices in contrast showed that community members refrained almost entirely from including Zhou or Shang style ceramics in their repertoire and, like the YJW community, did not seem to have much change in this respect, or other customs, over time either. JZ inhabitants displayed mortuary practices that were similar in other respects to the XJN sites with a preference for large numbers of ceramics and ornaments made of bone, though they differed in respect to grave structure and an overall more uniform simple rectangular grave with a single individual per-grave interment pattern. In light of these finds, it is quite possible that these elements reflect a situation where a greater internal social differentiation existed among the XJN society in comparison the JZ community. Another possibility is that even if differences existed, they were not displayed in the burial practices at JZ (perhaps as a way to mitigate social tensions spurring from wealth inequality of the mortuary ritual).

When the three cemeteries are compared to TMQC, the YJW graveyard clearly clustered with the former and the XJN and JZ cemeteries clustered together. Though in contrast to TMQC the YJW community members tended to favor all artifacts (other than ceramic vessels) as a way to represent wealth, as the total number of artifacts found in a grave and not a specific type of artifact, was the norm (at TMQC these were bronze weapons and gear associated with charioting and horse riding). In addition, the elites of the YJW cemetery were not buried in a separate physical location as was observed for the TMQC locus III, reserved for the Jin lords.

These finds should spur us to a renewed analysis of the state of interaction between the Central Plains societies and their neighbors to the West. Rather than a dominating culture, it would appear that goods, ideas and people moved between regions and were incorporated differently in various places. The

Zhou too, if those members of the XJN community even saw themselves as such, differed quite a bit from their contemporaries to the East, a situation not all that different from their contemporaries existing in the other parts of the Zhou world

Chapter 8 - The Anthropology and Archaeology of Foodways

Introduction

In the introduction to the second edition of their popular volume *Food and Culture*, the editors, Carole Counihan and Penny Van Esterik (2008), begin by stating their amazement at how food studies had mushroomed since they wrote the first edition in 1997. In fact the editors found it important to put together the original volume because of what they viewed as a pronounced disregard of food studies in academic circles at that time. They noted that since the late 90s food studies had gone to permeate the entire academic sphere, from film studies and architecture, to the history and future of food and even post-Freudian analysis of literary orality studies. Two reasons they offer for this florescence are 1) that feminism and gender studies have legitimized the study of a what was traditionally viewed as a female activity, and 2) the link between food and socio-political statements (such as fair trade awareness, organic produce and food health and safety) became a major issue in everyday life.

The number of popular books discussing how a certain food or ingredient changed the world (these include beans, coffee, sugar, chocolate chickens, cod, salt and bananas – to name just few) can be seen to directly reflect the public interest generated towards food in recent years. Yet to 'rediscover' the importance of food and its place in human sociality is tantamount to rediscovering the importance of sex. Indeed back in 1910 Georg Simmel had already written a newspaper article noting the centrality and importance of food in a manner that would seem almost self-evident to readers today: Simmel observed that eating, a most personal and individualistic experience (you can read what I read, but not eat what I eat), is transformed into a collective social activity through cultural norms, which in turn shape habits of individual consumption into coded social events and a need to gather together in order to eat (in Symons 1994)

Indeed, for human beings food is more than simply nutrition. They feed the cat, put the horses out to pasture and fodder the barn animals; but people eat.

This chapter begins by looking at the social role food plays in the life of communities and the individuals that make them. I start by discussing the importance of food in anthropological literature as well as the archaeological scholarship on culture contact and social identity. I then provide a short overview of food studies in Ancient China and the relative small amount of insights it affords into the archaeology of the Western Zhou period.

I then provide a brief explanation of the methods pursued in the analysis component of this chapter and how archaeologists have looked at ceramic assemblages to investigate communities and differences in foodways between them. After providing basic statistical information on the Tianma Qucun (TMQC) site data (overview of site in previous chapters), In chapter 9 I present the findings of the usewear analysis I conducted on the Western Zhou *li* 鬲 cooking vessels. Following this study the results of the preliminary technical analysis conducted on the TMQC assemblage are presented along with an attempt to gain a better understanding of their differences in terms of their relationships to cooking strategies. I draw great inspiration from the works of James Skibo (1992, 2013), who distinguishes between intended and actual function of ceramic vessels and Isabella Druc (2015), who uses a low resolution digital microscope to gauge the basic material components of ceramic vessels. This analysis provides the baseline for the comparison performed on the peripheral sites in Shandong province pursued in chapters 11&12.

Part 1 - The Anthropology of Food and Community Identity

The study of food and its sociability has been an important research topic in anthropology from its very beginnings. Both Radcliffe-Brown (1922) and Malinowski (1922) emphasized the importance of food as a means of regulating social systems. Evans-Pritchard's (1940) study of the Nuer found a community of people whose social ties were contracted around the acquisition and consumption of food. Margaret Mead (1943) highlighted the importance of understanding the cultural context of foodways in order to bring about lasting change in diet and eating habits. Levi-Strauss (1966) found food and cuisine, like language, to be fundamental to the shaping of social structure. His culinary triangle provided a universal framework of social analysis to gauge how food was being moved from different states – raw to cooked and finally rotten – through the manipulation and combination of ingredients and specific food preparation practices (such as roasting, frying, boiling etc…). Edmund Leach (1976) refined this approach and introduced the concept of social specific eating habits where societies choose what to eat in relation to the social distance between them and the animal being eaten: in Western society, for example, both dogs and lions are not consumed. The first is too close and the second too distant to human sociality. Instead, we eat animals that are in-between (i.e. cows, pigs and chickens).

Pushback against the hegemonic structural arguments of Levi-Strauss and his followers came from environmental functionalists who tended to down play the social role of food preference and practices. Their critiques were championed by Marvin Harris (1985) who famously argued that cultural taboos were the result of environmental adaptations for survival and not cultural specific developments. Yet even while these approaches could explain some aspect of the variability found among food preferences worldwide (e.g., few Inuit recipes call for Emo as their main ingredient), they cannot explain the richness, creativity and nuance of food and cuisine. Indeed Marshal Sahlins (1976) presented a staunch critique of Harris and his approach, arguing that food was inherently cultural, noting that the vast majority of taboos or food norms are quite irrational if taken out of cultural context.

Mintz and Bois (2002: 100) argue that the publication of Jack Goody's book *Cooking, Cuisine, and Class: A Study in Comparative Sociology* in 1982 marked a turning point in the way anthropologists and other scholars approached the study of food. Goody's (1982) work continued to focus on the connection between food and economic as well as political power, but was also able to highlight the importance of studying food throughout its entire social cycle, from production, processing, consumption and discard. With it, the importance of the interplay between social practice of food ways and the people who follow them, returned to be a primary research schema. This study not only disregarded most of the functional arguments, but at the same time also emphasized just how many social and cultural aspects food studies could shed light on.

A growing realization among scholars became to view food as being social, precisely because it is so closely related to identity formation. Indeed food shapes us as both independent individuals and as group members (Bell and Valentine 1997; Caplan 1997: 9–14): As individuals, the action of taking food from the physical world into our bodies creates a self that can be placed in, and connected to, reality (Fischler 1988). Beyond existential reassurance, food and the specific ingredients and dishes we consume not only present to the world who we are as individuals, but, in social contexts, force others to encounter and accept us for who we are (Meiselman and MacFie 1996). Food is also commonly used to affirm social boundaries as well. Mary Douglas' (1972) work showed that the ways in which different meals and foods are shared can be related to different levels of intimacy: drinking is for acquaintances and meals are for close friends and family. These actions have their own thresholds and boundaries, as eating cold foods, like sandwiches, is not the same as sharing a hot meal with someone. Bourdieu (1986) argued that food tastes – dining, etiquette and dinnerware – were all expressions of class distinctions in French society. Food not only nourished the elites, but the way in which they ate it actively helped preserve their social status (and had the added benefit of barring the lower classes from moving up the social ladder). Banquets and feasts, on the other hand, can offer unequalled opportunities for class blurring that allows faster social climbing as James Watson (1987) found in his study of mortuary ceremonies in Chinese villages.

Anderson (2005: 125) highlights that this seemingly inherent tension between the two main social aspects of eating: that of *solidarity* (sharing and participating) and that of *separation* (a marker of social class, ethnicity or as being part of a privileged group) is also the aspect of food identity that allows a person to establish his or her individuality. Hauck-Lawson (1998) coining the term food voice, similarly emphasized the power that food has in allowing individuals to display and communicate elements of one's identity and concerns. Food is a symbolic device to quickly present stories of family, migrations, traditions and personal experiences.

Indeed, food not only solidifies group membership as well as sets groups apart from each other (Mintz and Bois 2002: 109). Groups defined by foodways can be contained in anything as small as a community or village (Douglas 1984; Reagon 1986) to as large as regions (Balaam and Carey 1981) and as socially broad as ethnicities (Satia-Abouta et al. 2002) or nationalities (e.g., (Appadurai 1988). Single ingredients can be linked to group identities (Ohnuki-Tierney 1993) as can certain ways of making specific dishes or even whole cuisines (Chang 1973). Food and foodways are an important self-defining marker for the establishment of group identity markers, especially in the role they play for those trying to define groups and peoples from 'the outside' (often times without much agreement between them, Anderson 2005: 199-200).

As with all forms of social identity it is important to remember that food and foodways are not pristine markers of social identity, but instead as Appadurai (1981: 494) finds: "A plastic kind of collective representation". That said, as food is so important for the construction of group identity frameworks, for both individuals to act among groups and as creators of boundaries between them, they hold the potential of being of great impact and importance in cases of culture contact. Not surprisingly a large number of studies have focused on the outcomes and rates of modifications of foodways among migrant families. Developments and changes of foodways among migrants are related to both availability of familiar ingredients for first generation immigrants, as well as their cost, which can result in either their quick abandonment or the construction of new dishes where the preparation of new local foods are made in the migrant's own traditional ways (Satia et al. 2002). A number of ethnographic studies find that oftentimes breakfast will be the first meal to undergo changes among immigrant families, as it is perhaps the least symbolical significant meals among familial daily cycles (Caplan 1997: 13)[62]. Anderson and Wang (1987) find that for Chinese immigrants coming to the US the first things to be added to their migrant cuisine are local snacks and the last to go are feast foods associated with Chinese holidays. Lentz (1999) argues that throughout history most changes in food habits can be attributed to economic pressures and not taste, and only rarely has food changed to favor foods that provide poorer nutrition. As an overarching general rule of thumb this might be the case, yet Crown (2000: 2228–232) presents a wide range of possible reasons and ways foodways change over time: New foods can be added to diets if they are considered prestigious and subsequently new tools will be developed to process them. At other times both ingredient and cooking technologies are added simply as the result of intrigue, often times during cases of colonization or the opening of new trade avenues. Diets may be altered extensively during food shortages as well and technological aspects of food procurement and preparation might change, to better suit the level of group mobility by restricting, for example, the types of cookware carried.

[62] Incorporation of foreign foods stuff can be preserved in local names as well. Tomatoes in China were originally called foreign eggplant 番茄 a native plant and only latter *xihongshi* 西红柿 translated to red western persimmon foreign (at times also translated as barbarian eggplant to make a point of them being degraded as well Anderson 2005: 120).

What is common to all these changes is not only the importance of the food ingredients and the ways dishes are prepared from them, but also the groups they are eaten by and shared with. In fact Anderson (2005: 165-169) notes that changes in foodways are only rarely products of economic constraints; they instead mostly revolve around social needs and desires. Indeed change and adaptation of food may be more fundamentally an evolutionary adaptive social construct. Kittler et al (2011: 2) view foodways to be a useful social mechanism with which to mitigate the tensions caused by the omnivore paradox: As omnivores, humans can digest a variety of plants and animals – a trait that has enabled us as species to colonize the entire planet. Yet, as humans require more than a single food stuff to survive, human groups expanding into new territories must experiment with the incorporation of new foods into their diet. The problem humanity faces as its continues to move around the planet is that as a species we must find and keep food that is required to sustain physiological needs, while at the same time avoid foods that could harm our bodies. Psychologically, this creates two contradicting impulses: the appeal of new foods and a strong preference for familiar foods. Foodways (to the rescue) then become social rules to reduce the anxiety associated with these desires and needs, by providing guidelines for the incorporation of new foods in light of repetition and conservatism. These guidelines, while socially constructed, can easily be selected for and continue to create a strong attachment to the cuisines and, in turn, the communities that created them. This evolutionary proclivity explains our biological imperative for the sociality of food found among all cultures. yet why foodways change and how, is the question anthropologists must answer in a socially specific manner.

Archaeology of Food and Culture Contact

After a long period of neglect, in the 1960s and 70s archaeologists returned to studying food. These studies focused on developing models that looked at subsistence and its changes through time, as a technological adaptation to environmental changes (Bird and O'Connell 2006; Cohen 1977; Gumerman 1997; Harris and Ross 1987). This emphasis remained in archaeological circles for quite some time and in fact even at the turn of the 21st century Parker Pearson (2003: 1–3) lamented what he saw as a continued absence of archaeological studies that looked at the connections between foodways and social contexts. The past decade, however, has seen the similar explosion of food studies many other disciplines have enjoyed, and with it the appreciation of its potential to understanding social constructs (Klarich 2010; Mee and Renard 2007; Twiss 2007, 2012). Studies now investigate food in order to shed light on issues of political economy (e.g., Bray 2003; Dietler and Hayden 2001); class differentiation, status and prestige (e.g., Cuéllar 2013; Curet and Pestle 2010; van der Veen 2003); gender relations (e.g., Hastorf 1991: 199; Hendon 1996) as well as ritual, religion and ideology (e.g., Carrasco 2010; Nicholas and Politis 2002).

The importance of food for understanding archaeological communities is particularly salient. Following the observations made by social anthropologists that rejected essentialist notions of communities (after Cohen (1985), archaeologists have begun to think of communities not as natural occurrences in time and space, but as imagined constructs instead. Imagined communities are no less real to their members, but instead of being defined by a territory they hold or the proximity of the group member domiciles, they are seen to be a collection of people who maintain shared ways of doing things (Kolb and Snead 1997; Yaeger and Canuto 2000). Unsurprisingly, the ways in which foods are prepared, the ingredients used and rules of commensality (i.e. who eats with who, what and when), are crucial to this understanding of communities. Indeed, as Weismantel (1988) argues, the ways in which meals are prepared and consumed create and maintain household relations. Similarly how food is exchanged and shared between households, in turn, creates the social structure of a community.

While most archaeological studies of food in social contexts and commensal practices have focused on feasting and elite strategies for the accruement of prestige, social capital and power (Bray 2003; Dietler and Hayden 2001; Mills 2004), there are of course many different ways humans eat communally and reasons why they choose to do so (Kerner et al. 2015). Indeed Potter and Ortman (2004) find the importance of everyday food practices to be decoupled from Maya political efforts and elite interests. Instead, they are a salient action for the integration and definition of individuals into a community. Jones (1999) traces changes in the location of food processing and eating sites and their relationship to larger community spatial organizational shifts in order to uncover larger changes during the Neolithic period in Scotland. Samuel (1999) argues that worker villages in Amarna Egypt where comprised, originally, of transplanted communities that were slowly fragmented into households overtime, as they resorted to independent household-specific bread manufacturing and eating practices.

Focusing on community-specific culinary preferences also provides an outlet from larger overarching definitions that collapse regional and sub-regional variation. Ian Kuijt (2001), dissatisfied with the simple broad cultural categorization of PPNA and PPNB sites employed by prehistoric archaeologists, argues that a complex arena of communities existed throughout the Levantine Neolithic, each with its own unique way of storing, preparing, sharing and eating food. Joyce and Henderson (2007) trace the origins and development of foodways at Puerto Escondido, Honduras over a period of 800 years to similarly show community specific and unique practices observed at this site when compared to villages found in its proximity. Monica Smith (2006) explored the range of regional and site level cooking methods and consumption practices of rice, the preferred staple crop of Southeast Asia. She too finds an intricate array of community specific practices amongst a shared regional preference for a single ingredient.

As an important social factor for the study of communities, archaeologists have also embraced food (and with it cuisine and taste) as holding great potential for the study of past instances of culture contact, migration and colonialism (Crabtree 1990; Daróczi-Szabó, 2004; Dietler 2007; Franklin 2001; Smith 2006; and many contributions in Graff and Rodríguez-Alegría 2012; Parker Pearson 2003; Twiss

2007). As noted above, the identification of specific ingredients or foodways should not be seen as a superior indicator for the definitive delineation of ethnic groups either. Bunimovitz and Lederman (2009) argue that pork – seen by most scholars as a Philistine food – should not be absolutely used to ascribe ethnic identity. In fact at the Bet-Shemesh site cooking styles and consumption habits display a unique blend that draws upon Canaanite and Israelite food ways as well. Indeed, most studies that incorporate culinary practices and food preferences with culture contact studies develop a multifaceted approach: In discussing the fourth millennium Uruk expansion and colonization process, Stein (2012) conducted an in-depth study of lithic, ceramic and faunal assemblages of the colony of the Hacinebi. Butchering, understood as a male task, was found to have varied between households as exemplified in both the tools that were used and the way it was performed. While most all households contained cooking ware of local style, kitchens differed mostly in respect to the serving dishes they contained. Smith's (2003) study of the Egyptian colony of Askut during the Middle Kingdom found a very similar situation. The relatively high number of Nubian cooking pots and their gradual rise in number during the Egyptian occupation at the site, is taken by him to reflect an initial diversity and gradual acceptance of Nubian food ways at the household level. In fact both Stein and Smith hypothesize a scenario where male colonizers took up local wives, a practice that produced new hybrid foodways.

Lee-Dawdy (2010) focused on the distinctive foods eaten by the French colonizers and local indigenous groups in Louisiana as a lens through which practices of commensality among and between them could be studied. The French did in fact incorporate local ingredients into familiar recipes to some extent, but most of the interaction between these groups was achieved via tolerant hospitality customs. Hodos (2010) shows that the ancient Sicilians were selective in their incorporation of Greek drinking cups. Having a clear preference for external paraphernalia in their drinking rituals, Greek skyphos and kylix were utilized differently among the communities and regions of ancient Sicily. Dietler (2010: 233–252) provides a similar in depth analysis of the incorporation preferences in Bronze

Age Greek and Phoenician colonies of southern France. Varying degrees of continuity and change are observed among different colonies in respect to adoption and rejection of novel vessels, which in turn reveal a great deal about cooking styles and preferences (e.g., sautéing, stemming or boiling), as well as attitudes towards dining and alcohol consumption. Ben Shlomo et al. (2008) propose that the reduction in cooking vessel volume in Iron Age Israel was a Philistine influence and the result of extensive communications with urbanized populations. As the extended family model – the basis of earlier village life – disintegrated, local populations, who were used to making large cooking vessels, borrowed Philistine cooking ware to suit the new smaller family unit of consumption (Ben Shlomo et al. 2008: 239-241).

This short overview reveals the importance of foodways and culinary preferences for the study of communities and in turn their utility in assessing impacts of culture contact. Before moving to the analysis section, an overview of the food studies in ancient China is provided to present the state of the field and recent research that has been conducted, as well as to better orient the reader with the possibilities and limitations of the study pursued in this work.

Food Studies in Ancient China

The importance of food and its centrality in Chinese culture can hardly be overstated. While not always at the forefront of academic research, important volumes have looked at the development of the Chinese kitchen and its many cuisines over the centuries (Anderson 1988; Chang 1977c; Huang 2000; Simoons 1991). In recent years there has been an increased interest in foodways in historical and ancient China studies, which seek to understand ways food is connected to social life. For example a large number of studies have focused on the early connections between ancestor worship and ritual feasts (e.g., Chang 1977d; Nelson 2003; Sterckx 2004c; Watson and Rawski 1988). The entanglement of banqueting and the negotiation of social relationships in late historic periods is another important topic (e.g., Watson 1987). Few studies, however, have extended these questions into the deeper past. Most studies of foodways in ancient China are in fact those that deal with the origins of agriculture and the domestication of plant and animal species. Those studies that have looked at social aspects of foodways are limited mostly to the Neolithic period (Brunson 2015; Liu et al. 2013; Shelach 2006) and very few are extended into the Bronze Age (but see Jin et al. 2012; Jing and Campbell 2009; Underhill 2002).

That said, the most common approach in attempting to understand food preferences in ancient China has been to either document the earliest occurrences and examples of what will, eventually, be identified as typifying Chinese cuisine (e.g., when does tofu make its debut ?) or by extending later traditions and even modern practices into the deeper past. Perhaps the most well-known western proponent of this approach was archaeologist K.C. Chang. In his examination of food preferences and tastes to investigate how they developed throughout the history of Chinese civilization, Chang stated that it is clear that "continuity vastly outweighs change" (Chang 1977c: 20). Intriguingly, however, Wilkinson (2001: 289) writes that upon preparing a menu composed of dishes from a six century cookbook, his Chinese guests were unwilling to refer to it as authentic Chinese food.

Most information concerning foodways and cooking habits for the Western Zhou period are still based on information found in later historical texts that provide detailed descriptions of ingredients, dishes and preparation methods (e.g., Chang 1977a, 1973; Cook 2004). Zhou people seemed to consider the consumption of uncooked food and a life style of subsisting predominately on meat as opposed to grains, as characteristic of barbaric peoples (Di Cosmo 2002; Pines 2005). Note, however, that these texts focus less on dietary needs and production methods, but more broadly on the role food plays in Chinese elite society and culture. In fact later Eastern Zhou period texts frequently discuss the scholarly gentleman as a connoisseur of food and wine (Sterckx 2004a). While data from periods dating before and after the Western Zhou should not be used as exact guides for the study of food- ways during the Western Zhou (Stir-fry was probably invited only during or after the Han period), they can provide invaluable insights nonetheless. For example, Chang (1973: 497) provides a list of characters found on oracle bone inscriptions that represent proper etiquette in relation to cooking practices during the Shang period. Later texts (e.g., the *Zhouli* and *Liji),* describe foods and dishes, as well as grains and meats in their many ways of preparation (Chang 1977a: 30–35). Finally, some cooking and serving vessels mentioned in later texts may well have existed during the Western Zhou, but did not survive, such as lacquer bowls and wooden serving dishes (Falkenhausen 1999b).

Sadly, evidence from the Western Zhou period itself is rare. Several poems, believed to date to the late Western Zhou period, clearly mention grains such as millet and rice (For a full list see Keng (1973). Millet, both Broomcorn millet (*Panicum miliaceum*) and foxtail millet (*Setaria italica*) are understood to have been the most commonly consumed grain and were probably made into porridges or *zhou* 粥 (Ren 1986, 1995 and see below). While rice and wheat existed they were consumed by the upper classes and reserved for special occasions (Hsu and Linduff 1988: 354–355). Additionally a number of inscriptions on bronze vessels refer to specific dishes that were served in them (Yao 1999). Yet to date most studies that have looked at food during the Western Zhou periods have focused on its ritual aspect. For example the reduction of ritual wine vessels in ancestor worship in favor of those holding food, is emblematic of the transformation from Shang to Western Zhou times (Shang debauchery and Zhou piety are an important element of the righteous dynastic cycle, Poo 1999). Ritual bronze vessels, as discussed in chapter 2, were made in the shape of food containers to feed the dead ancestors and later their living descendants. In fact the actual food served in mortuary rituals changed quite extensively during the Western Zhou period as well (Falkenhausen 1999a).

That being said, these practices must be understood, mostly, as relating directly to funerary and other rituals. While Chang (1980: 230) has made the arguments that markings found in Shang bronze inscriptions might reflect the occupation and trade of the craftsman who owned them (e.g., 鼎 to signify a bronze *ding* maker), it is hard to imagine that ordinary people cooked with bronze vessels on a daily basis. The information also does not lend itself to understanding commensal practices of daily meals and whether or not households pooled their food together or not (and see below). We have better archaeological data for the agricultural tools and implements used for the production of food during this period than we do of plant and animal remains. Various hoes and spades were made from bronze, stone and animal bone. Harvesting tools and knives for processing were made of shell as well (Hsu and Linduff 1988: 351-3). Excavations over the past few years have shown that Zhou people consumed meat from sheep, cow, pig and many types of fowl, but proportions and numbers are rarely reported (but c.f. Lin et al 2013). A recent exception is the work published by Jin et al. (2012), which presented a detailed report of all seeds analyzed from 10 early pits at Chenzhung, where the vast majority of plant material was identified as millet.

These studies shed some light on the available ingredients, but not how they were incorporated into the ancient diet. Chang (1977c: 46-50) argues that the Eastern Zhou classification of *fan* 饭or grains and *cai* 菜 or vegetables and meats, was already extant during the Zhou period. He quotes Confucius as noting that when eating, one must be mindful when not take more meat than grain (Chang 1973: 510). The distinction between *cai* and *fan* are not all that different from what is found among many other agrarian societies worldwide, where the staple crop or the core foods, usually grains, are accompanied by smaller amounts of complementary foods such legume proteins and leafy grains (a pioneering study by Bennett et al (1942) in Illinois helped establish this idea). They not only balance the necessary dietary needs of the human body (supplying nutrients, vitamins and minerals), but also encourage the consumption of more of the staple crop or core food (Mintz and Schlettwein-Gsell 2001). These can then be plotted by frequency to establish cultural specific dietary compositions: core and complementary foods (e.g., Italian pasta and tomato sauce), secondary legume and vegetable dishes (antipasti) and peripheral meat dishes (Kittler 2012: 7-8)[63].

In terms of food preparation methods the main techniques described in later texts are steaming 蒸 *zheng* and boiling 烹 *peng,* which included stewing and simmering. These where perhaps not the only methods employed by Zhou period cooks. Others included roasting, baking, pickling etc.., but were probably less common during this period (Huang 2000: 70-89; Chang 1973: 500). Millet porridge/gruel or *zhou* 粥, believed to be the staple *fen* food of the Shang and Zhou periods, was made by boiling grains in water (Anderson 1988: 25). Steaming was perhaps reserved for other grains or fish meat and vegetables to make the *cai* dishes. Another important dish was the *geng* 羹, which combined *cai* and *fen* in one serving, and could be anything from a clear soup to a rich stew with grains, vegetables and meat. A number of *geng* recipes have been preserved and the *Liji* (dated to later Eastern Zhou periods) does in fact state that soup and grain dishes of broth, meat and grain were enjoyed by all, from noblemen to commoner (Legge 1967: 464).

Actual evidence for ancient meals and dishes is even rarer. A 3rd millennium BCE bowl of millet noodles from Lajia site in Qinghai (the Chinese Pompeii) being one of the oldest preserved foods in the world (Lu et al. 2005). The Mawangdui burial dated to the Western Han is another rare example were the original cooked dishes were preserved (Pirazzoli-t'Serstevens 1991). Several images present elaborate scenes from Han dynasty kitchens but none exist from the Western Zhou period (in Huang 2000: 87.) More often than not what archaeologists find are only the cooking wares these foods were made in and consumed from, namely ceramic vessels, and interpreting their function is not always a straight forward task. The ancient form of the character *zhou* 粥 (porridge) was 鬻, which Huang (2000: 82) sees as good evidence for the role *li* vessels had in making this important porridge[64]. *Li* vessels are

[63] Chinese agricultural families still consume more than 90% *fan* in their daily diet (Jing 2000).

[64] Huang 2000: 77-80 notes that the *li* vessel is not perfectly designed for the preparation of making food as much of the heat is lost under it. The inventions of stoves that allowed the placement of li tripods in ceramic brick or stone cooking

possibly the single most abundant cooking vessels found in ancient Chinese sites and are always associated with cooking (Chang 1973; Li 1952). A *yan* 甗 steamer is comprised of a bottom part, which is a three footed tripod (note *li* character in the bottom left side of the character) and the open steamer *zeng* 甑 that is placed into it (Huang 2000: 77 and see Figure 8-1).

Later texts such as the *Shijing, Zhouli* and *Liji* describe the use and function of bronze vessels in the preparation and serving of ritual foodstuffs (and in fact Chang 1973: 495 finds that one would be hard pressed to find a poem and chapter in them without food being referenced in one way or another). A *ding* 鼎 (a three legged tripod similar to the *li*) is used both for cooking and serving. The *gui* 簋, a large bowl, was used for serving *fen* grain dishes and *dou* 豆, a shallow bowl sitting on pedestal, was reserved for serving *cai* or meat and vegetable dishes (see in Hu 1994)

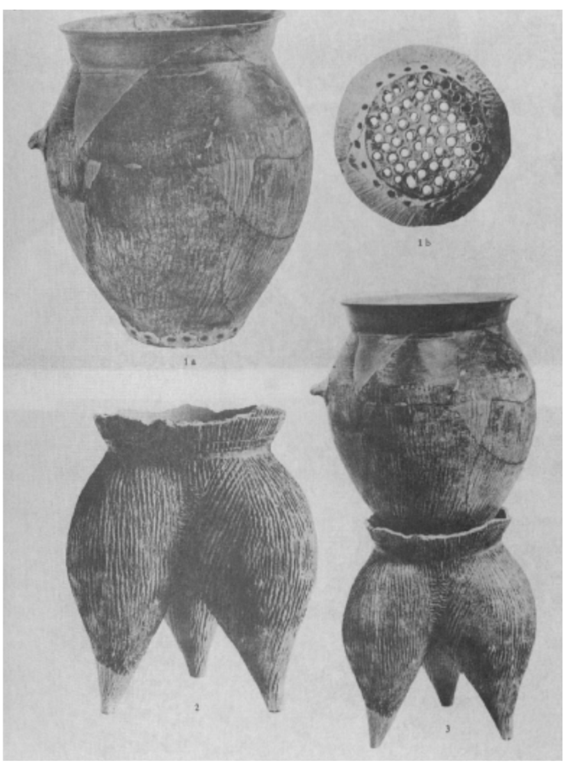


Figure 8-1 - Shang dynasty Yan steamer comprised of li and Zeng found by Andersson in Henan province (in Huang 2000: 77)

---

utensils would have provided for a more efficient heating process. While it is not unthinkable that these stoves, or 灶 *zao,* would have been used during Zhou times some of the earliest examples are models found placed in Han dynasty graves.

Consequently, the vast majority of studies reverse engineer, so to speak, the function of ceramic vessels from those of the ritual bronze vessels (Chang 1973: 503-506 provides an overview and see Zhu Fenghan 2000 for another approach). Following this methodology, to date most studies of Chinese ceramics, from the Western Zhou and other periods, divide vessels into cooking, serving and drinking wares – *ding, li* and *hu* 斛 for boiling and stewing, *zeng, fu* 釜 and *yan* 甗 for steaming. *Gui, pen* 盆, *xu* 盨*, fu* 簠*, dui* 鐜 and *dou* were used for serving grains, fruit, vegetables and meats, and alcoholic drinking cups included *zun* 尊 *, he* 盉 and *gu* 觚 [65]. Other vessels types range from generic terms for jars such as the *guan* 罐 or *yu* 盂 and *weng* 瓮 for large containers, to rarer *fou* 缶, *yi* 匜 *you* 卣 and *pan* 盘 (Figure 8-2 for main vessel types).

What an actual meal looked like is unclear as well, but Chang (1977b: 36-39) is happy to extend later texts to the Western Zhou period. Here, the gentleman class ate on individual mats where dishes of meat, grain and vegetables were placed at their sides. Etiquette dictated the order in which the dishes were consumed and how guests, women and children should eat and when. Needless to say there is no archaeological evidence to support this for the Western Zhou period, or that these texts in fact reflect how the commoners ate. In fact it is very possible that eating parties huddled together around a common serving bowl. Zhi Zi (1986a; b) provides an excellent overview of the development of spoons and forks in Chinese history from the Shang to later Qing times to argue precisely this point. Hu (1994: 217-218), accepting the communal meal model, finds instead that spoons, and other utensils, would have been reserved for ritual ceremonies and the upper classes. Everyday meals may have been consumed with ones two hands.

[65] Of note is the fact that a good portion of these vessels were used for heating presenting and drinking of alcoholic beverages, but their function, like that of other bronze vessels, was used partly in banqueting, feasting and ritual ceremonies. Secondly, ceramic versions of these vessels are much less frequently found among Zhou assemblages and might reflect their lesser importance during this time, though (Fitzgerald - Huber 1995) finds the Erlitou *jue* and *jie* ceramic vessels that were produced during this period as inspired by ceramic versions to the west.

This brief survey leaves much to be desired to be sure. The temptation to extend the more recent past into the deeper past is strong indeed, but the urge must be curtailed. While using the historical information to gain insight into the past, it cannot be used as a straightforward manual for its reconstruction. Instead, armed with this knowledge, I turn to archaeological methods used successfully in other parts of the world, and indeed in earlier periods of China's past, to better approach, investigate and present some new information on Ancient Chinese foodways of the Western Zhou period.

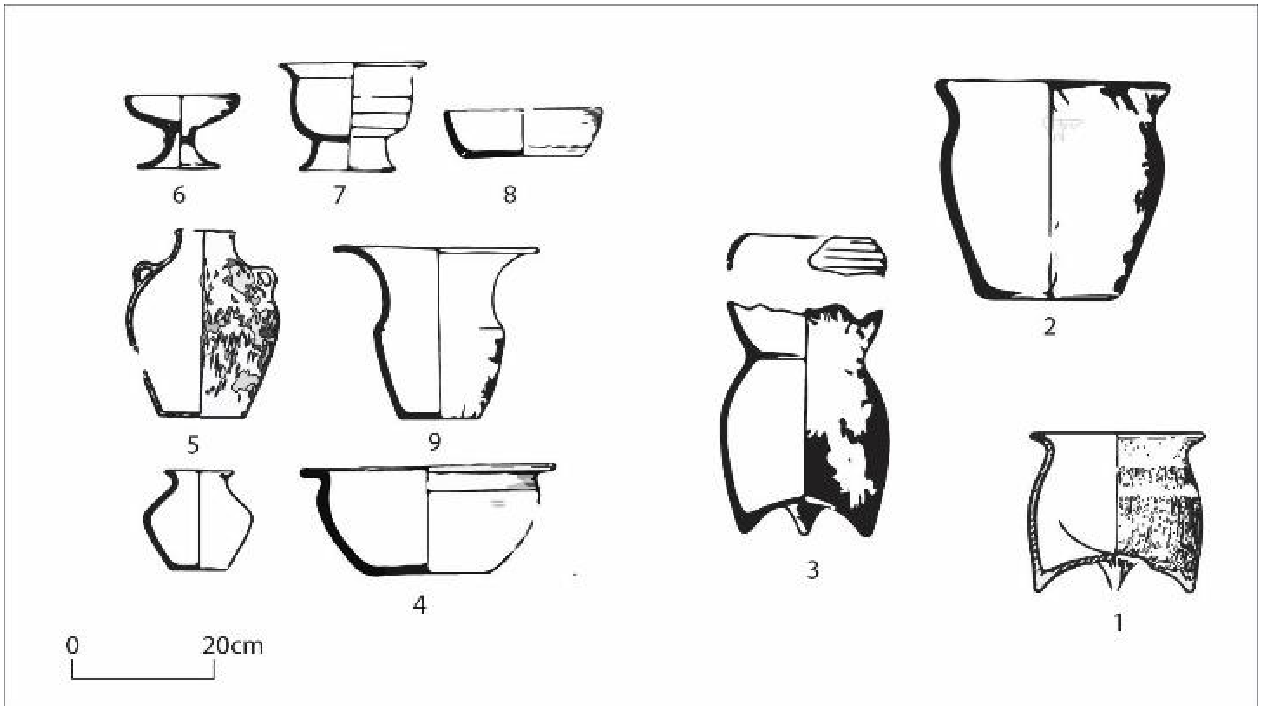


Figure 8-2- Main vessel types at TMQC: 1) li 鬲 2) zeng 甑 3) yan 甗 4) pen 盆 5) guan 罐 6) dou 豆 7) gui 簋 8) bo 钵

Part 2 - Archaeological Methods of Ceramic Analysis and Foodways Studies

Archaeologists have studied ancient foodways in a multitude of manners. These range from focusing on technical analyses of specific ingredients, to the stages that make up the production, preparation, consumption and the discard of food. Zooarchaeological assemblages are analyzed to gain insight into both the taxa and the specific parts of the animal that were prepared and consumed (Flad 2011; Stein 2012; Zeder 1991). Similarly, botanical remains are analyzed to investigate plant types and exploitation methods (Guedes 2011; Hu et al. 2006). Chemical analysis on skeletal remains can determine quality of individual diets and the ingredients that they were made up of (e.g., DeNiro 1987; Lee-Thorp 2008). Other studies examine hearths for heat intensity and cooking style (e.g., Wandsnider 1997) as well as preparation surfaces (e.g Klarich 2012). Food sharing practices can be inferred from the location of storage units (e.g., Peterson and Shelach 2012), as well as site architectural layout and internal house spatial arrangements (e.g., Haaland 2007; LeCount 2010). Each of these methods holds the potential of shedding light on community specific eating practices as well as providing useful gauges that can be used to compare different regions and changes they underwent. Few studies employ them all, but the potential reward is clear: Twiss et al (2009) is a unique study that combined zooarchaeological, botanical and architectural remains to investigate the relationships between private and public spaces at Çatalhöyük.

It is surprising, however, that archaeologists have narrowly chosen to investigate pottery in order to understand ancient foodways. At times it can even seem as if every social aspect but foodways are inferred from ceramic assemblages. Production, craft specialization, technical properties of clay matrices, trade and ethnicity are all more frequently studied. Perhaps because they are such potent tools for the acquisition of chronological information, many techniques and analysis methods provide tools to reveal the variability of ceramic qualities to aid archaeologists in separating assemblages into groups (cultural and ethnic groups most often – the former still accepted and the latter contested, as discussed in chapter 2). Archaeologists have acknowledged the importance of observing changes in ceramic assemblages as indicators of foodways (Sassaman 1993; Welch and Scarry 1995) and storing cooking, serving and eating vessels are all studied to reveal ancient foodways (Blinman 1989; Blitz 1993; Costin and Earle 1989; Johannessen 1993; Reents-Budet 1994; Skibo 1992). When combined with the location of the tasks performed with them, household difference and community practices of eating and sharing can be inferred as well (D'Anna and Jauss 2015). Residue analysis form ceramics are used to reveal vessel contents (Heron and Evershed 1993) such as the existence of milk products

(Evershed et al. 2008), or the types of animals and plants used (e.g., Lombard 2008). Alas, the collected, reported or preserved residential archaeological data that can be used to study food for the Western Zhou period sites is rather limited and consists, almost entirely, of ceramic sherds found in trash pits that cannot be linked to specific houses or family groups[66].

Nevertheless the richness of the ceramic material affords ample data to conduct meaningful analysis with. The results of Anne Underhill's (2002) exploration into the role of food and drink in social relations, provided a stepping stone for foodways studies in Ancient China. Where previous studies of political development in ancient China focused on material wealth and labor, Underhill was able to show not only the range in attitudes towards food and drink in social contexts through time, but also their centrality for the negation of political and social status. Minna Haapanen (2005) was the first to introduce the notion of studying foodways as reflecting communities and communities of practice in Ancient China. Her study of Shang period foodways at the site of Anyang and its vicinity, present a clear example in the ways daily meals facilitated and created community level cohesion (Haapanen 2005: 44).

With the presentation of the complexity of ancient Shang foodways Haapanen does not simply suggest that a single ingredient or the existence of a particular cuisine is what created these communities. Instead, through the continued use of specific vessel types, style of cooking and communal eating habits, the individuals at these sites formed foodway practices to bring them together as a community. In the next few pages I lay out the methodology used in this study to approach the analysis of TMQC residential assemblages, which will in turn be used investigate communities in the Zhou periphery.

[66] Residue will be an important venue to pursue in the future, but and as I hope the reader will agree at the end of this chapter, will be better suited after the initial analysis presented here.

From Vessel Shape to Function – The Approach Followed in this Work

David Braun's (1983) influential paper reminded archaeologists that pots were tools (and as such could be studied to reveal their use and function), at a time when style and its social implications was still the main focus of ceramic analysis. Reverse engineering function from a vessel's shape and its basic properties was of course still the first line of analysis, and methods to infer function from vessel shape and form are still plentiful (Linton 1944; Sassaman 1993; Smith 1988). Rice's (1987: 208–209) classic study separated vessels into three large categories by function: storage, processing and transfer, each with their own subgroups that could be observed by identifying parameters that influence their functional properties such as capacity, stability, accessibility to contents and transportability. Smith (1988: 913–914) further elaborated on these main groups with the following categories: 1. Dry storage (household use) 2. Long-term storage of dry materials (granary) 3. Storage of beverages or water 4. Long-term storage of potables (permeant water storage; wine) 5. Storage of liquid non-potable (oil; honey) 6. Cooking (frying, baking) 7. Boiling (simmering stewing) 8. Mechanical processing 9. Eating (bowls and plates) 10. Drinking 11. Serving food 12. Serving liquid 13. Transport of potables (fetching water) 14. Transport of potables over longer distance. While more than 30 parameters exist and can be used to asses function, the most important ones he followed in his study were (Smith 1988: 914-915):

a) *Relative openness of the vessel profile* – the ratio of circumference of the lip to total external surface (in square cm) as important for determining importance of pouring.
b) *Absolute diameter of the vessels at rim* – the inverse relationship between distance of transport and liquidity of contents.
c) *Total volume of the vessel* – only partly relates to volume used (if not paired with openness) and a better predictor of transportability of a pot.

Hally's (1986)study added even more parameters and found some general rules of thumb for the relationships between shape and function. Hally argued that most vessels intended to hold liquids would have a degree of orifice constriction. Evaporation of vessel contents would be effected by orifice size as well as wall porosity and thus a vessel's evaporation level, could be calculated by finding the ratio between orifice size to vessel capacity. For cooking vessels, heat absorption efficiency can be achieved by increasing maximum vessel diameter, increasing the height of the shoulder above vessel base, and roughening the exterior surface. The smaller the ratio the greater the reduction of heat loss would be for a vessel of any size (Halley 1986: 279- 280). Other studies have noted that cooking vessels will conduct heat more evenly throughout the vessel, if they are devoid of sharp edges (Rye 1981; Woods 1986). Vessels used for frying should have more open orifice sizes as well as flatter bases (Rice 1987: 239–240). Sassaman (1995: 220) found that flat bottom basins are ideal for non-direct heating. Thick walls and fiber temper also help insulate heat, while the flat bottom helps spread heat evenly around the vessel. These characteristics, however, are not ideal if high thermal shock resistance or high heat propagation is desired (and see more below).

A number of ethnographic studies attempted to find all-encompassing correlations that could be made between vessel shape and function. While some correlations were found and reported (Henrickson and McDonald 1983), more often than not, however, studies found that ceramic vessels were used in ways other than their initial intention (Rice 1996; Sinopoli 1991; Stark 2003). Nevertheless constraints and limitations of various design decisions that confer advantages and disadvantages for certain functions can be found (Braun 1983; Hally 1986; Orton et al. 1993; Smith 1985) to the extent that vessel function can be deduced to a level in which a primary use range can be achieved (Braun 1980: 173 and see overview in Skibo 2013)

Haapanen's 2005 study of Shang vessel use and function was one of the first of its kind to be conducted on ancient Chinese ceramic assemblages. Her analysis found a relatively good correlation between the larger vessel group categories and their function (discussed above) in the sense that they fit their supposed function categories. That said, the more important contribution of her study, in my mind, was to introduce the wide variation of uses for each vessel type both in and between sites. I will use these categories, discussed by Chang and presented in the section above (and see Figure 8-2), as an initial starting point to compile ceramic assemblages from the different regions. Vessel properties will be measured and frequencies analyzed to provide a preliminary understanding of community specific food preparation and consumption practices. Indeed Haapanen (2005: 362-3) finds that communal eating habits become more important, as evidenced by an increase in *li* cooking vessel amounts as well as *pen* and *gui* serving dishes. Steaming, however, seems to be of less importance as the numbers of *yan* and *zeng* vessels were quite small for all sites examined (Haapanen 2005: 361).

While the size and frequency of cooking pots, as well serving vessels, can serve as an indicator for the number of people being fed, they can also reflect the type of food being prepared: large amounts of small vessels can be used for the preparation of elaborate recipes for small parties as well (Isaakidou 2007). Following Skibo (1992) who emphasizes studies that discuss the relationship between intended and actual function, Haapanen not only analyzed the frequency, size and other basic aspects of the ceramic assemblages she examined, she also complemented he work by implementing a limited usewear analysis observation as well. This provided a more nuanced reconstruction of food preferences at these sites. Similarly, the second stage of this study will focus on cooking vessels (mainly *li*) and will consist of examining and documenting usewear remains relating to cooking practices. Studies combining the two have been successful in finding important insights into the economic and social constructs of regional communities (e.g., Mukherjee et al. 2007; Pauketat 1989; Vieugué 2014; Welch and Scarry 1995; Wilson and Rodning 2002).

Indeed the location and examination of use wear alteration can also further inform cooking habits as they can be inferred from both carbonization and soot remains found in the interior and exterior of ceramics vessel. Heat sources, vessel placement and intensity of fire all manifest themselves as use alteration remains on ceramic cooking vessels. Hally's (1983) pioneering research established important proxies for the inference of cooking methods, such as simmering and frying, which can be found by observing the location of soot and carbonization as reflecting vessel placement and proximity to fire. Soot deposits indicate direct placement over the fire and their absence might mean they were placed directly in the fire, since this will result in the removal of the soot that was initially accumulated. Absence or near absence of soot and bright color oxidation zones will also be indicative of placement in the fire or prolonged exposure to fire (Hally 1983: 12-14).

Other studies have developed Hally's methodologies (Arnold 1985; Kobayashi 1994; Longacre et al. 2000; Rye 1976 and see Stark 2003) with the most well know and fully detailed work done by James Skibo (1992; 2013). Skibo's (1992) study complimented his ethnographic work with the Kalinga tribes in the Philippines with experimental archaeology lab work, as a way to provide a range of possible correlations between cooking practices and their residues. Skibo identified two main modes that can be differentiated with this approach: the *wet mode* – boiling or stewing – and the *dry mode* – roasting and braising – by observing external soot and oxidization patterns and internal carbonization and charred food remains (see Figure 8-3). In the *dry mode* oxidization marks are commonly formed on the base or the area most directly exposed to the flame and soot will be found on, around and along the bottom part of the vessel exterior. When cooking in the dry mode, interior contents can reach well over 300 degrees and blackened carbonization marks of food permeate the walls (and at times actual charred food remains will form throughout the vessel interior as well Skibo 2013: 93-5). In the *wet mode* vessel interior areas in direct contact with the liquid will not reach temperatures nearing 300 degrees and as a result will not form blackened carbonization marks typical of the dry mode. That said, those interior sections of the vessels directly above it will have internal carbonization marks: as food particles bubble and simmer upwards they will enter the hotter area of the walls above the liquid line. Well preserved vessels will even retain a ring of carbonization indicting the height of liquid level that was used to cook the dish. If long simmering and condensing are involved, to the point where most of the liquid is reduced, then carbonization will occur on other parts of the vessel as well (Skibo 2013: 96-98). It is best to think of these methods as two extremes on a cooking continuum with a host of variations that will leave different residue marks. I will return to them as I investigate the usewear marks of the TMQC vessels in the following chapter.

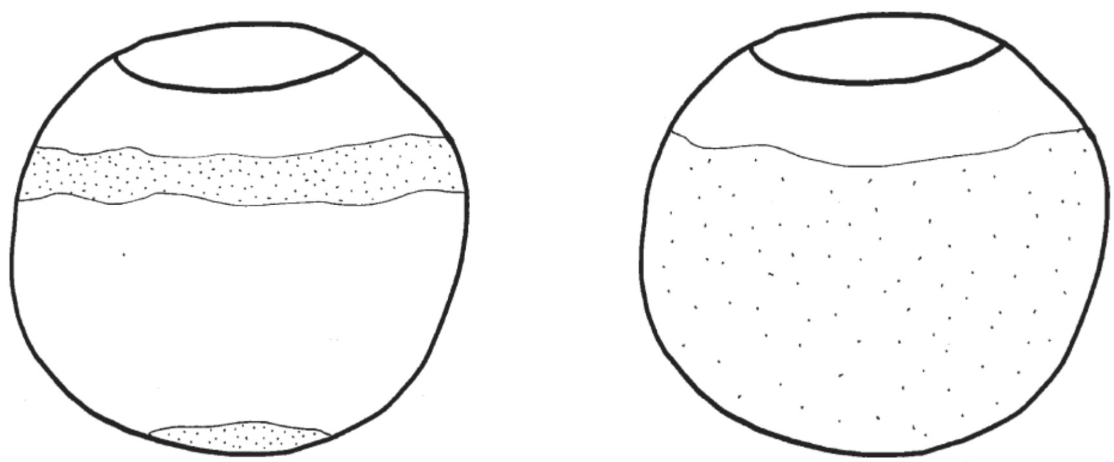


Figure 8-3 - Usewear main patters: 1) Wet mode on the left 2) Dry mode on the right (after Skibo and Schiffer 2008: 34)

Finally as technical features vessels i.e. the ways in which vessels are produced and the materials used for their construction, greatly influence their performance as cooking wares, I will compliment this study with a technical compositional analysis, using a digital microscope, in an attempt to investigate the relationship between the technical and material aspects of vessels and their intended use. It is by now fairly common knowledge that the following constitutes the minimum appropriate technological makeup for a cooking vessel: low fired, high in temper and often rough textured and even brittle. Yet further technical choices ranging from materials used, surface treatment, inclusion type and frequency and firing temperatures all contribute to what kinds of foods can be made in vessels as well how they can be prepared (Schiffer and Skibo 1987). Surface treatment greatly influences thermal shock resistance and heat conductivity, for example (Schiffer 1990; Schiffer et al. 1994; Skibo et al. 1997), and more than any other technological aspect, temper has been the most widely studied and debated in this respect. Everything from type, size and frequency have been tested to find their influences on vessel function (Bronitsky and Hamer 1986; Feathers 1989; Jeffra 2008; Müller et al. 2010; Skibo et al. 1989; Steponaitis 1983). In fact Braun's (1983) argument that pots were tools was exemplified by showing that changes in technological choice in the production of cooking vessels were undertaken in order to better suit performance requirements and needs during the woodland period in North America.

Separating technological intention from cultural practice, however, is not an easy task (Gosselain 1992; Sillar and Tite 2000), yet a growing number of experiments have attempted to establish parameters for the investigation of technological choices and their results (Schiffer 1990; Skibo et al. 1989, 1997; Tite 2008; Tite et al. 2001). Hein et al.'s (2008) paper: *Thermal conductivity of archaeological ceramics: The effect of inclusions, porosity and firing temperature*, is a good example of an attempt to understand these combinations as well. Indeed technical aspects of cooking vessels can be used to infer possibilities and limitations of ceramics vessel and intended characteristics (Schiffer et al. 1994). In the next chapter I present the findings of the usewear analysis I conducted on the Western Zhou *li* 鬲 cooking vessels. Following this study, the results of the preliminary technical analysis conducted on the TMQC assemblage are presented along with an attempt to gain a better understanding of their differences in terms of their relationships to cooking strategies. The final stage of this study will be the analysis of aspects pertaining to food preparation and vessel production. This is a rudimentary study, but one that can still provide for insight into these questions as well as establish community specific production traditions and practices with which to compare different sites and regions (Velde and Druc 1999: 162).

	Vessel shape and attributes	Wall thickness	Temper	Firing temperature	Porosity	Surface treatment
Resistance to mechanical stress	Vessel with sharp corners and edges will concentrate stress forces increasing its likelihood to break (Rye 1981)	Thicker walls can absorb more physical shock (Mabry et al. 1988; Neupert 1994)	Strength decreases with size increase of quartz particles and their quantity (Kilikoglou et al. 1998). Shape and size can influence vessel toughness as well (Müller et al. 2010)	Higher firing temperatures produce a more durable vessel (Skibo et al. 1989 ;Tite et al. 2001)	Higher porosity levels will influence resistance to abrasion (Rice 1987:362; Skibo 2013: 121)	slip/polished and textured surfaces have the poorest abrasion resistance smudged and resin-coated surface best (Skibo et al. 1997)
Transferability	Handles and hooks can provide easier handling and transportability (Halley 1986: 279; Skibo 2013: 34-35)	Thinner walls can be used to create lighter vessel (Skibo et al 1989)	Organic temper affects weight reduction (Skibo et al. 1989: 140) Fibrous temper enables mobile groups to have a more expedient ceramic production sequence (Pratt 1999). Organic temper workability of excessively plastic clay is improved (Rye 1981: 34)	As firing temperature increases, resistance to breakage increases as well - suitable for an often moved vessel (Skibo et al. 1989)	A high concentration of open pores can create a lighter vessel (Rice 1987: 351)	Corrugation is a time consuming component of production (Pierce 2005).
Thermal shock resistance	Cooking vessels are better off without sharp edges so that they have even heating throughout (Rice 1987; Woods 1986)	The thermal gradient and thermal stress resistance is lowered in thinner walled vessels (Lawrence and West 1982: 226; Rice 1987: 229)	Higher concentrations of temper increase thermal shock resistance (Tite et al. 2001) Smaller quartz grains increase resistance (Braun 1983)organic temper results in reduced material shrinkage (Rye 1981:34) Sand is superior (Bronitsky and Hamer 1986); Or burnet shell (Steponaitis 1983) Problematic correlations (Feathers 1989)	Low firing temperature increases thermal shock resistance (Harry et al. 2009; Tite et al. 2001)	More porous vessels have greater thermal shock resistance (Woods 1986; Rice 1987: 230)	Resin and other surface treatments positively affect thermal shock resistance (Schiffer et al., 1994; Skibo et al., 1997)
Heat efficiency (direct heat)	Increasing the maximum vessel diameter and height of the shoulder above vessel base increase are beneficial for heat efficiency (Braun 1983: 280)	Thinner walls can provide a more rapid conduction of heat and thus its effectiveness (Braun 1983; Smith 1985; Sassaman 1993)	Organic temper can result in less effective heat conduction (Reid 1989). Temper that creates large pores (like sand) will increase heat effectiveness (Schiffer and Skibo 1987: 605)	Low fired pottery decreases heat effectiveness (Harry and Frink 2009)	High levels of porosity result in reduced heating effectiveness (Schiffer 1990)	Resin positively affects heat efficiency (Schiffer 1990) Corrugation increases heat effectiveness (Pierce 2005). Other do not (Young and Stone 1990)
Heat loss (indirect heat)	restricted vessel orifice reduces heat evaporation (Henrickson and McDonald 1983; Linton 1944: 370)	Thicker walls Reduce heat loss (Skibo 2013: 93)	Organic temper can produce a vessel more resistant to heat loss over time (Sassaman 1993: Skibo 2013: 93)	Lower fired clay will reduce heat loss (Skibo 2013: 93)	The more porous the vessel the grater the heat loss (Schiffer 1990)	Resin can help negate rapid heat loss (Schiffer et al. 1994)

Table 8-1- Technical properties and their influence on ceramic use properties

Chapter 9 - Ceramic Analysis of the TMQC Residential Area

The material used for this study comes from the residential part of the TMQC site as reported in in Vol I of Tianma-Qucun 1980-198 excavation report (Beijing and Shanxi 2000). As noted in chapter 5, excavation at the site focused on the cemetery, as did the later work in 90s and early 2000s, but a non-negligible amount of residential material was also unearthed and cataloged. Excavations of residential areas come mainly from the areas around the TMQC village (to the north and south) as well as several smaller excavation points around Beizhao and Tianma villages to the East (Beijing and Shanxi 2000 : 9-11). A small Yangshao phase was found, but the vast majority of the stratums were dated to the Early Western Zhou through the Late Warring States period. Remains included several badly preserved houses as well as kilns and wells and several dozens of waste pits yielding bonze, stone and shell tools and a large amount of discarded ceramic sherds. The ceramic remains of the Early and Middle Western Zhou period comprise the assemblage that was analyzed for this work. The remains have all been be drawn and published in volume 1 by archaeological loci (Beijing and Shanxi 2000 :33-281)[67].

Basic Statistical Investigation on the Early Period Ceramic Assemblage

For each sherd the following measurements and observation were taken and recorded –

1) Vessel type – only rims, bases and legs were observed so as to be able to securely identify vessel type.
2) Color - based on standard typological categories of grey, black, and red (which includes orange and reddish-brown).

[67] I was very pleasantly supersized to find all reported ceramic vessels in the store houses of the Peking Univeristy work station. I am greatly indebted to Professor Liu Xu for arranging the viewing of these materials and for spending the first few days with me at the site, and famlerizing me with the internal system the excavators and subsequent analysts used.

3) If rim sherds were analyzed their inner and outer diameter were recorded, which were also used for volume calculation of *li* cooking pots. Appendix B includes the analysis performed from whole *li* vessels to obtain ranges of volume from diameter size.

4) Bases were measured as well, but their numbers were fairly low and no statistical analysis was performed on them other than observing what types of usewear patterns they revealed.

5) Width of *Shengwen* 绳纹 or cord markings (aka corrugation marks) was measured for each vessel. Width was calculated by measuring the internal width of the imprint, thus providing the maximum width of the cord being used to create these imprints when the vessel was leather hard.

6) Vessel thickness was measured by averaging two measurements along the wall or base (depending on fragment size). For whole vessels, thickness measurements were taken from two points and their average used.

7) All vessels and sherds were thoroughly inspected for the remains of usewear associated with cooking practices, a method described in detail below.

The general spread of data can be seen below (Table 9-2)

Vessel	N	**Grey (n and %)**	**Black (n and %)**	**Red (n and %)**	**Inner rim diameter (Mean/ median)**	**Inner rim diameter (SD/SE)**	**Outer rim diameter (Mean/ median)**	**Outer rim diameter (SD/SE)**
鬲 *li*	30	30(100%)	0	0	18.91(20)	4 (0.81)	23.16(25)	4.55(0.92)
盆 *pen*	14	12 (85%)	2(15%)	0	23(23.5)	5.6(1.5)	27.85(27.5)	6.35(1.69)
罐 *guan*	29	25(86%)	2(7%)	2(7%)	13.03(10)	5.84(1.14))	16.53(14.5)	6.21(1.21)
簋 *gui*	10	5(50%)	2(20%)	3(30%)	25.12(26)	7.18(2.53)	29(31)	8.7(2.9)
甗 *yan*	3	3100%)	0	0	31.66(34)	8.73(5.04)	35.66(37)	9.07(5.23)
豆 *dou*	13	6(46%)	5(38%)	2(15%)	15.9(14.5)	6.5(2.05)	18.1(16)	6.48(2.05)
瓮 *weng*	13	11(84%)	1(12%)	1(12%)	19.6(20.5)	5.98(1.89)	25.6(26.5)	7.86(2.48)
钵/碗 *Bo/wen*	4	3(75%)	1(25%)	0	14.25(13.5)	3.59(2.51)	15.75(15)	3.09(2.07)
All	118	97(82%)	12(10%)	9(8%)	18.43(18)	7.07	22.49(21)	8

Table 9-1 - Basic statiscis of TMQC Early period vessels (SD-stadard deviton SE-Mean stadard error)

Vessel	N	**Cord marks Shengwen (Mean/median)**	**Cord marks Shengwen (SD/SE)**	**Cord marks Shengwen CV/%**	**Cooking - usewear N and (%)**	**Wall thickness (Mean/median)**	**Wall thickness (SD/SE)**
鬲 *li*	30	0.20(0.21)	0.03(0.006)	15% (100%)	26(86%)	0.943(0.89)	0.16(0.02)
盆 *pen*	14	0.18(0.19)	0.05(0.02)	27% (50%)	1(7%)	0.87(0.825)	0.16(0.04)
罐 *guan*	29	0.19 (0.19)	0.05 (0.01)	27%(51%)	9(31%)	0.82(0.8)	0.16(0.03)
簋 *gui*	10	0.25(0.25)	(10%)	/(10%)	0	0.8(0.83)	0.15(0.04)
甗 *yan*	3	0.26 (0.26)	0.08(0.06)	33%(66%)	2(66%)	1.058(1.01)	0.1(0.06)
豆 *dou*	13	0	/	/	2(15%)	0.77(0.77)	0.18(0.04)
瓮 *weng*	13	0.19(18)	0.04 (0.01)	21% (70%)	6(46%)	1.38(1.38)	0.434(0.12)
钵/碗 *Bo/ wen*	4	0.18(0.22)	0.06(0.05)	33%(75%)	0	0.85(0.89)	0.2(0.14)
All	118	0.19(0.19)	0.04(57%)	23%	46(38%)	0.92(0.86)	0.27(0.2)

Table 9-2 - Basic statiscis of TMQC Early period vessels (SD-stadard deviton SE-Mean stadard error- contiued)

Some preliminary observations can be made from this table: First, it is important to note that the assemblage is dominated by *li* and *guan* vessels with other vessel category types averaging under the 25 unit count needed for most basic statistical analyses. Thus, much of the inferences displayed above should not be taken as more than a small and not-unproblematic sample. That being said, notably in terms of color preference, Early period vessels are dominated by the grey color (82%). Similarly, despite the low numbers, most vessel categories display expected values for usewear remains: *li* vessel had an overwhelmingly large amount of usewear remains related to cooking (86%) with only *yan* (66%) steaming vessels also displaying very high numbers (this is somewhat similar to what Haapanen 2005: 361 notes for Shang period steamers). Serving vessels: *pen, dou bo* and *gui* have either very low usewear marks or none at all. The *weng* (46%) large basins and *guan* (31%) jars have moderately high usewear marks (discussed below). Note that *guan* usewear marks level is related to the fact that out of all categories this vessel type collapses a great deal of variation in it i.e. all jars are simply called *guan*. This becomes obvious when observing the distributions of rim diameter measurements across vessel types (Figure 8-2)

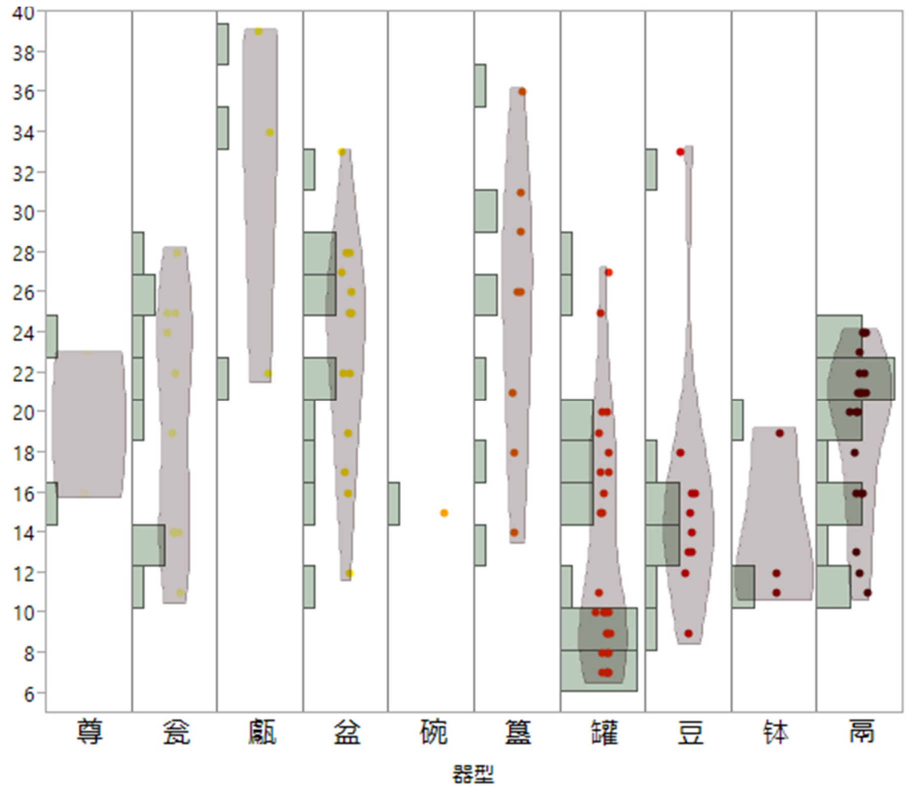


Figure 9-1 - Distributions of rim diameter measurements by vessel type for TMQC Early period

This graph shows that except for *dou* (with an outlier) and *pen* vessel types, vessels categories are not normally distributed and thus may not include a single standardized size type for these vessel categories. In fact, most exhibit either bi-modality, like *guan,* or none at all e.g., *gui*. This further points to a scenario where the mean of vessel diameter size is not the best measurement for understanding the spread of vessel type sizes. As many vessel type numbers are low, only general inferences can be made for each of these vessels types. Similarly it is not possible to continue to investigate these batches except for *li*, fortunately, as it was the main cooking vessel and the one we are interested in here. On that note, it is worth pointing out that the relatively higher percentages of cooking usewear observed for *guan* and *weng* vessel types is confined to the double handled *guan* and the 3 legged *weng*, which were quite possibly specifically used for cooking. These vessels are unique to the Early Western Zhou period at TMQC and do not appear in the Middle period. Unlike vessel rim diameter size *shengwen* corrugation marks are mostly normally distributed for all vessel categories (Figure 9-2).

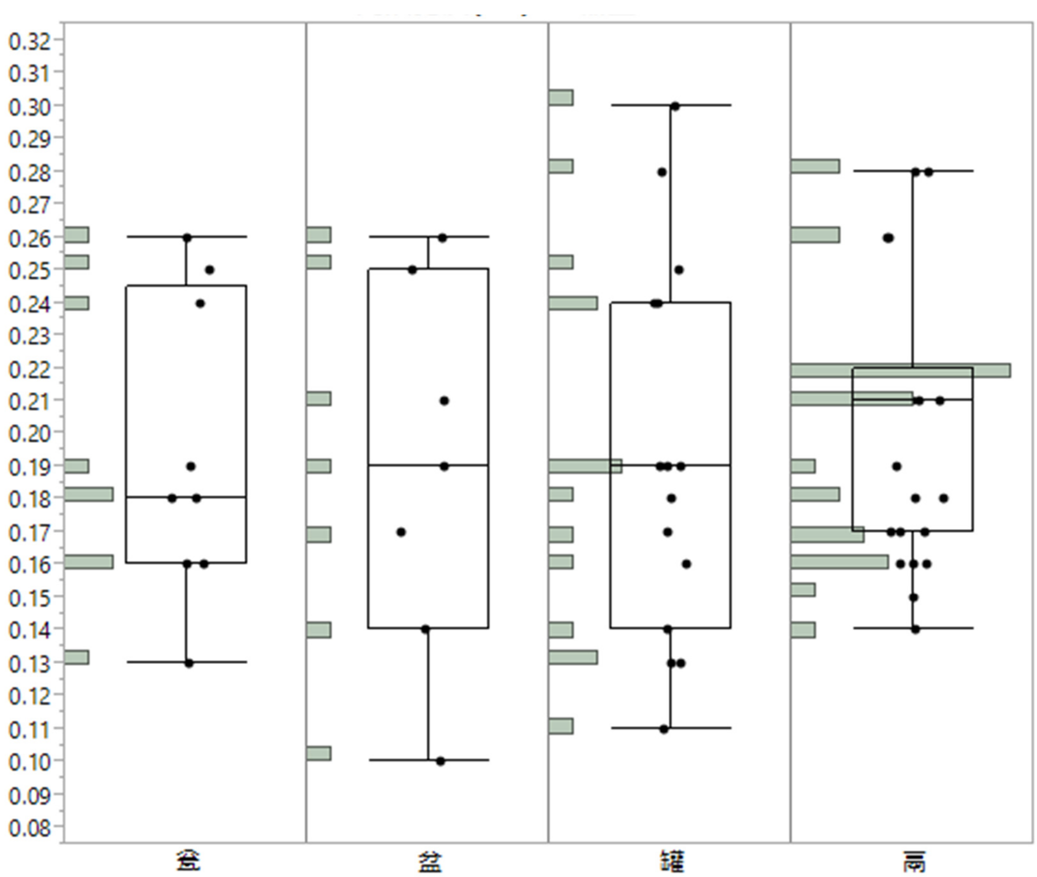
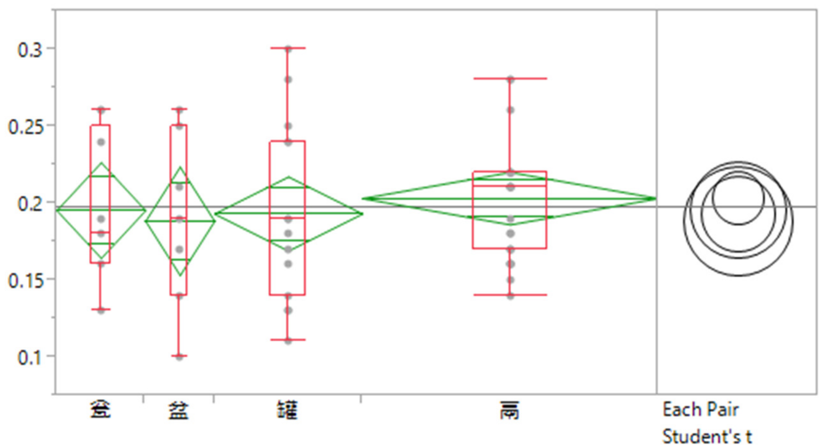


Figure 9-2 - Shengwen corrugation observation for TMQC Early period vessels (left to right: weng, pen, guan and li)

Shengwen, or cord marks are made by potters pressing string or cords of string to the vessel when it is leather hard and before the firing process. As has been suggested by Rowan Flad (2012) *shengwen* width have the potential of reflecting the different cord sizes used for corrugation imprints and can also be used to understand production components as well: If highly standardized cord width sizes are found among certain or all vessel types, a scenario where a single production area that created these vessels can be hypothesized. Another possibility is that a single cord maker supplied these cords to a number of different potters or that all potters followed the same cord width standard.

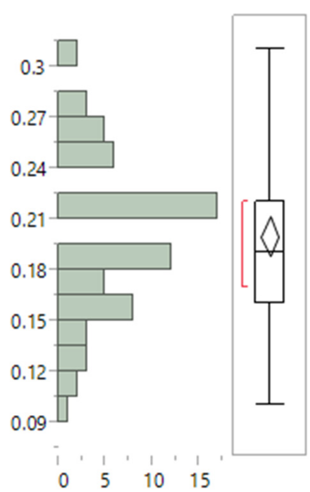
Thus understanding whether or not the corrugation marks reflect a single tradition during the Early period is important in order to better approach the variation of production at TMQC (This will be important as a way of comparing sites and periods). An ANOVA analysis, the comparison of variance between the different vessel categories, was performed to test how unlikely it is that samples we have could come from the same population (Figure 9-3).



Level		Mean
li	A	0.2033
weng	A	0.1955
guan	A	0.1933
pen	A	0.1885

Figure 9-3 - ANOVA analysis on TMQC Early period corrugation width (left to right: weng, pen, guan and li)

Since the differences between these samples have very low significance ($p=0.8271$) the null hypothesis that they display meaningful difference is rejected and thus I speculate that they came from a single sample. Indeed when *shengwen* corrugation mark distributions are observed for all vessel types a strong normal distribution was observed (Figure 9-4).



Mean	0.199
Std Dev	0.047
Std Err Mean	0.005
Upper 95% Mean	0.211
Lower 95% Mean	0.188
N	67
CV	23.80
Median	0.19
Mode	0.22
5% Trimmed Mean	0.192

Figure 9-4 - TMQC Early period shengwen distribution graph.

The *li* cooking vessels were submitted to a more robust inspection but first the analysis of the Middle period assemblage is provided.

Basic Statistical Investigation on the Middle Period Ceramic Assemblage

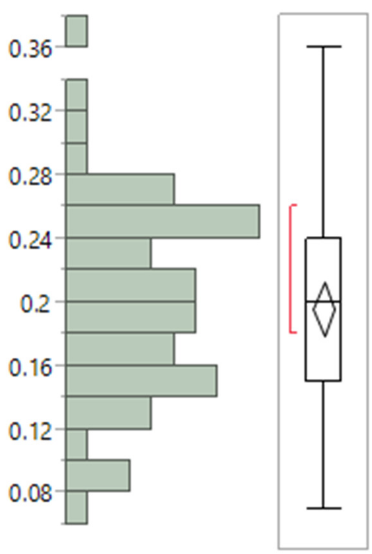
The Middle period assemblage is 33% smaller than the previous period, but should not be taken to reflect a contraction of the site, but is most likely a bias in sampling or excavation (though it is interesting that both grave numbers and waste pits remains drop during this period). The same analysis performed on the Early period assemblage was conducted and summarized in Table 9-3.

Vessel	N	**Grey (n and %)**	**Black (n and %)**	**Inner rim diameter (Mean/ median)**	**Inner rim diameter (SD/SE)**	**Outer rim diameter (Mean/ median)**	**Outer rim diameter (SD/SE)**
鬲 li	27	23(85%)	4(15)	14(14.44)	3.51(0.7)	18(18.8)	4.06(0.81)
盆 pen	26	20(77%)	6(23%)	24(21.5)	6.96(1.36)	29.65(27)	7.92(1.55)
罐 guan	3	3(100%)	0	16.33(11)	11.01(6.38)	21.3(18)	11.37(6.37)
簋 gui	1	1	0	13	0	15	0
甗 yan	4	4(100%)	0	26(26)	1.41(1)	32(32)	1.41(1)
豆 dou	11	8(73%)	3(27%)	16.55(16)	1.01(0.33)	18.22(18)	1.3(0.43)
瓮 weng	9	9(100%)	0	22.85(22)	8.53(3.04)	28.57(28)	10.45(3.95)
钵/碗 Bo/wen	2	2(100%)	0	17(17)	1.41(1)	18(18)	1.41(1)
All	84	71(85%)	12(15%)	/	/	/	/

Vessel	2 N	**Cord marks Shengwen (Mean/median)**	**Cord marks Shengwen (SD/SE)**	**Cord marks Shengwen CV/%**	**Cooking - usewear N and (%)**	**Wall thickness (Mean/median**	**Wall thickness (SD/SE)**
鬲 li	27	0.2(0.2)	0.04(0.009)	(97%)	24(88%)	0.81(0.79)	0.12(0.02)
盆 pen	26	0.18(0.19)	0.06	33%(65%)	3(11%)	0.78(0.79)	0.13(0.02)
罐 guan	3	0.21	0(33%)	/(33%)	0	0.93(0.93)	0.12(0.07)
簋 gui	1	/	0		0	0.7	0
甗 yan	4	0.26(0.26)	0.14(0.08)	(100%)	2 (50%)	1.125 (1.125)	0.24(0.05)
豆 dou	11	/	0		0	0.65(0.66)	0.11(0.03)
瓮 weng	9	0.14(0.16)	0.07(0.02))	48% (77%)	2(22%)	1.32(1.165)	0.45(0.15)
钵/碗 Bo/wen	2	/	0		0	0.65 (0.65)	0.18(0.13)
All	84	0.19 (0.2)	0.06(0.008)	33% (65%)	31(36%)	0.85(0.79	0.26(0.02)

Table 9-3 - Basic statistics of Tinama Qucn Middle period vessels (SD-standard deviation SE-Mean standard error)

As was observed for the Early period, the only two moderately abundant vessel types for the Middle period are the *li* and *pen* vessels while *guan* vessels, the second most abundant category type for the Early period are practically non-existent. *Dou* serving and *weng* cauldrons are found in similar quantities and other vessel category types are represented only by several sherds. As was stressed above, these quantities hardly mark assemblage preferences changes from the Early to Middle period. Instead they reflect the availably published assemblages from the 80-89 seasons where the latter 1990s excavation focused more heavily on later Western Zhou periods (and has yet to be published). That said, a noticeable difference between Early and Middle periods is the absence of vessels made with red paste. Usewear marks associated with cooking are still very high for *li* vessels as expected, while those found on *weng* drop somewhat from the previous period, as a result, perhaps of the absence of the three legged giant cauldron that displayed those patterns during the Early period. Furthermore, the standard error mean of internal vessel diameter is quite large signaling little confidence in the mean as representing this batch. Here too the *shengwen* corrugation mark width between vessels was examined to gage their spread (Figure 9-5).

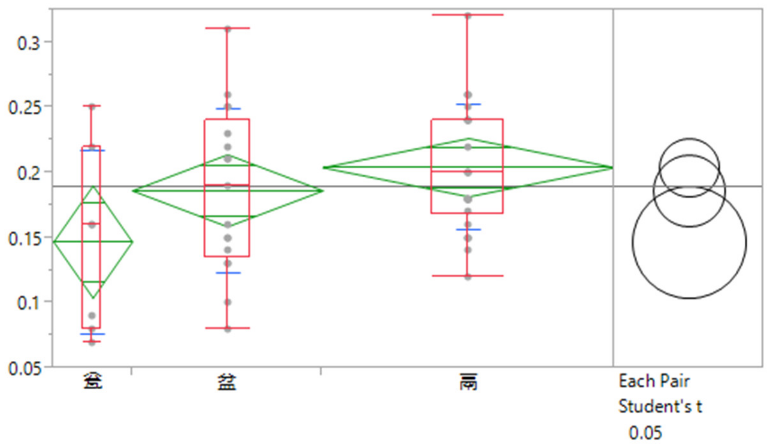


Mean	0.19
Std Dev	0.06318
Std Err Mean	0.008
Upper 95% Mean	0.212
Lower 95% Mean	0.178
N	55
CV	32.294

Figure 9-5 - TMQC Middle period shengwen distribution graph.

Mean *Shengwen* width (19.5mm) for the Middle period at TMWC is similar to that seen for the Early period vessels (19.9mm), but the coefficient of variance value (CV) for the Middle period observations is much higher (32% as opposed to 22% in the Early period), suggesting a greater degree of variation among them. This is primarily the product of the *weng* sample having a high degree of variation. An

ANOVA test highlights this below (after checking that the sample is normally distributed and the largest variance is no more than three times the smallest (Drennan 2009:170 and see Figure 9-6).



Level			Mean
li	A		0.204
pen	A	B	0.186
weng		B	0.1471

Figure 9-6 - ANOVA on TMQC Middle period shengwen width size (left to right: weng, pen and li)

A t-test performed on both period sample means reveals the following results (Figure 9-7):

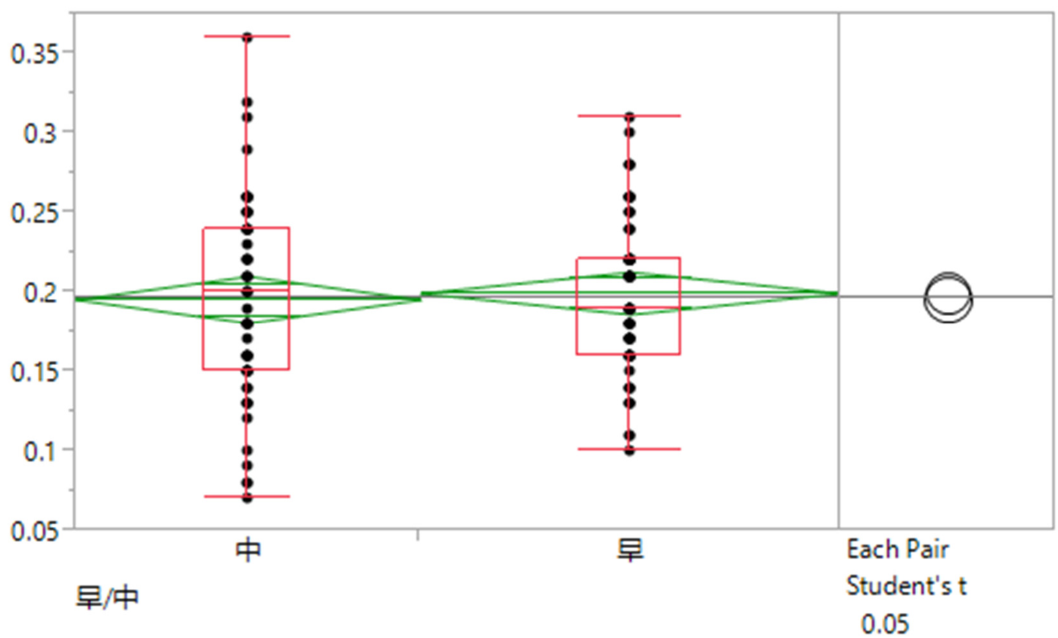


Figure 9-7 - T-test preformed on shengwen mean between Early (right) and Middle period (left) assemblages at TMQC

Figure 9-7 presents both the spread of all points measured and the difference between means on the right. In summation it is thus possible to estimate with a 95% probability that for this assemblage, the actual difference between the *shengwen* mean of Early and Middle period sherds is between 0.02 cm and 0.01cm. This difference is almost not significant at all (t =0.69) leading to a rejection of a scenario where the men size of *shengwen* size were considerably different between periods (i.e. that production techniques or traditions changed)

Li Cooking Vessel Analysis

It is unfortunate that this study will not be able to say much about dining practices, which could have been inferred from the observation of serving dishes or eating bowls and plates at TMQC, as their numbers are simply too low. Nor will it be possible to make meaningful comparisons between periods in this respect either. However, since this study is concerned with cooking vessels a more robust study of *li* vessels is provided.

Period	N	**Grey (n and %)**	**Black (n and %)**	**Inner rim diameter (Mean/median)**	**Inner rim diameter (SD/SE)**	**Outer rim diameter (Mean/median)**	**Outer rim diameter (SD/SE)**
Early	30	30(100%)	0	18.91(20)	4 (0.81)	23.16(25)	4.55(0.92)
Middle	27	23(85%)	4(15)	14(14.44)	3.51(0.7)	18(18.8)	4.06(0.81)

Period	N	**Cord marks *Shengwen* (Mean/median)**	**Cord marks *Shengwen* (SD/SE)**	**Cord marks *Shengwen* CV/%**	**Cooking - usewear N and (%)**	**Wall thickness (Mean/median**	**Wall thickness (SD/SE)**
Early	30	0.2(0.21)	0.03(0.006)	15% (100%)	26(86%)	0.943(0.89)	0.16(0.02)
Middle	27	0.2(0.2)	0.04(0.009)	(97%)	24(88%)	0.81(0.79)	0.12(0.02)

Table 9-4 - Li vessel properties of Early and Middle periods at TMQC

A cursory observation of *li* vessels reveals that there was little change between periods in terms of usewear and corrugation width, although vessel thickness decreases somewhat (and is statistically significant and see below), however only by a few millimeters. The impact this change would have had on vessel performance is unclear, but in fact might be related the larger noticeable change in *li* vessels between the Early to Middle periods: their size. Larger vessels can require more material to make them structurally sound (Rice 1987: 229). A more robust analysis on the connection between technical features and vessel performance is explored below.

Vessel	period	Inner rim	Outer rim	maximum body diameter (external)	vessel height from base to lip	vessel height from leg to lip	Vessel wall thickness
H321:6	Early	24	31	29.8	25.1	28.7	0.895
H321:11	Early	21	25	23.2	20.3	23.8	0.92
H34:10	Middle	14	19	18.53	16.43	20.25	0.845
H23:23	Middle	12	16	17.62	13.24	15.5	0.72

Table 9-5 - Properties of four whole li vessels from TMQC (numbers are in cm)

When the *li* vessels of both periods are compared it becomes clear that while Early period sites have larger diameter orifice sizes on average, their sizes are also more variable then the Middle period *li*, which while smaller, display a number of larger *li* vessels as well. These results are not normally distributed and thus do not point to a single preferred vessel size category, even when a trend of larger or smaller vessels is observed between periods (Figure 9-8)

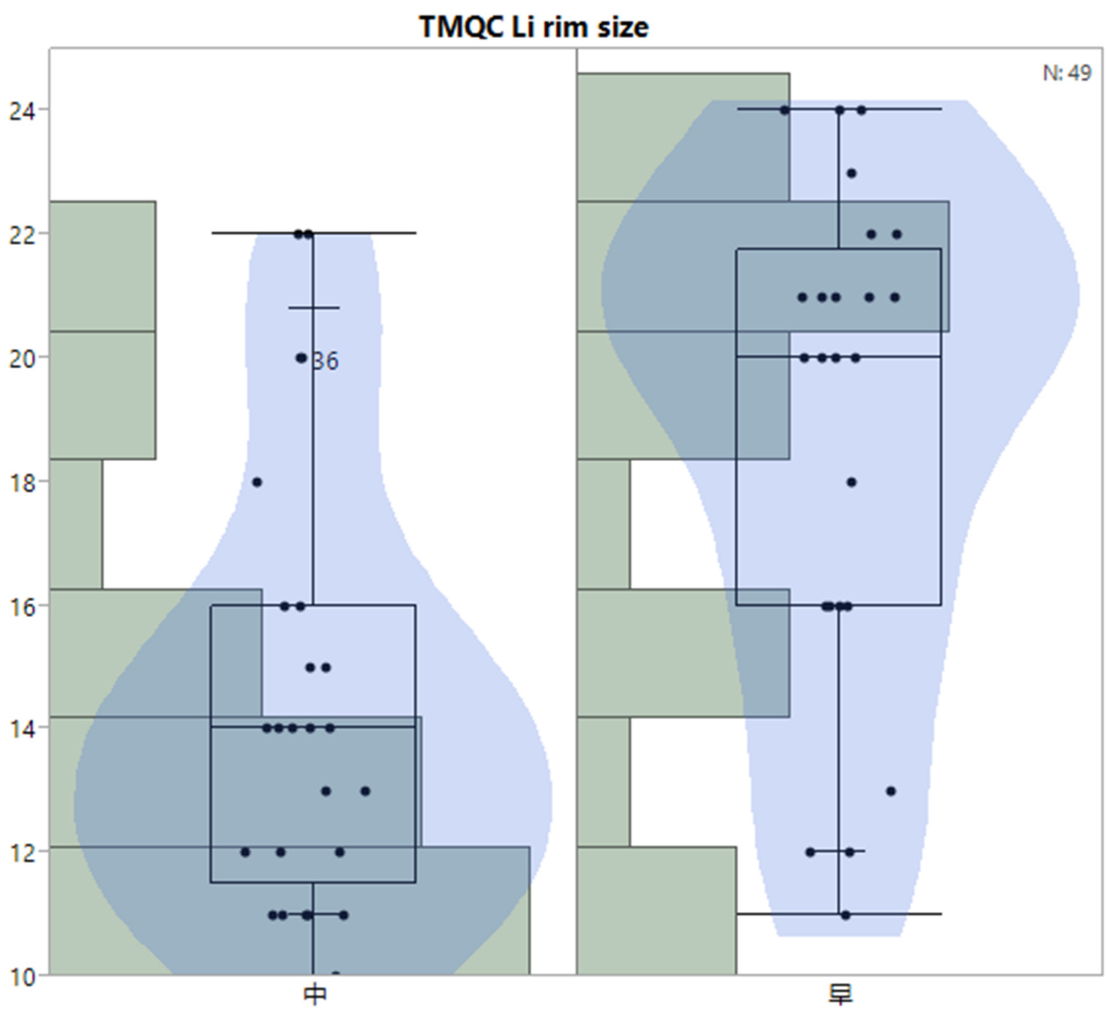


Figure 9-8 - TMQC li rim size by period (Ealry 早 right and Middle 中 left)

A nonparametric Wilcoxon test does in fact reveal that the differences between these two groups is very significant (z=3.526, 01>p>.005). Indeed, when the *li* vessels are separated into two categories, big and small marked at 15cm, it is clear that the majority of the Early period vessels fall in the large category, while the majority of the Middle Western Zhou period vessel can be considered small (and see Figure 9-9).

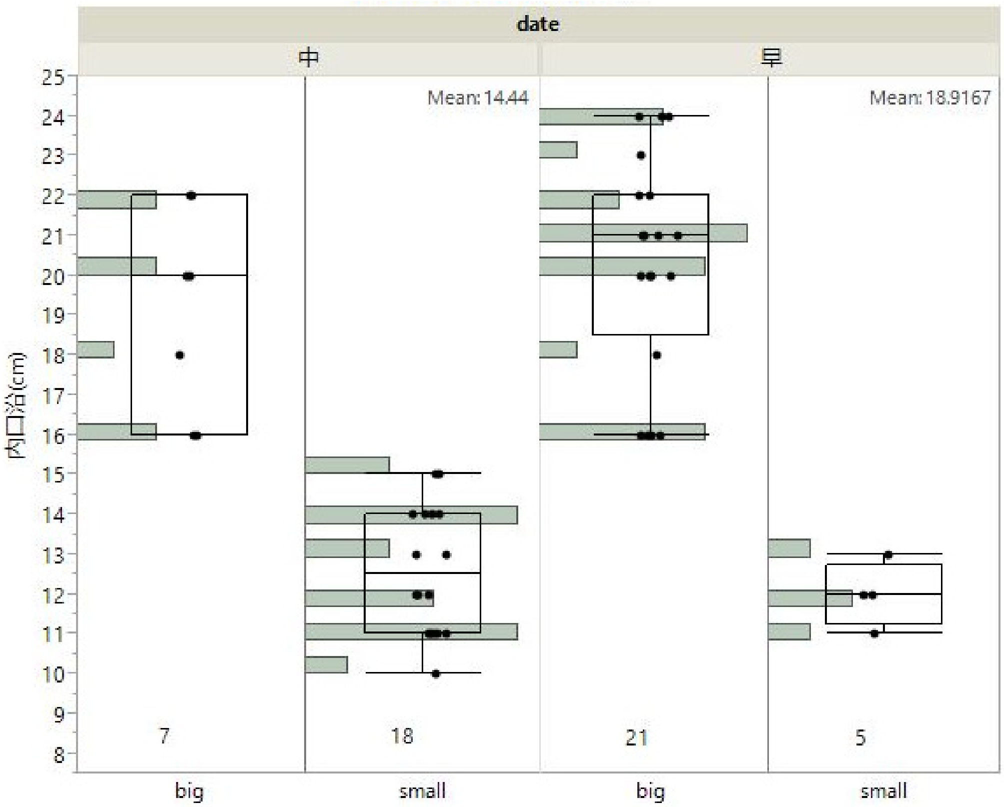


Figure 9-9 - TMQC li rim size by period (Ealry 早 right & Middle 中 left) and size - small and big (numbers in cm and X axis number are counts)

Dividing the samples in this way does not present two categories of normally distributed observations, however. Thus a pattern that would reflect two general types of vessel groups based on their size does seem to emerge. In fact there might have even been more than two or more preferred rim sizes among TMQC *li* vessels during both periods even though a reduction in rim size is observed. Unlike corrugation marks where a hypothesis was put forward where potters were using similar cords sizes in their attempt to keep a uniform width size for their final products, potters may not have had an ideal cooking size that they were trying to make at TMQC for either period.

Since the mean is not a good estimate for comparing these samples, batches of resampled medians from both periods were created instead i,e. a new batch of medians for all the populations the observed sample may have come (Drennan 2009: 137). The reason to do this is that resampling provides an error range with which to estimate the observed median and thus a method of comparing *li* vessel sizes between periods. It will also allow a compression of these two periods in a way that will present how confident of a claim can be made that medians of both samples are in fact different. A boot strap of 10000 samples was run resulting in the following distribution (Table 9-6):

Coverage	Pct Lower	Pct Upper
0.95	16	21
0.90	18	21
0.80	19	21
0.50	20	21

Rim Early median boot

Coverage	Pct Lower	Pct Upper
0.95	12	15
0.90	12	15
0.80	13	14.5
0.50	13.5	14

Rim Middle median boot

Table 9-6 - Bootstrap resampling results on TMQC Early and Middle period li vessel rims

These results display, with a 95% confidence rate, that the median of early period TMQC *li* rim sizes fall between 16 and 21 cm, while the median of Middle Period TMQC *li* rim sizes are between 12 and 15 cm. A somewhat less confident statement (50% confidence level) would be that Early period median of *li* rim size is somewhere between 20 and 21cm in contrast to Middle period *li* rim sizes that fall between 14 and 13.5cm (again the confidence in this claim would not be very high). These results can also be presented in a bullet graph form for a visual representation in error ranges and confidence in them (Drennan 2009: 148-152; Figure 9-10).

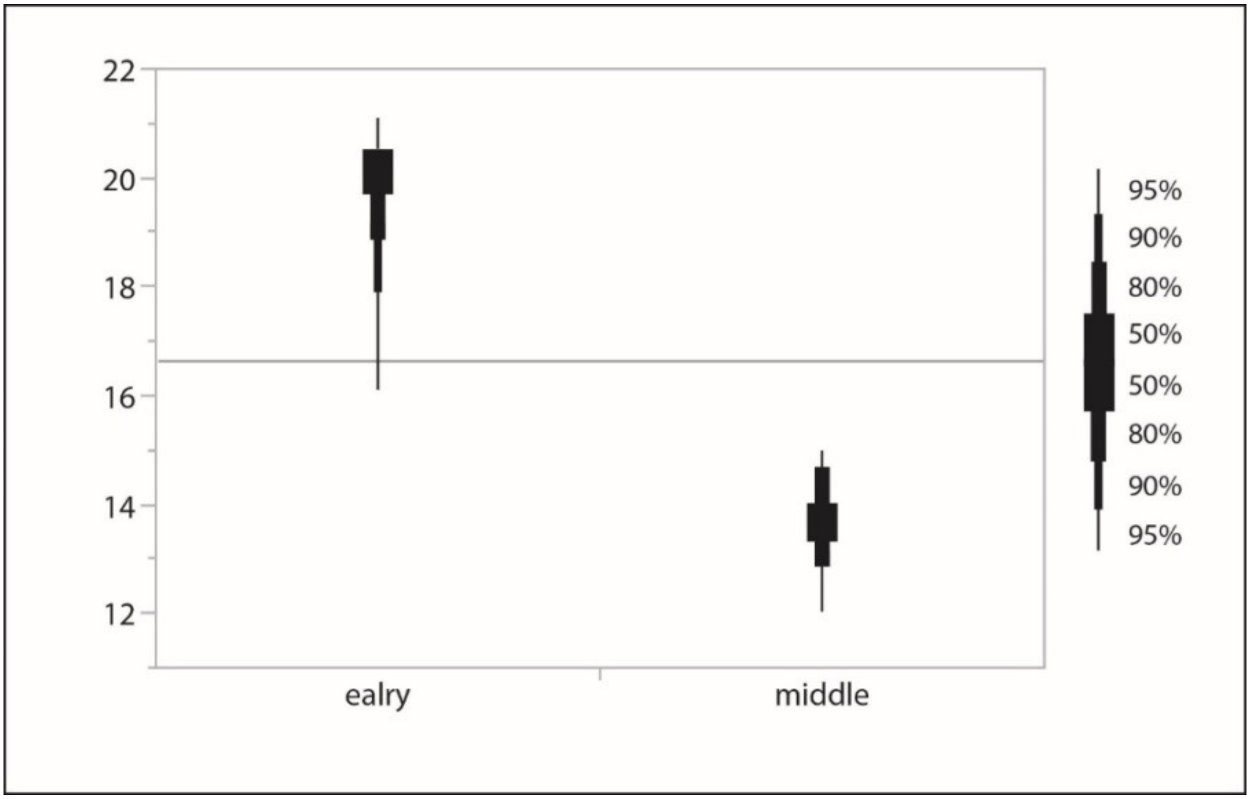


Figure 9-10 - Bullet graph comparing median li rim size for TMQC Early and Middle periods

In order to understand these differences in terms of the amount of food that can be made in these vessels, their volume was calculated using a model generated from the observation of 35 whole li vessels from 6 difference sites (Appendix 2 has a detailed explanation on how vessel volume was calculated from vessel diameter). Plotting *li* vessel volume measurements here results in a similar distribution observed for *li* rim sizes, and one that grants more confidence in a general two *li* vessel size categories existed at the site (Figure 9-11).

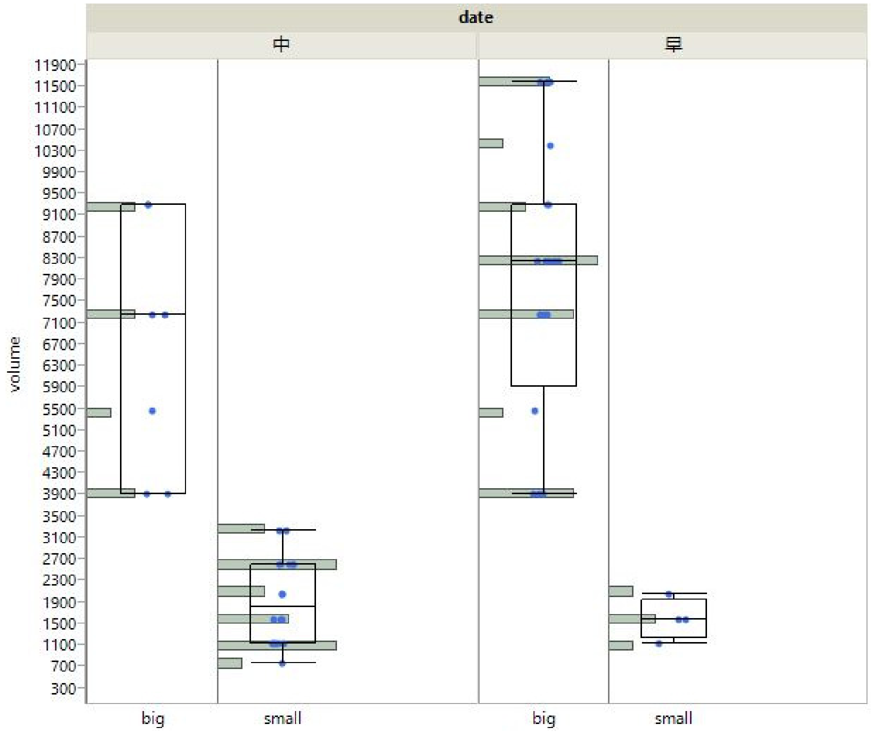


Figure 9-11 - TMQC li volume by period (Ealry 早 right and Middle 中 left) and size - small and big (numbers in cm)

Performing the same boot strap resampling conducted on the *li* rim diameter size on *li* volume produced the following results are found (Table 9-7):

Coverage	**Pct Lower**	**Pct Upper**	**Coverage**	**Pct Lower**	**Pct Upper**
0.95	3907.28	8239.31	0.95	1566.41	3228.34
0.90	5452.64	8239.31	0.90	1566.41	3228.34
0.80	6350.28	8239.31	0.80	2057.9	2920.11
0.50	7247.93	8239.31	0.50	2334.89	2611.87
Vol early period median = 7.4L			**Vol middle period median =2.6L**		

Table 9-7 - Bootstrap resampling results on TMQC Early and Middle period li volume

While the medians for each period are 7.4 L for the Early period and 2.6 L for the Middle period, a more robust way for describing this data is to say the there is a 95% degree of certainty that the median of Early period *li* vessel volume falls between 8.2 and 3.9 liters and 1.5 to 3.2 liters for the Middle period. These results show that during the Middle period the largest vessels were still smaller than the smallest vessel of the Early period. It is also possible to say with 90% confidence that the Median volume of the Early period *li* vessels fell between 8.2 and 5.4 liters and 3.2 to 1.5 liters for the Middle period.

From Vessel Volume to Portion Sizes

The Quanyu 權輿 poem in the *shijing* notes:

於我乎、每食四簋、今也每食不飽。于嗟乎、不承權輿。

He assigned us at every meal four dishes of grain; But now at every meal we do not get our fill. Alas that he could not continue as he began! (Translated by James Legge 1879 and retrieved from Ctext.org 2/11/2016).

Legge translated the *gui* 簋 vessel character here as dish, but K.C. Chang (1973: 507) takes this to indicate that four large bowls of grain were needed to sate a single man's appetite. How big the *gui* vessel is in this poem was and how many people ate from it is of course impossible to assess. Vessel volume provides an important clue to the amount of food that could potentially be made and therefore the number of people that could be fed with it. The question that needs to be answered here is: what is the relationship between vessel volume and the amount of people that could be fed with it? In the following pages I look instead to a number of different studies and research avenues for inspiration and possible ways with which to try and understand cooking quantities and feeding portions. Turner and Lofgren's (1966) pioneering study of pueblo communities in Arizona hypothesized that cooking vessel volume was influenced by the average number of people who were being fed. While serving vessels, both bowls and ladle size remained constant (with a mean value of 691 cc for bowls and 360 cc for ladles or about ½ of the bowl volume), the average volume of cooking vessels increased from 3107cc to 4879cc over roughly 1500 years (Turner and Lofgren 1966: 124-128)[68]. The assumption then made by Turner and Lofgren was that people ate the same amount of food at each sitting and that the number of people who ate at each meal grew, and with it the size of their cooking pots. Taking the volume of 691cc as a meal serving for one individual, Turner and Lofgren calculated changing household sizes in Western Pueblo communities over times and even found the results to fit ethnographic observation of known household sizes in the region (Turner and Lofgren 1966: 129-13).

[68] Most all vessels maintained an average mean for each period but larger vessels of 8000cc and 11000cc existed as well, but in far smaller quintets.

Nelson (1981: 109–110), however, pointed out that these assumptions overlooked the fact that children require less food and thus no single consumption variable could be used to directly calculate household size. Indeed Mills (1999: 99) provides a number of parameters that can also influence changes in the sizes of cooking pots: household wealth, supra household feasting patterns and differences in foods being cooked and the methods for cooking them. Rice (1987: 293-9) adds specialization among communities and environmental considerations as contributing factors as well. DeBoer and Lathrap (1979) noted that large vessel volumes can also be reserved for specific activates like the brewing of alcoholic beverages, and thus do not necessarily correlate in any way to the amount of people consuming the product in a single siting. In fact, even while several ethnographic studies have found correlations between cooking vessel volume and household size (e.g., Hildebrand and Hagstrum 1999), other studies emphasize the need to factor in the sum of all cooking vessel volume that are found in a single household in order to understand these relationships (Longacre 1991; Tani 1994). Indeed Nelson's study (1981: 126) of Maya villages in Guatemala found that vessel volume did correspond to household size, but only when corrected for household status and wealth.

Arthur's (2009) study of the Gamo people in Ethiopia encouraged archaeologists to even incorporate information on life cycles and uses of pottery in a particular community to better comprehend these relationships. Another common approach has been to analyze ratios between serving and cooking wares in a given household (e.g., Blitz 1993). Crown (2000: 258) astutely argues that supra household commensal practices and changes in the ratio between cooks and diners, and not household size, could also result in a change in vessel size. Indeed, while guidelines for finding the relationship between cooking vessel and the amount of people could be fed with it do exist, they are very general and are hard to implement cross-culturally. DeBoer's (2001) model of assigning vessels with rim orifice diameter size of up to 11cm to everyday household use and 29cm and over to feasting activates is hardly a worldwide universal.

What complicates these studies further is the fact that different foods and diets require different amounts and quantities to satisfy basic human needs. Both the US FDA and EU FIC, for example, publish information on the number of calories needed to be consumed by individuals and the daily suggested serving size from each food group, but not a meal. Bray's (2003) work is a commendable attempt to reconstruct the Inka diet through historical accounts and pictographic evidence, and is used to contemplate the minimum daily requirements of various foodstuffs that would comprise daily meals. The many contributions in Voutsaki and Valamoti (2013) provide an overview of a number of scientific methods that could shed light on diet as well include methods that range from residue, microware texture and stable isotope analysis[69]. That said, diets do not provide us with quantities of food being eaten per day, only the ingredients comprising them. Certainly even while all of the above studies might disagree with respect to how well volume corresponds to household size, no one doubts the common understanding that larger vessels are used to make more food and have the potential of feeding more people. In fact most ethnographic and archaeological studies find a range of cooking vessel sizes in many households each used on different occasions (Junker and Niziolek 2010: 36–39)[70].

Thus in a scenario where all cooking pots were used to prepare the same dishes, it is not unreasonable to assume that larger vessels fed more people who made up larger individual households or even a number of different family units who had their food made in a single pot[71]. In attempting to answer these questions, several studies have looked not only at ceramic vessels, but at food preparation and consumption loci in early sites as well in their attempts to discern household and supra-household eating parties (e.g., Gumerman 2010; Mills 2007; Moore 1996). Utilizing ceramic assemblages, a

[69] Indeed the way pots are used and the type of food cooked in them can provide useful information. Residue analysis could reveal whether, for example, larger pots were used to cook grains, while smaller ones where reserved for the production of secondary foods, or whether a single pot was used to concoct all-in-one stews.

[70] This could potentially be discerned if important and uncommon ingredients existed only in larger vessels as has been noted by several studies on feasting (Hayden 2001: 40). Another way to look at these issues is to see whether or not house sizes were increasing as well and thus indicating that more mouths were being fed (Crown 2000: 261).

[71] Another possibility brought to my attention during my stay at TMQC is that people in different places may have been hungrier and used bigger pots to make more food…

number of studies have followed Cooper's (1982) pioneering work on feasting in early China. Emerging elites might have attracted followers by sponsoring feasts in public contexts as a viable political strategy among China's early chiefdoms (Underhill and Habu 2006: 132). Similarly Liu Li has compared cooking and serving vessel quantities between the households of Neolithic Jiangzhai and Yuchisi and found that low numbers of vessels at Jiangzhai households would not have sufficed to hold feasts with and thus must have been made for private family use (Liu 2004: 42–46). Identifying ritual-specific or large communal feasting occasions also helps shed light on specific meals that aid in the reconstruction of the amount of food consumed in a single sitting. A study by Urem-Kotsou and Kotsakis (2007) in Neolithic sites in Greece makes the claim that large cooking vessels found with smaller serving vessels and large preparation vessels might indicate that food was made together, but cooked and served in individual houses. In addition, large pots could be used to feed a single family over a number of days and not in a single sitting. A large quantity of a staple dishes can be prepared in a single cooking episode that is then left over a small fire and slowly consumed by a family during the better part of the week – as was the custom in many of 19th century New England farmsteads.

As noted above, the ceramic data of this study comes not from houses but from trash pits that cannot be separated into individual households. Instead they represent an accumulation of sherds, mostly cooking vessels, from a single community over several hundred years. Furthermore, the low number of *wen* and *bo* bowls may indicate a situation where diners were consuming food out of a single serving vessel instead of dishing out food into individual bowls. Below is a column measurement found for the Middle periods at TMQC (Table 9-8).

Vessel	Period	Vessel type	Volume
H332:9	Early	*Bo*	1.1-1.3 L
H414:1	Early	*Wen*	1.1-1.2 L
H111:a	Early	*Bo*	4.2-4.4 L
H159:2	Early	*Bo*	1.2-1.4 L
H316:9	Middle	*Bo*	2-2.2 L

Table 9-8 - TMQC Early and Middle period bowl volumes

Several studies argue however that there is a link between the total number of diners and the size of serving vessels. Henrickson and McDonald (1983: 638–639), in attempting to classify vessel types through empirical measurements, provide the following rough estimates for vessel volume and portion size: serving vessels of 200-500cc are cups, 0.5-1.5L are bowls and anything larger than that are family size serving dishes. Juhl (1995: 35) also finds a degree of correlation between individual serving sizes and family serving sizes, namely a volume ratio of 1 to 3 of individual container size to family serving vessels. It is hard to tell if the bowls in table 7 fed individuals in a single meal, but it would seem that the *wen* and *bo* serving bowls are quite large for individual portions. Turner and Lofgren's (1966) 691 cc measurement was a single meal serving size for one adult and is far less than the volume and quantities of cooked food that might have been poured into them - namely millet porridge *zhou* or *geng* dishes discussed above.

Other studies use bowl volume as the daily allowance measurements of food for individuals and not meals as reflected by vessel volumes. Johnson (1973) found that most of the bevel rim bowl volumes unearthed at Habuba Kabira – believed to reflect worker daily meal portions given in return for corvée labor – cluster around 800cc with the largest reaching a volume of 1L. D'Anna (2010: 187) notes that bevel rim bowl volume cluster around 600 and 800 at the site of Arslantepe, however, these might very well be volumes of grain and not cooked food, which workers would process to make their daily meals. If so, when cooked, the food they would yield would only fit in a much larger bowl (and see below).

In his publication of the Anyang Shang site Li Ji' wrote that *li* of 500 cc or less could be considered for the purposes of individual diners for a single meal (and see discussion in Happanen 2005: 224-225). It is not clear how this estimate is calculated, but using this estimate we can say that the average early period *li* cooking vessels could feed a maximum of 15 people with 7.4 L and the middle period 5 with 2.6L. This result might speak to differences between families and supra family quantities, but it does so in the most general of ways. Since most scholars believe that Zhou people subsisted primarily on cooked millet, perhaps in the form of porridge, I turn to other research avenues that study the consumption of these foods.

Serving Size of Millet Porridge (African Ethnography)

The importance of millet as a crop and millet porridge in particular for sub-Saharan African communities has not gone unnoticed by even the earliest Western ethnographic expeditions (Beattie 1971; Roscoe and Mackie 1924). Ricquier (2014) provides a fascinating linguistic history of the origins, spread and change of millet porridge in Africa by tracing additions to recipes, direction of movement and levels of acceptance or rejection. In fact Richards (1939: 47) noted that for the common Bemba man "all other foodstuffs, whatever their nutritive value, he considers merely as additions to the essential ubwali, as snacks to be eaten before the main meal is prepared, or as substitute foods during the hunger months". Richards and Widdowson (1936: 169) describe the millet porridge of, then Rhodesian villages, as the main component of every meal as well stating that: "the grain is ground coarsely between two stones and flung into boiling water, stirred with wooden spoons for a few moments, and served warm in baskets as a glutinous, elastic mass, brown, and of a very coarse texture".

They further lamented the difficulty in assigning the actually daily amounts made and eaten by families, as the food was distributed at each meal to different groups of varying sizes. Often times the chance visitor or guest would wander through the camp and consume whatever food they could (Richards and Widdowson 1936:1 70-175). Indeed Smith and Dale (1920: 145) wrote that while it is near impossible to estimate the amount of food an adult consumes daily in the Illa speaking regions of Rhodesia, three pounds of cooked porridge are an agreed upon healthy ration given to employs for a day of work. Similarly, Fortes and Fortes (1936: 269) working with a Tallensi community found that an adult male won't feel satisfied until he has consumed around 1½ pounds of cooked porridge.

Talleseni people by and large eat 2 meals a day which adds up to the 3 pounds cooked porridge a day Smith and Dale recorded.

Recordings of the amount of millet grain used to make these porridges is even rarer. A single account is given by Boyd-Orr and Gilks (1931: 26–28) who when living among the Akikuyu tribe found that the two main dishes comprising the vast majority of daily food intake was Irio – a thick porridge of maize, legumes, and plantains and a gruel, Ocuru, made of millet flour and water. Men received daily portions of 2 cups of Irio stew and 1,259cc Ocuru made with 377 grams of millet (Boyd-Orr and Gilks 1931: 26-28). More commonly reported is the amount of grain consumed. Cohen (1967: 76–77) reported that on average Kanuri households went through 9 pounds of millet grain each day, where on average four adults and a larger number of children will live together. Elsewhere (Cohen 1960: 288) he notes that on average adult males will consume 1.9 pounds (0.83kg) of raw millet a day. Irvine (1973: 381) found a somewhat lower number of 0.73 kg of millet per day per adult at the Lir village of the Wolof people and Lhote (1955: 263) observed that Kel Ahaggar adults consume annually 187 kg of millet and 15 kg of dates a year or about 500 grams of millet grain a day. This lower estimate is also given by Nicolaisen (1963: 213) who found that among the poorer Tuareg, millet porridge is relied upon almost exclusively for consumption and at least 0.5 kg of millet is required per day per person.

Higher average numbers are given by Forde (1946: 158–159) who compares a wide number of ethnographic accounts to find an average of 1.5-3 lb of threshed grain to be consumed daily per adult (the upper limits very likely being given as amounts needed to entertain guests at feasts). The highest numbers are given by Toulmin (1992: 224) who notes that 1.5 kg of raw millet grain or 1 kg millet flour is the daily allowance per adults per day in the Sahel (yet these numbers, found by yearly counts, include grain used to make beer as well).

Food Volume – Grain and Cooked Millet Porridge in China and the Modern Kitchen

Following results from a regional survey conducted on millet consumption in the Yiluo basin during the 1950s, Liu (2006: 184) quotes 191kg of millet as the minimum required amount for an adult consumed annually – or about 520 grams of grain a day. Peterson and Shelach (2012: 277–288) following statistics provided by the US Department of Agriculture, note that in order to satisfy the daily caloric requirement of an adult who is subsisting entirely on millet, one would need to consume 2.5 liters of cooked millet a day (Where 250ml of cooked millet provides about 200 calories). They further note that 1 liter of dry millet cooked with 1.5 liters of water will produce 2.5 liters of cooked millet, a quantity that would support the caloric needs of an adult male. They, however, calculate that ancient consumption might have only been around 1500 calories a day and thus find that only 1.8 liters of cooked millet was probably consumed daily, made of 0.72 liters millet grain. As the USDA lists that a cup of uncooked millet grain weighs 200 grams, this quantity is very similar to that used by Liu above. Where Peterson and Shelach require a little more than 3 cups of uncooked millet weighing 600 grams, Liu's 500 grams would amount to roughly 2 ½ cups or 0.6 liters of dry uncooked millet. If using the same 1 to 1.5 ratio of water to grain, 0.6 liters dry millet grain will produce 1.5 liters of cooked millet.

For ethnographic accounts of African millet the amounts of flour are not specified, but using the 1-1.5 grain to water ratio (that yields 2.5 cooked from 1 L grain) mentioned above, 500 grams of millet grain will make about 1.5 liters cooked millet, 0.73kg would make 9 1/8 cups or 2.1 L cooked millet and 1kg would yield 25 cups or 2.9 L cooked millet. These numbers are higher than those mentioned by both Liu or Peterson and Shelach and might reflect more than the bare minimum intake. African accounts also refer to porridge made from flour and not grain and might use different quantities, though many similarities do exist. What is still lacking here is a way to convert the total cooked millet volume to weight in order to understand meal intake mentioned by these ethnographic accounts.

I did a bit of experimentation in my kitchen to better assess porridge properties and obtained the following numbers:

1 cup of raw millet grain weighs 230 grams (30 grams more than reported by the USDA in Peterson and Shelach 2012) and 1 cup of millet flour weighs 172 grams.

Millet flour porridge

1 cup flour, which weighed 172 grams, cooked with 2 cups water made 2.5 cups of porridge.

1 cup cooked millet porridge (from flour) weighed 252 grams. To make 3 pounds of cooked millet porridge, as noted above, one would need 5.2 cups cooked porridge made from 350 gram of flour. Other ratios could be used, but here I moved to making porridge from millet grain as this is the recipe used today in China and was perhaps the one followed in the past as well.

Millet grain porridge[72]-

I was unable to create cooked millet with the numbers Peterson and Shelach (2012) reported and found the millet to be under cooked or burned. In fact anything under a 1:3 ratio of grain to water, twice that of what they note, did not seem to work. Below are two charts with the amounts I used and the results of the experiments (Table 9-9):

[72] Full disclosure: The author notes that as he is not a fan of millet porridge it is very possible that the full amount of love recommended in the different recipes he followed may not have been used.

	1:1½ (Peterson and Shelach 2012)	**1:3 (pilaf)**	**1:6 (Thick porridge)**	**1:8 (Watery porridge)**
1 cup raw millet grain yields X cooked	2.5 cups (0.59L)	3½ cups (0.82 L)	5 cups (1.18)L	6 cups (1.41L)
1 cup cooked porridge weighs	/	234 grams	242 grams	261grams

Table 9-9 - Raw millet to water ratio needed to cooking porridge

Chinese Historical Sources on Millet Consumption

Documents on food provisions found in historical records of the early Chinese empires supply additional information on millet serving sizes. Indeed millet is in fact the grain of choice to be distributed to the people during the Qin period (Hulsewé 1985: 39). Records kept for Qin convict laborers report that women received 1/2 a *dou* 斗 and men 2/3 of a *dou* each day. Heavy work rations are 2/3 and 5/6 of a *dou* respectively (Hulsewé 1985: 31-32). As a *dou* 斗 is calculated as 1/10th of bushel also known as a *shi* 石, which is 20 liters, a *dou* would be measured at almost 2 liters. Thus men would eat about 1.3 L and Women about 1 L of millet[73].

Michael Loewe (1961, 1967) has reviewed excavated bamboo strips reporting the amount of grain issued to soldiers in the Western frontiers during the Han period. The accounts here are confusing and are given in a number of different measurement units, at per day and per month (30 days) rations, as well as in husked and unhusked portions. Rations varied by both status and age (a number of strips tell us the amounts that children and the wives of guardsmen were issued as well). One strip gives a monthly allowance of 3.33 *shi* of millet for a period of 30 days. Another strip notes that 1.74 *shi* of millet was given to an officer for 29 days or a quantity of 6 Sheng 升 (0.06 of a *shi*) per day (Loewe1967:

[73] Loewe (1961: 65) quotes 1 bushel or *shi* as 0.565 US bushels or a volume of almost 20 liters (19,968.753cc), also weighing 29.3 kg.

93). As the Han continued to use the weights and measurement system put forward by the Qin, the *shi* was calculated at 20 liters during the Han period as well. It is important to note that *shi* can mean both weight and volume (even though a separate unit *hu* 斛 was used specifically for volume, see more below). Thus Lowe (1961: 65) finds a *shi* as denoting a weight of 29.3 kg, a *hu* at almost 20 liters and sheng at 342.5 cc.

Using these measurements, the amounts given above are either 3.25kg or 2.2 L cooked millet per day for an individual solder and 1.758kg or 2.05 L a day in the second example given above. Since many of the recorded amounts are given in *sheng* it is not unreasonable to accept the volume amount but what makes this even more complicated is that we do not know if the amounts are being issued in husked or unhusked millet as the records are not always clear about this (note that all scholars believe grain and not cooked millet porridge was issued). Nonetheless Loewe (1967: 94) finds a range between 3.3 and 1.16 *shi* of grain as the standard 30 day allowance for a single person (65.6 or 22 L respectively of cooked millet for 30 days).

Hsu (1980: 68-70) is quite mindful of this issue and finds a ratio of 16.5:10 between the two i.e that 16.5 units of unhusked millet yield 10 husked units. He also provides a number of different quoted ration numbers in different historical texts ranging from 2.5 *hu* of unhusked millet grain per person for 30 days (or 1.51 *hu* husked millet grain = 1.006 L. grain a day) and up to 4 *hu* husked millet grain per person for 30 days (or around 2.6 L a day). Using this same ratio we can look at the quantitates for unhusked millet Loewe quotes and calculate that 65.6L unhusked millet will return 39.75L husked millet grain (or 1.35L a day) and 22L unhusked millet will produce 13.33L husked millet grain (or 0.44L a day the latter being a number issued to infant dependents) both making for more reasonable daily consumption amounts.

Both Loewe and Hsu view the amounts here as raw grain. Based, however, on the calculation presented above, we must ask who was eating all this food? Only the low estimate from Hsu of 1.006 L of grain a day would make sense, as if following Peterson and Shelach this amount would make 2.5 L cooked grains or the 2500 kilo calories needed by modern day US standards. But owing to the experiment results f 1 liters or 4.2 cups raw millet, which would weigh just under 1kg (982grams), this amount of raw millet would make between 14.5 cups of pilaf and up to 24 cups (or between 3.5 -5.67 L) of cooked millet porridge (weighing at 3.5 – 5.8 kg). Loewe's maximum and minimum allowances make even less sense as they translate into 19.11- 32.75 cups of cooked millet or between 4.55 to 7.79L cooked millet; the low estimate of 6.48- 9.24 cups of cooked millet or 1.5 - 2.2L cooked millet would be the daily ration for infants!

To put this plainly: if, taking the 3 *hu* average per adult per month (or 2 litters a day) of raw millet and using Peterson and Shelach's 1 to 2.5 Litters of raw to cooked millet, on average, an individual Han solder would be consuming 5 L of cooked millet (aka 5000 Kcal) a day. This seems far more than an average male could consume daily and would require eating contestant super abilities!

However, if we turn these numbers into cooked millet porridge quantities, the numbers seem to be a bit more reasonable: Individuals eating between 1-2 L (or 4-8.5 cups) of cooked millet a day and for Loewe 0.44L - 1.35L cooked millet a day. This would also be very similar to the amount quoted by African ethnographers who found that an adult male to eat about 1.4 L of millet porridge a day. This number is also closer to the 1.8 and 1.5 L of cooked millet found by Liu and Shelach and Peterson. Finally, this would also make sense to be the amount of cooked food being given out to Qin dynasty laborers: 1.4L for males and 1 L for females.

I use these values to calculate the upper and lower possible quantities of an adult male's daily millet each *li* can make at TMQC in person day value (henceforth PDV and see Table 9-10). With these numbers it is now possible to make the argument that while early period vessels had the potential to make between 3.28 and 4.93 PDV millet porridge servings in a single cooking session, the Middle period vessel could only produce between 1.1-1.7 PDV. Early period families might have made food once and then consumed it slowly through the week or a number of families could have pooled their resources for a single meal. The latter however seems less likely for Middle period inhabitants of TMQC as the small amounts could be consumed daily by 1-2 people at most or a single family at one meal.

	1:1.5	1:3	1:6	1:8
0.7 L (smallest M	0.28 L Raw 0.7 L cooked ***0.46 pdv***	0.17 L Raw 0.62 L cooked ***0.41 pdv***	0.1 L raw 0.5 L cooked ***0.33 pdv***	0.07L raw 0.46 L cooked ***0.3 pdv***
1.5 (low Middle M)	0.6 L raw/ 1.5 L cooked ***1 pdv***	0.37L raw 1.31 L cooked ***0.87 pdv***	0.214 raw/ 1.07 L cooked ***0.71 pdv***	0.166 raw/ 1 L cooked ***0.66 pdv***
2.6 (middle median)	1.04 raw 2.6 cooked ***1.73 pdv***	0.65 raw 2.27 cooked ***1.51 pdv***	0.37 raw 1.81L cooked ***1.23 pdv***	0.38 raw 1.73L cooked **1.13 pdv**
3.2 (H middle M)	1.28 L raw/ 3.12 L cooked ***2.08 pdv***	0.8 L raw/ 2.8 L cooked ***1.86 pdv***	0.45 2.25L cooked ***1.5 pdv***	0.35 raw/ 2.1 L cooked ***1.4 pdv***
3.9 L Early M)	1.56 L raw 3.9 L cooked ***2.6 pdv***	0.975 L raw 3.41 L cooked ***2.27 pdv***	0.55 L raw 2.78 L cooked ***1.85 pdv***	0.43 raw/ 2.6 L cooked ***1.73 pdv***
7.4 (Early period median)	2.96L raw 7.4L cooked ***4.93 pdv***	1.85L raw 6.47L raw ***4.31 pdv***	1.04L raw 5.28L raw ***3.52 pdv***	0.82L raw 4.93L cooked ***3.28 pdv***
8.2	3.28 raw 8.2 L cooked ***5.46 pdv***	2.05 L raw 7.17 L cooked ***4.17 pdv***	1.17 L raw 5.85 L cooked ***3.9 pdv***	0.91 L raw 5.46 L cooked ***3.64 pdv***
11.9 (largest E)	4.76 L raw 11.9 L cooked ***8.2 pdv***	2.9L raw 10.41 L cooked ***6.94 pdv***	1.7 raw 8.5 L cooked ***5.66 pdv***	1.32 L raw 7.98L cooked ***5.32 pdv***

Table 9-10 - Maximum amount of cooked millet in L that can be made using different ratios of millet to water (at 1.5 l cooked porridge per day as PDV).

It is still difficult to say with certainty much more than this for commensal practices of Zhou sites, but it does establish a certain range of possibilities. When combined with usewear analysis the possibilities can be further explored.

Usewear Analysis on TMQC *li* Vessels

Early Period

Usewear analysis was performed only on the *li* cooking vessels since out of vessel types that exhibited cooking use wear traces at TMQC, this vessel group was the only sample large enough to be statistically significant. Following Skibo (2013: 103) for each period I begin with whole vessels in order to gain an understanding of variation and style of cooking to assess how these vessels were used. Vessels were examined with the naked eye and usewear remains were recorded and drawn for each vessel. Markings in the form black line record eternal soot and internal carbonization and solid green and red areas where oxidization was observed (left external right internal; up is internal and bottom is internal oesrvation of the *li* crotch and legs). Only nine whole *li* vessels exist from the Early and Middle periods at TMQC yet they provide important data on this assemblage[74].

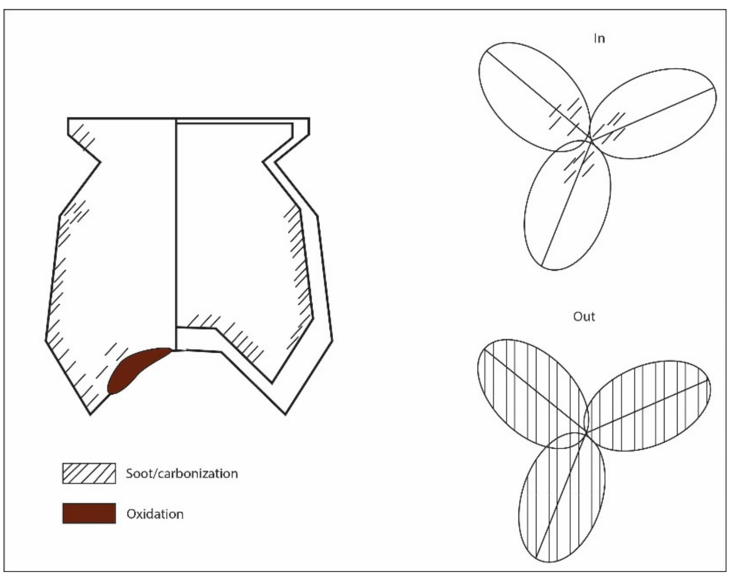


Figure 9-12 - Usewear marks for li H78:3 4L

H78:3 - External soot covers the vessel from the shoulder down to legs. A bright grey oxidization patch runs from upper part of the leg down to the crotch and base. A small patch of soot can be seen

[74] Unless otherwise stated this section follows the methodology presented and discussed in (Skibo (1992, 2013).

under the lip and neck. Internal carbonization can be seen from the shoulder down to leg and on the base

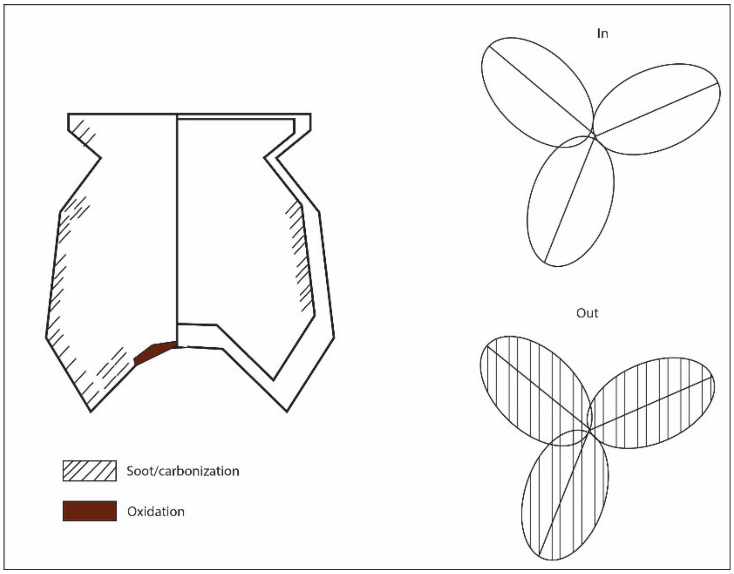


Figure 9-13 - Usewear marks for li H132:1 12L

H132:1 - External soot covers the vessel from the shoulder down to legs and a small patch can be seen under the lip and up to the neck. A small bright grey oxidization patch can be seen on the crotch near the base. Internal patches of black carbonization can be seen on shoulder down to base but not in legs or crotch.

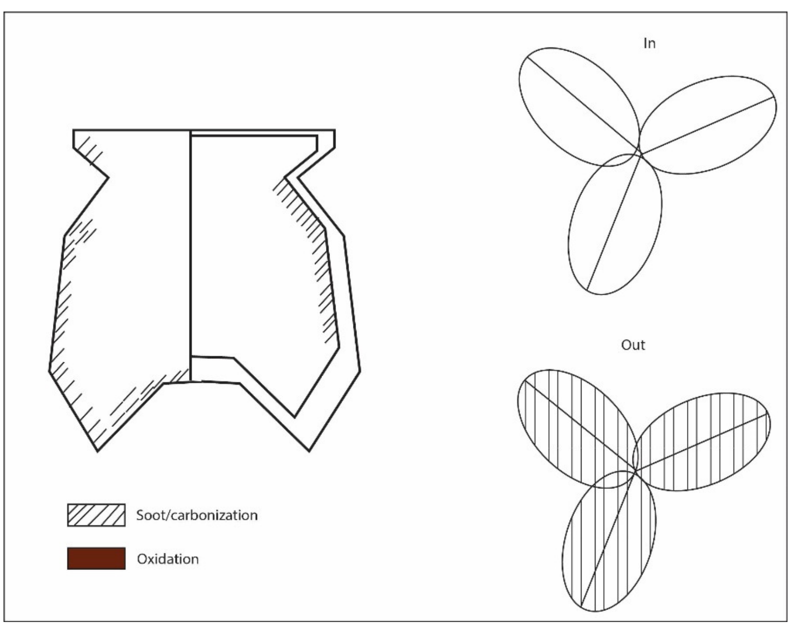


Figure 9-14 - Usewear marks for li H321:6 14L

H321: 6 – very similar to H132:1 with more soot on lip and internal carbonization on lip as well, only here the oxidization patch seen on other vessels is absent.

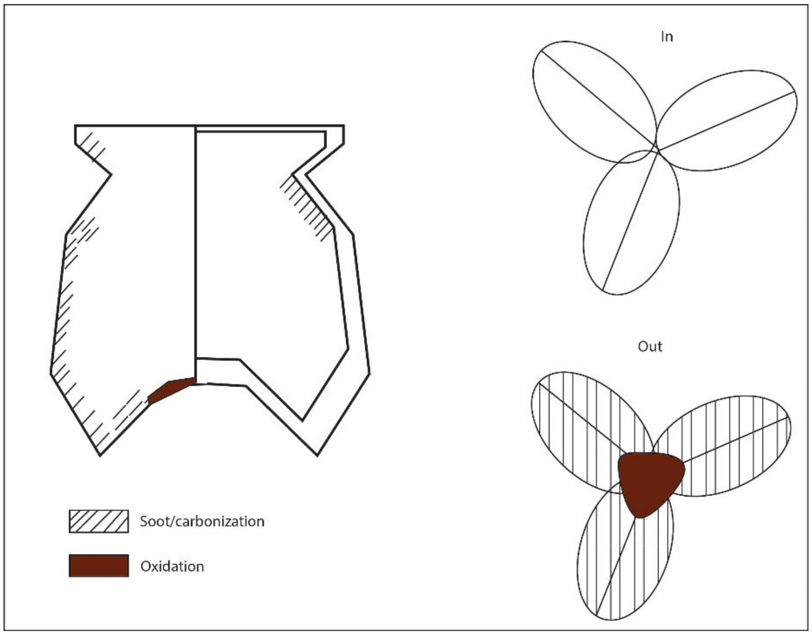


Figure 9-15 - Usewear marks for li H109:37 4L

H109:37 – external soot is observable from the shoulders down to the legs. An oxidized patch on the bottom internal leg is notable as well. Internally a clear 1 cm thick carbonization is observable just above the shoulder and nowhere else.

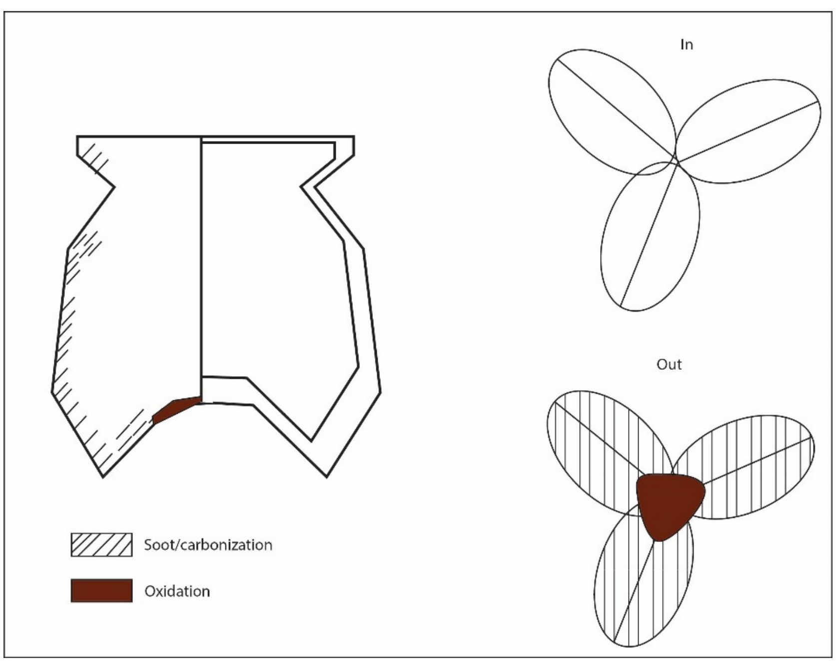


Figure 9-16 - Usewear marks for li H321:11 7L

H321:11 - External soot from shoulder down to legs. An oxidized patch on the bottom portion of base and half way down the leg in its inner side is quite clear. Internally, very little carbonization is seen apart from a small patch on the lip.

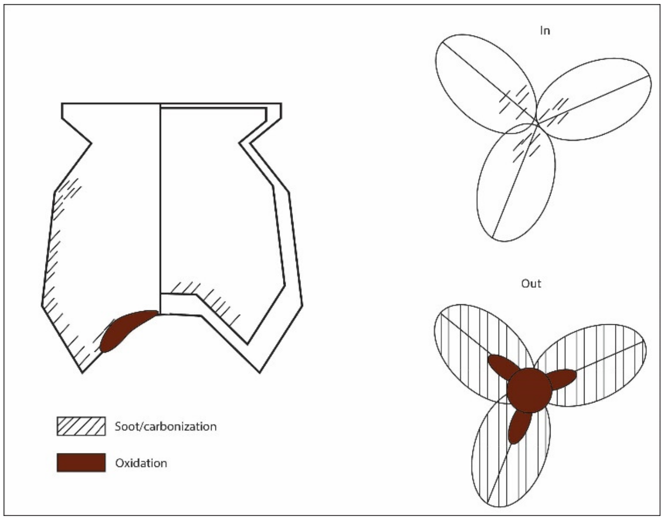


Figure 9-17 - Usewear marks for li H23:61 vol-10L

H23:61- External soot covers the vessel in patches from the shoulder down to base. A bright grey oxidization patch runs from upper part of the leg to the crotch and the base. Internal carbonization is not seen except for on crotch and upper part of leg.

From these observations the following patterns can be discerned: Four of the vessels have large patches of internal carbonization that run from the upper parts of the shoulder down to the base but not in its internal side. This might suggest a propensity for a dry cooking mode or at least one with small amounts of water/liquid that are evaporated at the end of the cooking process, but where enough liquid remained in the legs so as not to cause charring of cooked food. Skibo (1992: 153) finds that rice pots can form internal carbonization marks at their bases when water evaporates to a degree that food will begin to burn and char at their bottoms. At times these remains can result in carbonized food particles that can also be found on lips or upper parts of vessels when particles stick to the interior walls. At TMQC, however, there are only a handful of pots with internal or external carbonized food remains (see below).

External carbonization, i.e. soot and other remains, present important indicators as well. Skibo's (2013: 90-92) experiments and observations of Kalinga ceramics found three main types of external soot marks: the first is a fluffy black patch that accumulates where the vessel is exposed to a heat source. This soot comes off rather easily after washing or natural decay and is seldom found on ancient cooking pots. The second type forms by the contact of char ash with carbon agents or resins, which are produced during the fuel combustion process. These particles adhere to the surface of ceramic vessels that are relatively cooler and are quite resistant to decay. The third kind of soot is defined by a lack of soot and is an oxidized surface. It is mostly light grey or bright red in color. When vessel exteriors reach temperatures over 400^0 Celsius any existing soot is burned away, the color of the vessel changes and no new soot can form on that area of the vessel. Oxidation patches reflect the hottest and fire-concentrated areas these vessels were exposed to. Four of the vessels At TMQC had bright grey oxidized patched under their bases that continued down mid-way on the inner part of the *li* f and the bottom part of the *li* legs were covered in soot, leading me to hypothesize a concentrated flame under the vessel base. Soot remains are found on all vessels in patches from the base up to the lip, possibly as a result of char and coke adhering to the surfaces around the part exposed to the flame. These soot patches are observed in the areas of the pot that are the pinched sides of the vessels and not the external outer side of the legs. This is similar to patterns observed by Skibo (1992: 154) where soot did not appear directly above the area where pot supports were placed.

That being said, moisture, heat sources, their intensity, as well as how vessels were exposed to them, all contribute to the observed soot and oxidation patterns. Skibo's (1992: 157-168) experimentations found an inverse correlation between oxidization and the moisture levels inside the vessel walls. He suggests that when high moisture contents are present oxidization will normally not form, but will cause instead more soot to be deposited. In other words, the amount of liquid being used in the cooking vessel can perturb the formation of external oxidization patches even in areas placed directly under fires. This occurs because moisture will seep into the vessel walls and prevent the heating of vessel walls beyond the needed temperatures for oxidization patches to form. Still, while oxidation patches often mirror, externally, the internal carbonization patterns this is not always the case. Hally (1983) found that when a pot was suspend over a fire at a large enough distance, oxidation marks did not form on it, but food did char and leave carbonization marks in it. Furthermore Skibo's (1992: 167-171) experiments show that oxidization can form as a result of steam ventilation during the cooking process. This requires cooking with high liquid volumes and if thermal spalling (cracking of the ceramic composition) forms, it can also lead to steam being released through the cracks, preventing the formation of soot but not oxidized patches. Finally different wood types can inhibit or promote oxidization patches as well.

When these factors are taken into account it is possible to say with a high degree of confidence that H78:3, H321:6 and H132:1 were probably used for the dry cooking mode as evidenced by patches of black carbonization marks observed along the interior walls from the neck down to the base. The internal hollow parts of the leg had no carbonized remains and thus were either filled with liquid that prevented the external oxidation from occurring or they were not exposed to a sufficiently hot enough flame. Vessel H109:37 displayed the classic internal pattern of wet cooking mode where only a small band can been right above the water or liquid line, in this case the upper part of the shoulder. Both H23:61 and H321:11 have either no remains or some at the base. Both have oxidized patches and might indicate a reduction to low liquid levels or even a dry cooking mode. In contrast the internal usewear remains restricted to the base, might also reflect a case where vegetables, meat or grains were roasted first on the base and then liquid was added to obtain a boiling or simmering effect, which in turn left little internal remains. The smaller amounts of soot and their concentration along the base might in fact reflect a scenario where these vessels were not submitted to intense fires and thus the internal wall above the liquid line would not have been hot enough to form any carbonization patches.

A second possibility is that food was boiled in water and did not leave marks. Finally, small patches on the lip of H321:11 and H109:37 suggested contents being poured out or food bubbling up.

	Volume in L	Mode	Notes
H78:3	4	Dry	
H321:6	14	Dry	
H132:1	12	Dry	
H23:61	10	Wet	Braised first
H321:11	7	Wet	Braised first/small carbonized patch on lip maybe pouring
H109:37	4	Wet	small carbonized patch on lip maybe pouring

Table 9-11 - TMQC Early period cooking modes found on whole vessels.

Using these findings as a guide line, sherds from TMQC waste pits were analyzed and divided in the following way[75]: 1) combined sherds that had either, internally, small patches on the shoulder or neck with or without small patches on the lip, and those with very little to no carbonization remains internally, except for partial spots on the lip neck, and 2) sherds that had heavy patches of carbonization on the inner shoulder[76].

I take these patterns to indicate, basically, a dry and wet mode.

Type 1 (wet mode) count -17 Type 2 (Dry Mode) count - 11

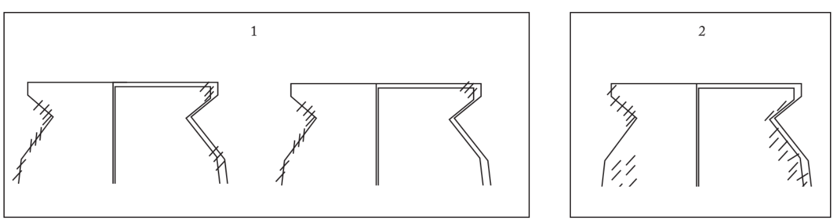


Figure 9-18 - *TMQC Early period usewear sherd analysis*

Charred food remains were observed on only three sherds, and were confined to areas around the shoulder. These sherds lacked all internal carbonization marks or had a very small and fine black spots under the neck. These vessels are smaller in volume (H321:5=2L H147:64 &H147:17=1.5 L) and as

[75] While it is certainly possible that those *li* sherds that did not retain usewear marks were used in a wet mode, as indicated by external soot marks, I do not add them to this analysis.

[76] only sherds large enough to have an identifiable lip down to part of shoulder were used for this analysis

such it is possible that charred food remains adhered to the vessels when their contents may have boiled over during the cooking process (Kooimans n.d. and see chapter 11).

Middle Period

The Middle period assemblage is somewhat smaller with only four complete or restored *li* vessels that could be observed. Nevertheless they too provide valuable insight into cooking methods.

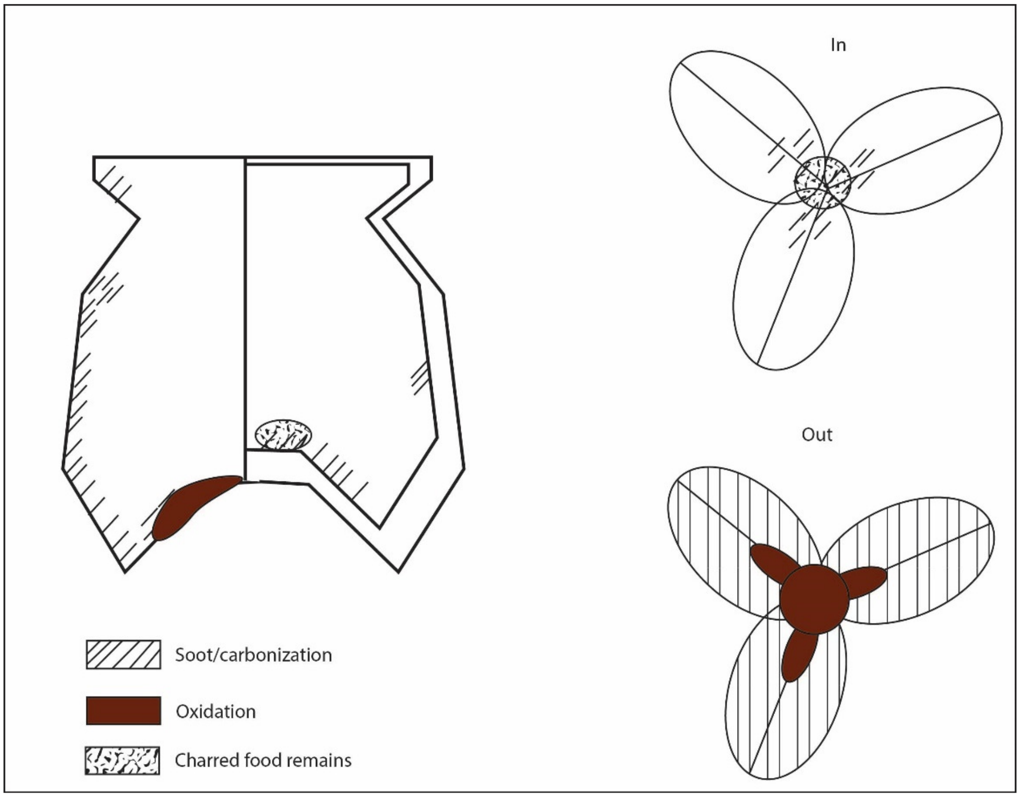


Figure 9-19 - Usewer marks on li H34:10 2.5 L (note charred remians on base)

Heavy soot can be seen on the shoulder under the lip and on the base around the leg. Oxidation in the form of bright grey and red colored patches can be seen around the leg and base. Internally, the basal area has carbonization remains and charred food remains on the base. A light carbonization patch can be traced in the lower interior part of the vessel walls.

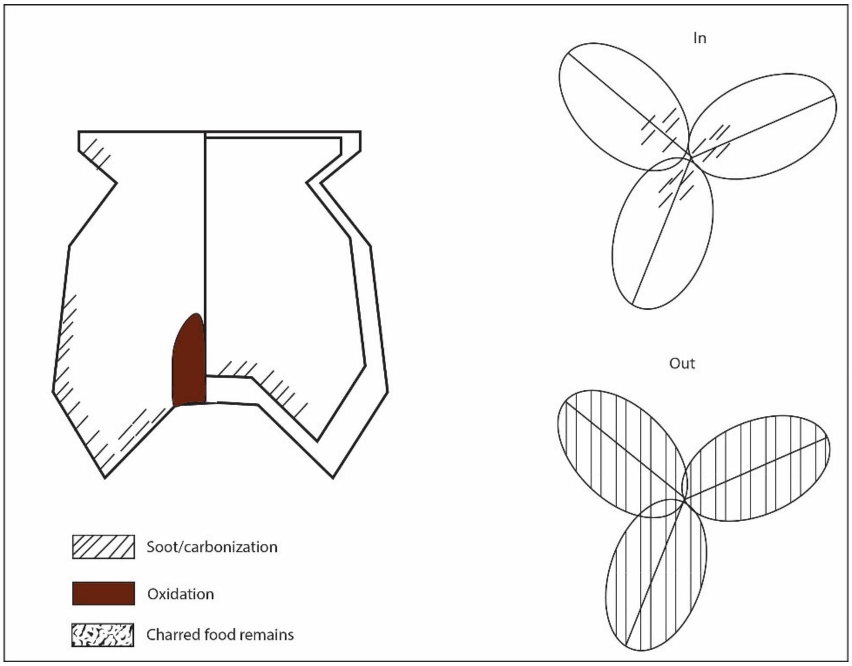


Figure 9-20 - Usewear marks on li H23:23 1.5L

Externally, heavy soot can be seen from the middle of vessel's shoulder down to the bottom of the legs and external base. Soot has accumulated on the neck and right under the lip as well. A bright grey oxidization patch runs from the crotch to 1/3 of the vessel walls and down to its base and crotch. Internal carbonization is not seen except for on the crotch and upper part of leg.

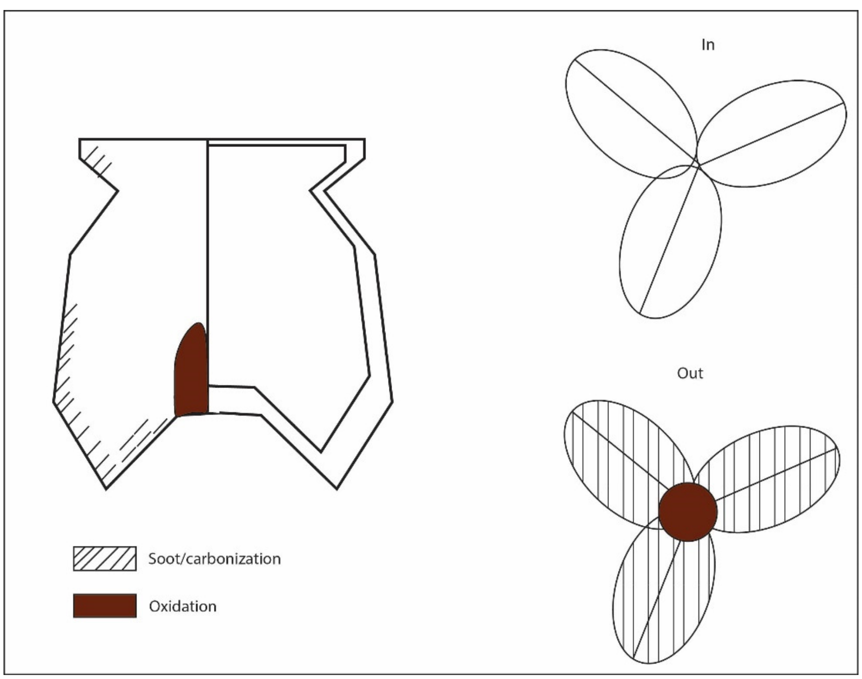


Figure 9-21 -Usewear marks on li H118:7 1L

The pattern here is quite similar, externally, to that observed for H34:10. A heavy patch of soot can be seen running from legs through mid-shoulder. An oxidized patch on one side from the crotch up to the side is visible as well and covers part of the crotch. Internally there are no carbonization remains.

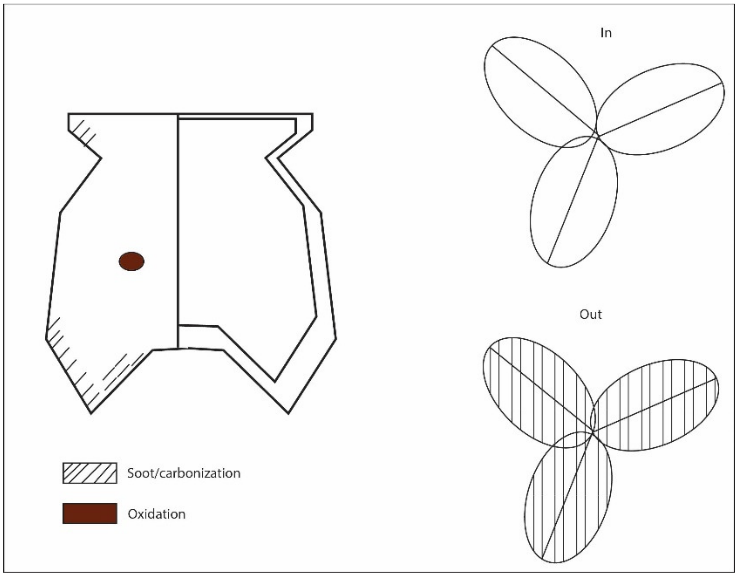


Figure 9-22 - Usewear marks on li H402:1 3.5L

A heavy soot patch can be seen under the lip. No soot appears on the shoulder or neck and is limited to the areas running down from the crotch to leg base up to shoulder. There is a small oxidization patch on the vessel's exterior wall. Internally there are no carbonization remains.

Following this initial observation it is clear that the biggest difference between the Middle and Early period remains is that for the former there is no evidence of large carbonization patches found inside the vessels, which are taken to reflect the dry mode of cooking. *Li* vessels either had no remains or small amounts of carbonized areas on the base and lower walls, which is more indicative of the wet cooking mode. The finding of carbonized food remains on the internal base of H34:10 is actually a typical pattern in grain boiling methods where charred remains form when too much liquid has evaporated and the food begins to burn on the bottom. Another difference is the strong oxidization marks running up from the base onto the vessel walls on the pinched side of the vessels. This pattern is similar to what Skibo (1992: 149-151) observes for some, but not all, rice cooking pots. Vessels set next to a hot fire during the final simmering phase of the cooking process, gain a large oxidization patch on their sides. This pattern might indicate that these vessels were being used to make grain pilaf, or that they were instead simply being set close to the fire on one side. The small oxidization patch on one side of H402:1, is probably the cause of thermal spalling and the release of steam that would prevent the formation of soot but not of oxidization (as noted above). Both sherds and whole vessel remains provide little evidence to suggest the dry cooking mode was employed during the Middle periods as characterized by internal carbonization patches throughout the interior. Examination of ceramic sherds with use wear remains reveals that all sherds had remains of external soot in patches from their lip down to the shoulder whereas the internal forms could be divided thus:

1) No internal carbonization	2) carbonization on lip and shoulder	3) carbonization on neck and lip
12	4	6

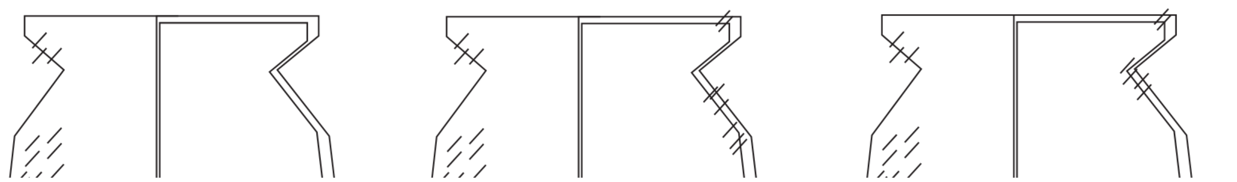


Figure 9-23 - TMQC Middle period usewear sherd analysis

This absence does not necessarily point to the abandonment of this cooking method, though it is likely. Vessels could have been used to roast and braise food in small quantities where carbonization marks would not be evident above the lowest parts of the interior and as such would not be preserved in this assemblage. Another possibility is that cooks used less heat intensive sources to cook their food, which would not allow the interior to reach temperatures above 300^{0}C degrees required for the charring of food. That being said, the smaller size of the Middle period *li* vessels would mean that using so little food (that would not leave marks above the lower interior) would also not yield much cooked food at all. Furthermore the heavy soot patches found all the way up the shoulder would suggest a rather intense heat source. It is important to point out that stews and other foods that require boiling, and not just roasting, can cause a dry mode pattern if enough liquid is lost during the cooking process (Skibo and Schiffer 2008: 51) Thus it is possible that during the early period a mix not only of dishes existed at the site, but of cooking methods as well, where some ate and prepared the millet porridge in different ways ranging from perhaps thicker stews or thinner soups.

The methods presented here are geared towards observing overall large trends and differences such as the absence of internal carbonization remains. What complicates this form of analysis further is that if the dry mode was used once, or if both modes were used repeatedly, the final observable patterns would be that of the dry mode. Thus, while the observation of a wet cooking mode can preclude that of the dry mode, the opposite is not true. When looking at usewear remains in respect to size and volume these vessels did not reveal any distinct pattern. This seems to be the case for the early period as well and reflects a situation that vessel size was not necessarily directly related with its function. That being said, using this as a base for community wide cooking practices, sites in the periphery can be evaluated to explore similarities or differences. The small amount of *li* leg fragments makes it difficult to say much about the way vessels were placed in the fire and the intensity of the heat they were subjected to (though as noted above oxidization patches found on the base and upper parts of the legs of many whole vessels does reflect placement in a heat source). As we will see their greater abundance at sites in Shandong will help with the reconstruction of the cooking modes there.

Ceramic Technical Analysis

Ceramic sherds were observed under a low resolution microscope following a protocol described in Druc (2015) and Velde and Druc (1999) This method, while not nearly as robust an investigation as other approaches (such as polarizing light microscopes used in ceramic petrographic studies), has a number of advantages: the first is the fact that looking at a magnified image of a freshly broken ceramic sherd reveals distinctive characteristics of paste, mineral composition and void structure that can be used to initially separate ceramics into basic group type. Not only is the analyst able to do so with portable machinery in the field, but it can be done with limited knowledge of the geology of the region the ceramic assemblage was made in (Druc 2015: 9-10). This is not a trivial issue in China as oftentimes geological information, along with soil and other mineral data, are not made readily available to scholars. An added benefit is the speed in which data can be recorded for the creation of a large dataset, which is often near impossible using other more robust, but time consuming methods. Research on more than 1000 sherds was performed on the TMQC periods and four Shandong sites.

It is important to note that this method provides only elementary information and should be followed up with expert petrographic studies. These petrographic samples can be taken from the initial groups identified with the low powered microscope – a step that aids in the overall goals and workflow of the ceramic material analysis. After a photograph was taken with the microscope, information was recorded for each sherd (see below). These parameters have several aspects that relate to intended function, production methods and the provenience of materials used (and are indeed the main focus of a large number of ceramic technical and material studies). Understanding the technical properties of inclusions and temper is an important part of these studies. Indeed the development of methods that can differentiate between intentionally added tempers and those that occur naturally continues to be an important topic of research (Rice 2015: 85–89). Here I use these variables to investigate underlying principles and unless otherwise noted I follow Velde and Druc (1999 ch 7; other excellent summaries can be found in Kidder (2004); Rice (1987); Rye (1981)). The main thrust of their approach is the ease with which observing these trends allows comparisons between sites as opposed to finding universal correlations between a given technical parameter and function. Accordingly, I will use this approach here mostly in an attempt to observe overarching patterns that can be used to compare the ceramics at different sites.

- **Inclusion structure**

Inclusions are not always temper, but are taken here to be observable materials that are not clay, both organic and non-organic as well as plastic and non-plastic.

  - *Spacing* - the distance between inclusions is both a product of the amount of temper added to the clay and how well distributed particles are as a result of the kneading process. The recorded ranges were close, single, double and open as a product of how far inclusions are from each other using themselves as a scale.
  - *Sorting* - the differences and uniformity in inclusion grain size among the clay matrix. Velde and Druc (1999: 195) note that this method can also be used to look at the size ranges of all grain types in the matrix. Using Prothero and Schwab's (1996) classification these were recorded on a 5 point scale from very well (5) to poorly sorted (1).
    - Size of the largest inclusion was measured to provide a range.
    - The mode size of the inclusion in a given matrix was taken as well.
  - *Roundness and Sphericity* – As particles are subjected to natural occurring processes of wind and water washing, they will become rounded over time. Thus a general approach has been to find angular inclusion particulars as temper, or an intended addition to the clay matrix (since they were crushed,) while more rounded inclusions might have been naturally occurring in the clay. Sphericity can have increased impact on vessel toughness as well. Here Adams et al's (1984) chart was consulted to form a measurement from rounded (5) to angular (1) and from high (5) to low sphericity (1).
  - *Orientation* – the orientation of inclusion particles are affected by the production style where wheel made vessels will exhibit diagonal orientation that is extenuated by the speed of the rotating surface. Coil built vessels will exhibit orientations that are parallel

to the base (Berg 2008). These structures tend, however, to form in lighter material tempers like shell and not in rock. Observed trends were parallel (to vessel walls), none, perpendicular and other.

- *Composition* – the type of material used. As with roundness and sphericity, material type can be used to infer both provenance and production traditions. As noted above the type of temper used can be seen to influence the performance of certain aspects of the vessel. Here I document very broad categories of mineral, rock, shell, grog and organic temper, but since the vast majority of vessels that had inclusions were comprised of minerals that could not be further broken down into subset groups with the low level resolution microscope, they were not pursued further here.

- **Void structure** - holes in the clay fabric. Voids are caused by a number of factors that range from the burning of organic material inclusions during the firing process, shrinkage around inclusions when water is added and differences in the mixing and working of clay. Differences between primary and secondary voids (the first caused by underworked clay and the latter the result of shirking in the firing process) are not discussed here (see Velde and Druc 1999: 111-115).
  - *Type of void* – the shape of a void is related to thermal conductivity and resistance of vessels (see below). Four basic structures were documented here: plain, long and thin and non-distinct.
  - *Size* – this is related to mixing and working of the clay as well as thermal conductivity and resistance of vessels. Three sizes were recorded (small, medium and large).
  - *Orientation* – as with inclusions this can relate to production techniques, but also to thermal conductivity and resistance properties of vessels. I document parallel, perpendicular, other and none.

- **Paste** – the clay mix and non-plastic materials.
    - Color distribution – separate columns for core; internal; external.
        - homogenous or heterogeneous color for sherds as a whole.

The combination of many of these elements result in a different technical characteristic and can be observed in the production of contemporary ceramicists even if the resulting function is different (Velde and Druc 1999: 158). For example, while all vessel types were either grey or dark grey/black to the naked eye, upon magnification variation in color could be observed (Figure 9-24):

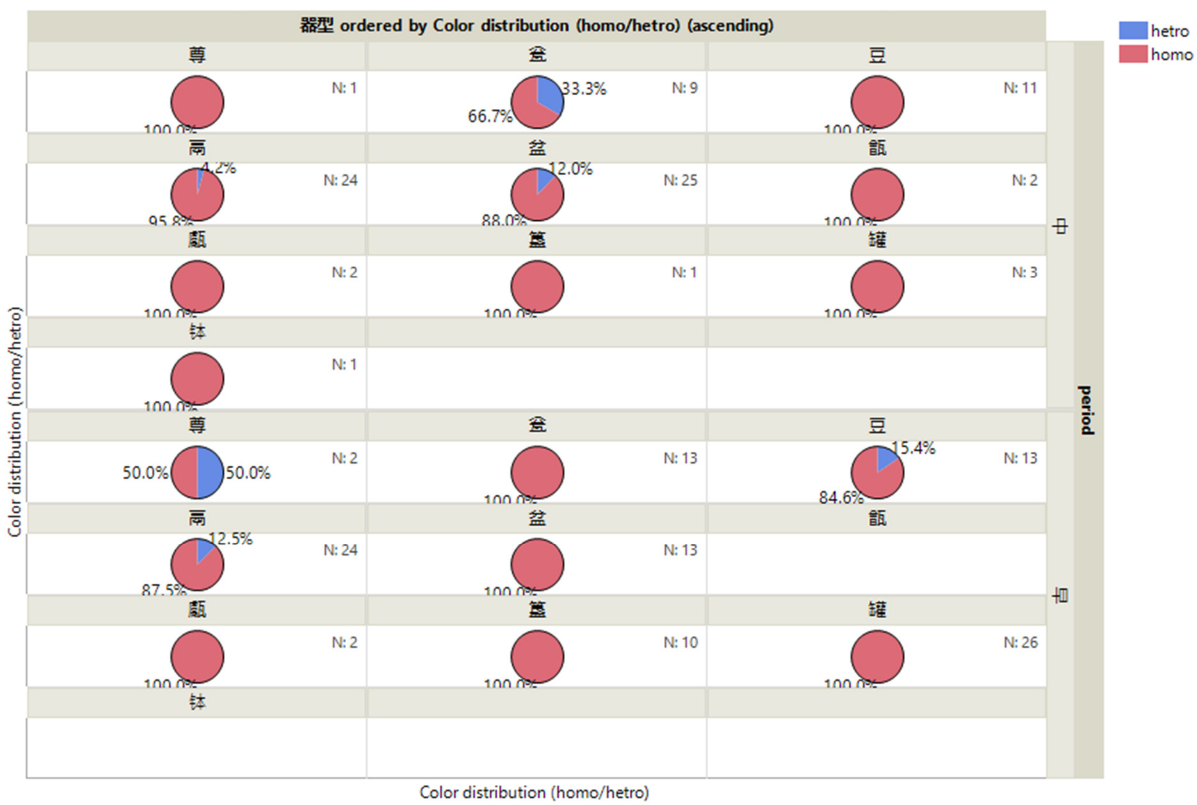


Figure 9-24 - Distribution of Heterogeneous and homogenies paste colors by vessels type and period at TMQC

As a general rule of thumb firing under oxidized conditions will result in red, brown and orange colors, while a reduction atmosphere will create a darker grey or black color. Often times a dark colored core can be the result of either a reduction atmosphere created in the kiln or a shortly fired vessel in an open fire where oxidation did not have time to fully take place (Gibson and Woods 1997: 46–50). It is important to remember that the final color depends on the original iron content of the clay as well as the degree of oxidation or reduction atmospheres achieved. Even though the vast majority of vessels at TMQC during all periods were homogenous, I do not take this to be indicative of one or the other. However, I use this base line for comparisons with other periods and sites. The first stage was recording the ratio between coarse (inclusion) fine (clay) and voids to gain a better overview of the clay matrix. Bullock et al's (1985) visual chart was used as a primary aid.

			Coarse				**Fine**				**Void**			
period	**器型**	**N**	**Median**	**Std Err**	**Mean**	**Range**	**Median**	**Std Err**	**Mean**	**Range**	**Median**	**Std Err**	**Mean**	**Range**
中 Middle	尊 *zun*	1	0.05	.	0.05	0.00	0.85	.	0.85	0.00	0.10	.	0.10	0.00
	瓮 *weng*	9	0.20	0.01	0.19	0.10	0.75	0.02	0.74	0.15	0.05	0.01	0.07	0.05
	甑 *zeng*	2	0.20	0.00	0.20	0.00	0.68	0.02	0.68	0.05	0.13	0.03	0.13	0.05
	甗 *yan*	2	0.20	0.05	0.20	0.10	0.70	0.10	0.70	0.20	0.10	0.05	0.10	0.10
	盆 *pen*	25	0.05	0.02	0.09	0.25	0.90	0.02	0.85	0.25	0.05	0.00	0.06	0.05
	簋 *gui*	1	0.05	.	0.05	0.00	0.90	.	0.90	0.00	0.05	.	0.05	0.00
	罐 *guan*	3	0.05	0.04	0.07	0.15	0.90	0.03	0.87	0.10	0.05	0.02	0.07	0.05
	豆 *dou*	11	0.05	0.01	0.04	0.05	0.90	0.01	0.91	0.10	0.05	0.01	0.06	0.05
	钵 *bo*	1	0.00	.	0.00	0.00	0.95	.	0.95	0.00	0.05	.	0.05	0.00
	鬲 *li*	24	0.25	0.02	0.23	0.35	0.70	0.02	0.70	0.35	0.05	0.01	0.07	0.10
早 Early	尊 *zun*	2	0.13	0.08	0.13	0.15	0.83	0.08	0.83	0.15	0.05	0.00	0.05	0.00
	瓮 *weng*	13	0.15	0.01	0.14	0.15	0.80	0.02	0.77	0.25	0.10	0.01	0.08	0.10
	甗 *yan*	2	0.25	0.05	0.25	0.10	0.65	0.10	0.65	0.20	0.10	0.05	0.10	0.10
	盆 *pen*	13	0.10	0.02	0.10	0.20	0.85	0.03	0.82	0.35	0.05	0.01	0.07	0.15
	簋 *gui*	10	0.00	0.01	0.02	0.05	0.93	0.01	0.93	0.05	0.05	0.01	0.06	0.05
	罐 *guan*	26	0.10	0.01	0.11	0.25	0.80	0.02	0.83	0.25	0.05	0.01	0.06	0.15
	豆 *dou*	13	0.05	0.03	0.07	0.30	0.90	0.03	0.87	0.30	0.05	0.01	0.06	0.10
	鬲 *li*	24	0.20	0.01	0.20	0.20	0.75	0.01	0.73	0.20	0.05	0.00	0.06	0.05

Table 9-12 - TMQC vessel technical aspects table (ratios of inclusion, clay and voids) by vessels type and period

The results (Table 9-12) are quite similar for each of the vessel categories, with only a few observable differences between periods. Cooking vessels *li, yan* and *zun* all score highest in terms of the percent of inclusions (coarse) found in them and serving and storage vessels of *dou, pen, guan* and *bo* the lowest. *Weng* vessels can be found somewhere in between serving vessels providing support for the possibility that several of these vessels might have been used for cooking, as was noted by the usewear analysis above. As the number of many of these vessels types are quite low and may not reflect the exiting use patterns at the site. Plotting these results on a ternary plot provides for an easier visual aid and interpretation (Figure 9-25&Figure 9-26).

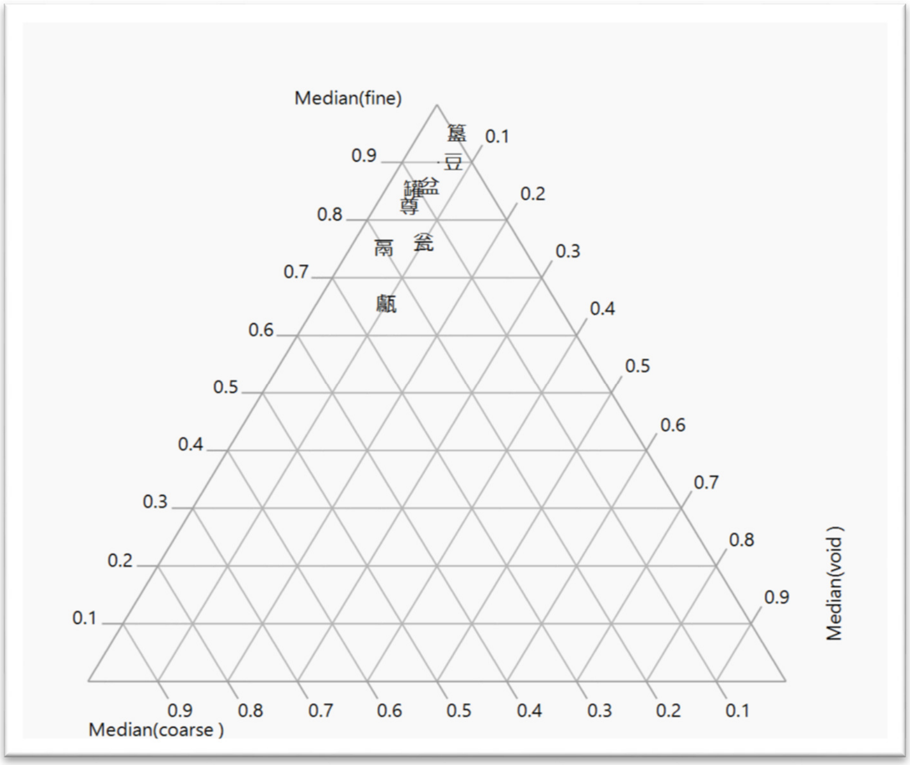


Figure 9-25 - Ternary plot for Early period vessel types at TMQC: coarse, fine void

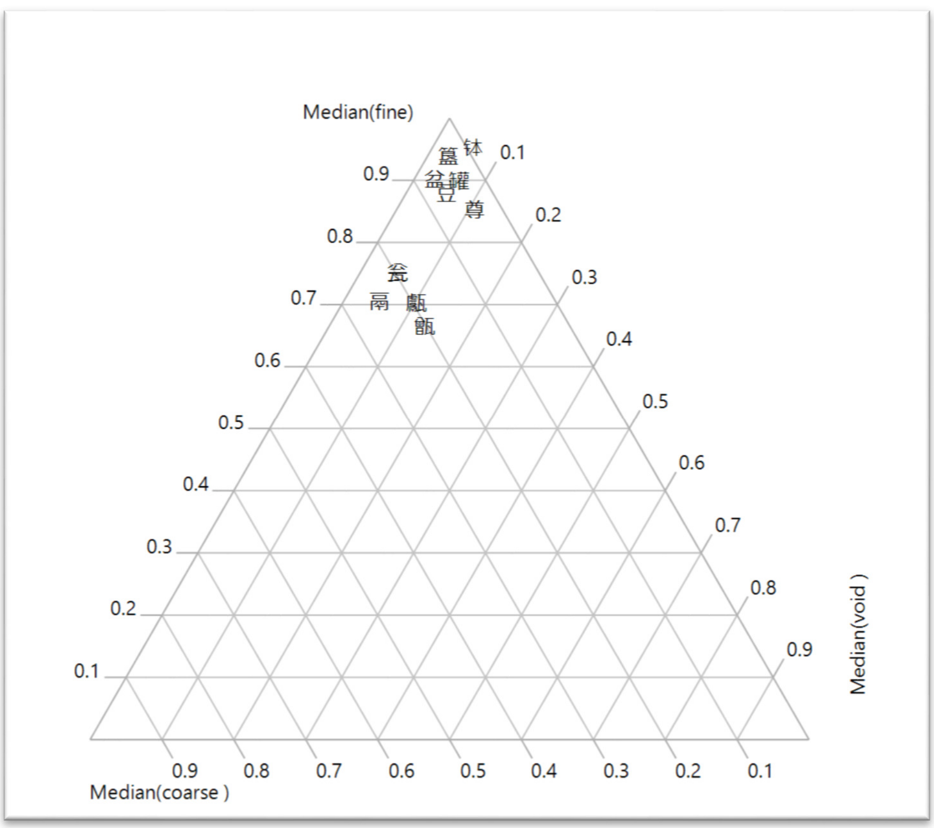


Figure 9-26 - Ternary plot for Middle period vessel types at TMQC: coarse, fine void

A similar table can be used to summarize inclusion observation data. Not only do the amount of inclusions seem to be related to vessel type, but also how well they were sorted.

		Coarse	Sorting		Spacing					Size range in mm (*largest inclusion*)			Modes in mm		
					N/I	close	double	Open	single						
Period	**器型**	**Mean %**	**Std Err**	**Mean**	**%**	**%**	**%**	**%**	**%**	**Std Err**	**Mean**	**Median**	**Std Err**	**Mean**	**Median**
中 Middle	尊	0.05	.	4.00	0.00	0.00	0.00	1.00	0.00	.	1.24	1.24	.	1.03	1.03
	瓮	0.19	0.00	3.00	0.00	0.22	0.00	0.22	0.56	0.12	1.35	1.31	0.05	0.60	0.61
	甑	0.20	0.00	3.00	0.00	0.50	0.00	0.00	0.50	0.13	1.02	1.02	0.04	0.54	0.54
	甗	0.20	0.00	3.00	0.00	1.00	0.00	0.00	0.00	0.50	1.61	1.61	0.13	0.82	0.82
	盆	0.09	0.14	3.96	0.20	0.12	0.00	0.44	0.24	0.11	0.93	0.80	0.08	0.56	0.49
	簋	0.05	.	4.00	0.00	0.00	0.00	0.00	1.00	.	0.48	0.48	.	0.24	0.24
	罐	0.07	0.58	4.00	0.33	0.00	0.00	0.33	0.33	0.15	0.72	0.72	0.11	0.36	0.36
	豆	0.04	0.18	4.18	0.27	0.09	0.09	0.55	0.00	0.11	0.67	0.62	0.04	0.35	0.37
	钵	0.00	.	5.00	1.00	0.00	0.00	0.00	0.00	.	.	.	.	.	.
	鬲	0.23	0.14	2.88	0.00	0.63	0.04	0.04	0.29	0.14	1.47	1.23	0.04	0.64	0.60
早 Early	尊	0.13	0.50	3.50	0.00	0.00	0.00	0.00	1.00	0.29	1.32	1.32	0.00	0.67	0.67
	瓮	0.14	0.13	3.31	0.00	0.08	0.00	0.23	0.69	0.12	1.00	1.04	0.05	0.51	0.52
	甗	0.25	0.00	3.00	0.00	0.50	0.00	0.00	0.50	0.06	1.03	1.03	0.06	0.60	0.60
	盆	0.10	0.31	3.62	0.31	0.15	0.08	0.23	0.23	0.23	1.27	1.12	0.04	0.53	0.54
	簋	0.02	0.16	4.60	0.60	0.00	0.00	0.40	0.00	0.08	0.58	0.63	0.06	0.33	0.34
	罐	0.11	0.16	3.65	0.15	0.12	0.04	0.35	0.35	0.18	1.15	0.98	0.04	0.50	0.46
	豆	0.07	0.21	4.31	0.46	0.15	0.15	0.23	0.00	0.13	0.72	0.62	0.09	0.43	0.40
	鬲	0.20	0.08	2.83	0.00	0.33	0.00	0.04	0.63	0.16	1.62	1.40	0.04	0.65	0.65

Table 9-13 - TMQC clay sorting and inclusion spacing and sizes for Early and Middle periods by vessel type.

Serving dishes, *gui dou* and *pen*, had the highest sorting values and indeed the smallest inclusion mode and range sizes, as well as low numbers of inclusion numbers (i.e. course %). Indeed spacing between inclusions was larger for these categories as well, and most all vessels in these categories that had inclusions were identified as the open spacing category during the observation stage. Around half of all these vessels had some mineral inclusions in them (for *pen* 66%), perhaps the result of either certain natural occurring minerals in the clay or the creation of a clay mixture where minerals were added (indeed their sizes are quite small and certainly smaller than those found in *li* vessels on average). Middle period vessels have higher sorting values and indeed higher percentages of pastes without inclusion in them, in respect to the Early period. Cooking vessels, *li, yan* and *zun,* had the lowest sorting values, largest inclusion sizes and inclusion mode sizes (though the latter categories were not all that different than those found in non-cooking vessel categories). Inclusion spacing distance was denser with almost 100% falling in the close or single category. Void structure data and distribution can be seen below (Table 9-14):

		Void Shape				Void Size		
		Void	Plain	Channel	Vugh	Small	Medium	Large
Period	vessel	%	Sum	Sum	Sum	%	%	%
中 Middle	尊	10%	1	1	0	0%	100%	0%
	瓮	6%	7	5	1	44%	55%	0%
	甑	12%	2	2	0	50%	50%	0%
	甗	10%	2	2	0	50%	0%	50%
	盆	6%	25	9	3	76%	24%	0%
	簋	5%	1	1	0	100%	0%	0%
	罐	6%	3	1	1	100%	0%	0%
	豆	5%	10	5	1	73%	27%	0%
	钵	5%	1	0	0	1%	0%	0%
	鬲	8%	19	12	2	66%	30%	4%
早 Early	尊	5%	1	1	0	1%	0%	0%
	瓮	8%	13	6	2	62%	38%	0%
	甗	1%	1	2	0	0%	100%	0%
	盆	8%	12	5	0	70%	15%	15%
	簋	5%	9	8	2	70%	30%	0%
	罐	6%	25	10	3	88%	12%	0%
	豆	1%	11	7	1	61%	24%	15%
	鬲	7%	18	9	4	50%	50%	0%

Table 9-14 - TMQC void properties for Early and Middle period by vessel type

Voids structure, shape and quantity all influence vessel thermal shock resistance, heating effectiveness and heat loss (and see more below). Porosity is also related to the transferability of a vessel (i.e. how easy it is to move it from place to place) as larger voids will create a large vessel that packs less material in it. The cooling effectiveness of water in storage vessels is also improved by a high level of porosity as pores allow evaporation of water, a trait more readily known as permeability. The *guan* jars observed at TMQC, for both periods, had low porosity levels of 5-10% similar to other vessel types at TMQC. *Guan* is a generic term for jars and also collapses the most amount of variability in it and thus should not be taken to represent a single vessel type. Note that *weng* vessels did have higher porosity levels, perhaps related to their size and desire to make them gather or to store water.

However not only the amount of pores, but also their shape, angle and distribution patterns, as well as the other components discussed above, contribute to the final mechanical properties of the ceramic vessel. Principal components analysis on all the above attributes reveals their connection and correlation among the TMQC site ceramic vessels.

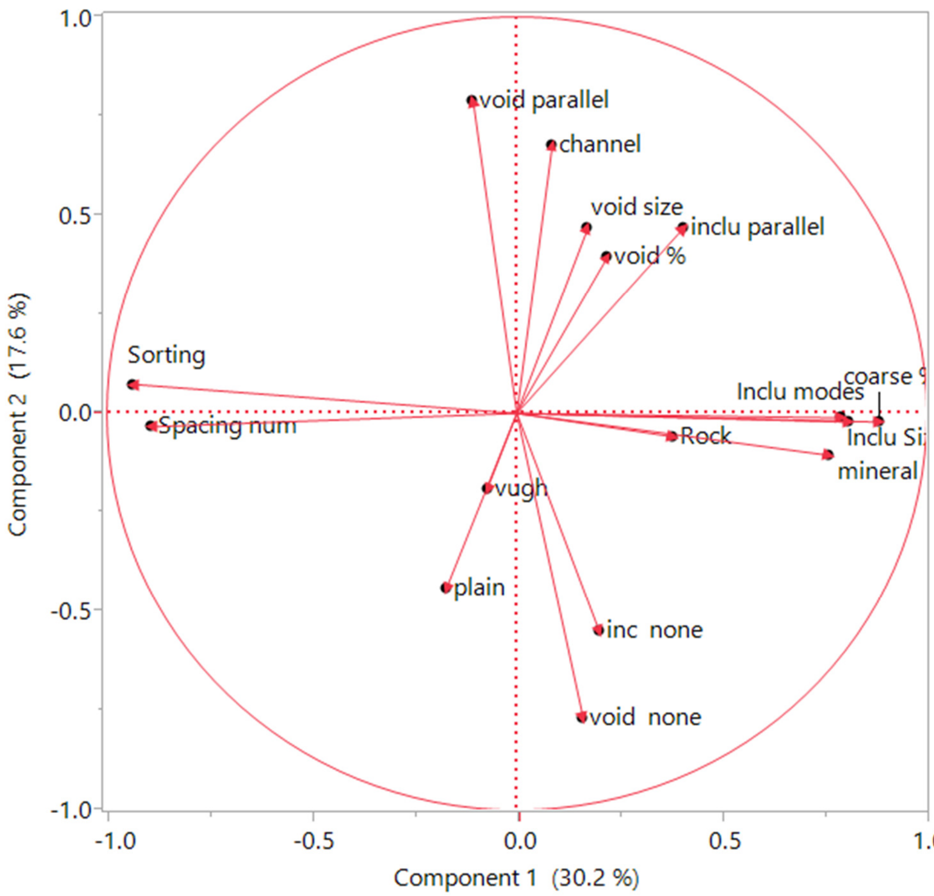


Figure 9-27 - PCA score plot for two Principal Components calculated values in relation to each other at TMQC

When interpreting a PCA score plot the direction and angle between variables is taken into account, as well as how strong they score for each principal component (i.e. the strength of a given attribute to the grouped components). Here (Figure 9-27), a strong connection between the amount of temper (coarse %), the size of inclusions (both modes and largest inclusion sizes found) and mineral inclusions, and to some extent rock inclusions, are all correlated. Large spaces between inclusions and high sorting values are strongly correlated among themselves, but not strongly correlated to the other variables mentioned above. While we would expect to see low spacing numbers with higher inclusion amounts (crowding the clay matrix) we would not assume a low sorting value (i.e. higher variability) among the inclusions, making for an interesting result. These variables make up principle component 1 which explains 30% of the data. Variables that are not connected to the above variables (those marked by roughly 90 degree angles between them), are large numbers of voids and their size (void %, size). Channel void shape that is parallel to vessel walls in orientation and a parallel to vessel wall orientation for inclusions as well. These variables are inversely correlated with the plain, vugh and parallel orientation, along with the no orientation for inclusions. Together these relationships make up PC 2, which explains almost 18% of the data. Plotting the individual observations (in this case our ceramic sherds) on an overlay plot by each PC score (Figure 9-28).

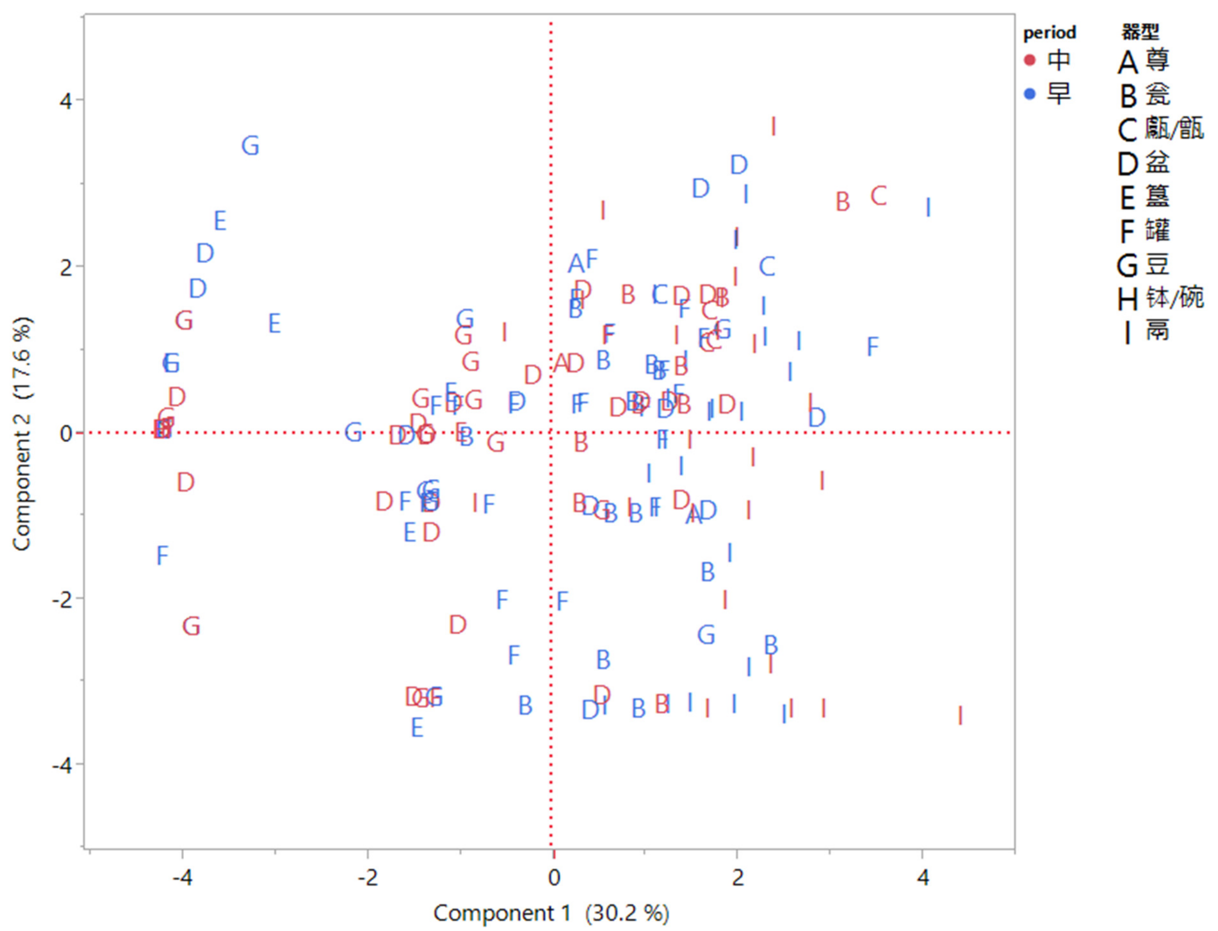


Figure 9-28 - PCA loading plot for two highest principal component's calculated at TMQC

The fact that both periods have a very similar distribution for all vessel types, seems to indicate little change over the time. That being said, very little clustering among different vessel types in terms of these variables was observed either. The few trends that should be mentioned are 1) most all of the *li* (I) cooking vessels score highly on PC 1 and quite low on PC2, with the same being said for *weng* (B) and *yan* (C) cooking vessels. 2) *Dou* (G) serving vessels seem to score rather low on the first component but *pen* (D) and *guan* (F) are not clustered in any one place.

When examining cooking vessels Velde and Druc (1999: 119-121; 161) looked at the relationship between void structures, temper material and orientation, as well as clay structure, in order to understand their impact on heat conductivity and thermal stress resistance. Dense clay particles that are oriented with vessel walls, high numbers of interconnected voids and low numbers of temper particles will decrease heat conductivity. While this type of vessel can be heated up more rapidly it will also lose its heat faster as well. In contrast, unaligned clay minerals and temper silicates with small isolated pores will provide low heat conductivity. An inverse relationship exists between these same characteristics and thermal shock resistance. These characteristics can be explored with the above observations and it is possible to add to them vessel wall thickness, as this too influences vessel properties and their influence on performance (summarized in Table 9-15).

	Pores/voids	Inclusions	Clay particles	Wall thickness
Low heat conductivity	1) Small and not connected 2) Oriented parallel to the walls	1)Oriented parallel to the walls 2)large numbers	Oriented parallel to the walls	Thick walls
High heat conductivity	Interconnected pores, large and open	1)Non-oriented 2)low amounts	Non-Oriented	Thin walled vessels
Low thermal stress resistance	Interconnected pores, large and open	1)Small particles 2)Non-oriented	Non-Oriented	Thin walled vessels
High thermal stress resistance	Pores are small and not connected	1) Large particles 2) Oriented parallel to the walls	Oriented parallel to the walls	Thick walls

Table 9-15 - Summery of correlations between mechanical properties on heat conductivity and stress resistance

It is important to note that there is no such thing as a perfect cooking vessel, but that in fact different mechanical proprieties will be better suited to cooking different foods. Velde and Druc (1999: 120) note that stews or other foods and dishes that require long cooking times, such as simmering, would do well to be cooked in a pot that has poorer heat conduction, while other dishes prepared quickly and with high levels of heat should not be prepared in them. In addition, thermal stress resistance will influence the longevity of a pot and can also hint at how much heat it was subjected to as well as for how long.

	Inclusion								**Void**						
	Size			**Orientation**					**Size**			**Orientation**			
Period	**Small**	**Medium**	**Large**	****	**None**	**Other**	**Par**	**Perp**	**Small**	**Medium**	**Large**	**None**	**Other**	**Par**	**Perp**
Middle	**0%**	**71%**	**29%**	**0%**	**54%**	**0%**	**42%**	**4%**	**67%**	**29%**	**4%**	**29%**	**0%**	**71%**	**0%**
Early	**8%**	**58%**	**33%**	**0%**	**58%**	**0%**	**38%**	**4%**	**50%**	**50%**	**0%**	**33%**	**0%**	**58%**	**8%**

Table 9-16 - Inclusions and void property medians for li cooking vessels at TMQC

When comparing *li* cooking vessels between the two periods at TMQC several differences can in fact be noted. Using Velde and Druc's assumptions it is possible to suggest that during the Middle period more pots were constructed that would better suit simmering rather than roasting, as is evidenced by smaller voids and more parallel void structures. Inclusion numbers increase as well, even though less would be needed to create the much smaller *li* vessels found during this time in comparison to the Middle period. Heuristic at best, this observation affords some insight into possible production considerations. However, note that this table averages out the differences among all vessels. In order to better comprehend the differences between the periods, principle component analysis was performed on the *li* cooking vessels. All of the observed properties were submitted to the test except for mineral inclusion type, as all cooking vessels contained minerals as temper. The results can be seen in Figure 9-29 below:

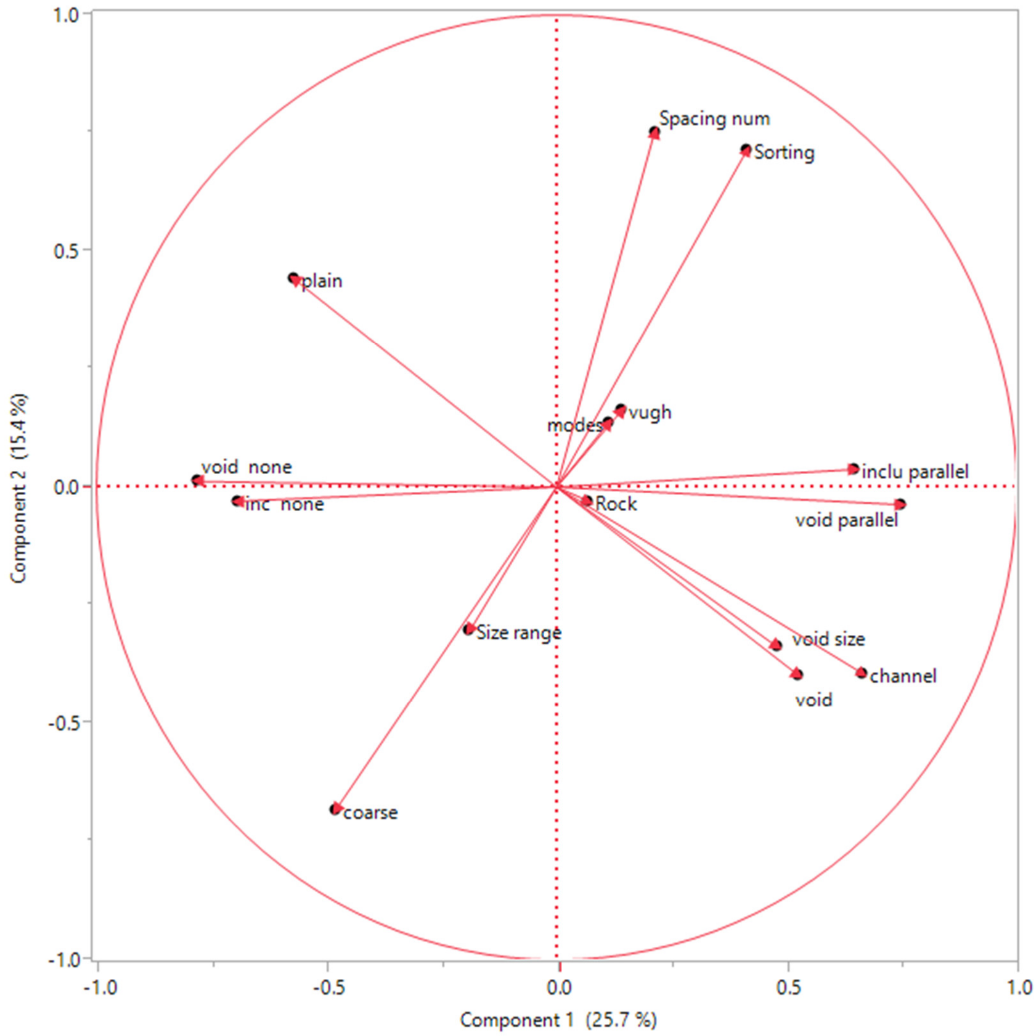


Figure 9-29 - PCA results preformed on TMQC Early and Middel period li vessels' technical attributes

The results above do not explain all of the data (both Principal components explain together a total of 40% of the variance), but show the inherent uncorrelated relationship between the different inclusions and void orientations, as these are mutually exclusive categories (only one type was recorded for each observation). However, the parallel void orientation was strongly correlated with inclusion parallel orientation as was no orientation for both inclusion and voids. Void size, channel type and overall void numbers are negatively correlated with plain voids. This suggests that the more inclusions found, (coarse %) the larger their size will be and the lower the sorting and more distant the inclusions will be from one another (their spacing). The use of rock as temper seems to not be as a strong of a contributing factor to any of these relationships. When the *li* vessels are plotted in a loading plot by PCA scores, a very interesting pattern emerges (Figure 9-30):

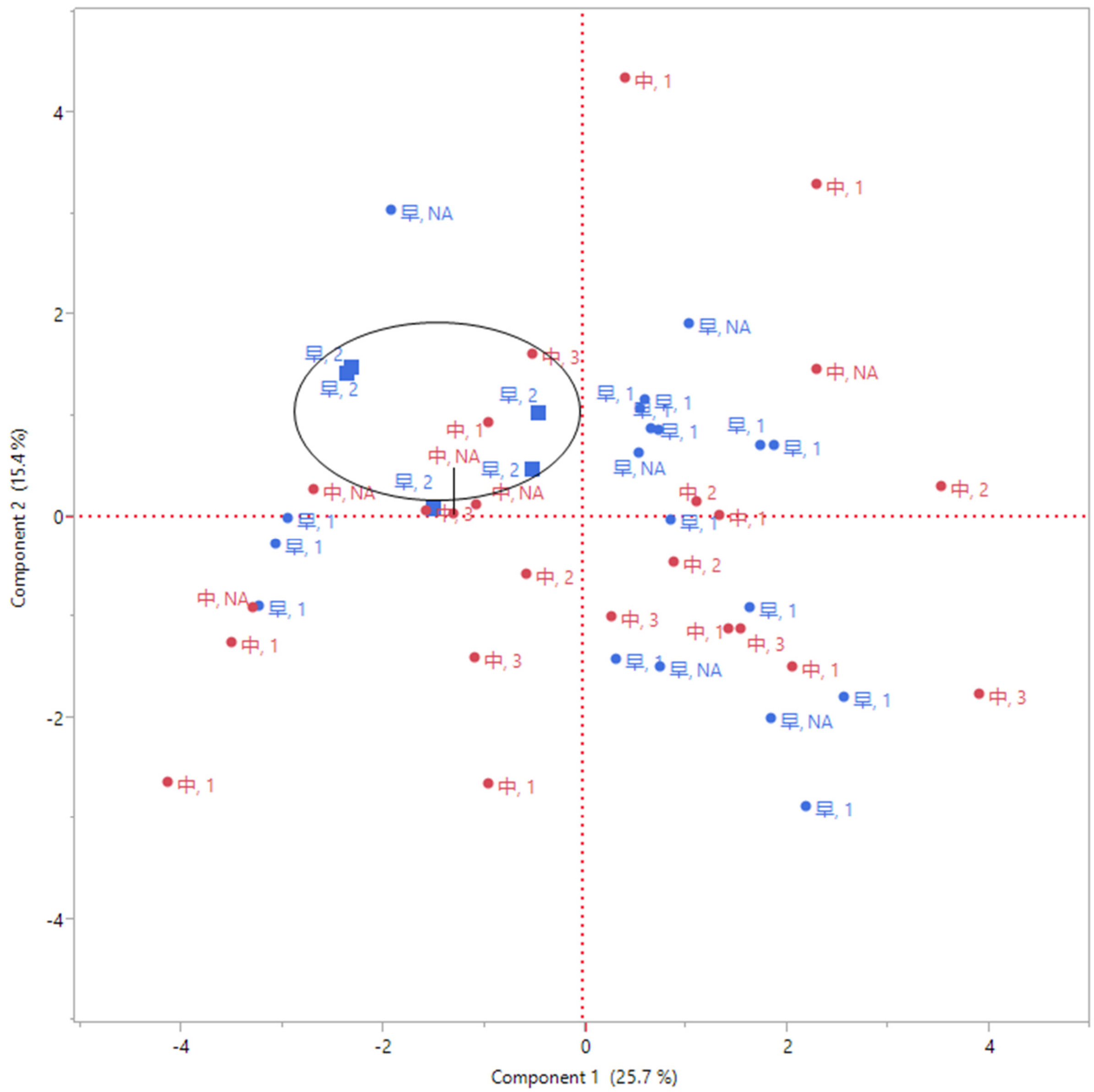


Figure 9-30 - Loading plot for TMQC Early (早 blue) and Middle (中 red) li vessels and their usewear type for two Principal components

Note that all of the usewear type 2 (dry mode) vessels for the Early period are grouped in the upper left corner (high Principle Component 2 and low Component 1) and no usewear type 1 (wet mode) vessels are found here. In contrast, usewear type 1 vessels cluster everywhere but there. In other words, dry cooking took place in vessels that did not have parallel inclusions or voids better suited for long simmering process. They also did not have large and interconnected voids that would make their combination better suited for high heat conductivity, but would in fact make for a more thermal resistant vessel. Indeed, these vessels are not very highly tempered, but the temper particle sizes are larger on average as well. The first combination better suited for high heat conductivity and the latter for high thermal stress resistance. The fact that inclusions are not oriented in any specific way in these vessels, however, might reflect a scenario where potters were aiming at reducing thermal stress resistance. While the TMQC potters during the Early period were very possibly creating vessels that would be suited for a dry cooking mode geared towards good heat conduction and heat resistance, we should not take this as a definite intended function. In fact during the Middle period at TMQC usewear types 1, 2 and 3 (all taken to be wet mode, but where the vessel may have been filled up to different level and subjected to varying heat intensities during the cooking process), can all be found in the upper left corner of the PC plot (high PC1 and low PC 2) as well as in all other areas of the loading plot. Unlike the Early period there seems to be little grouping in respect to the usewear analysis types observed. This does not necessarily imply that those Middle period vessels with high PC 1 and low PC 2, were necessarily used for dry mode, in fact no dry usewear traces were found during this period, but instead that potters continued to make vessels with all kinds of technical considerations even while they were being used in the wet cooking mode.

Nevertheless this clear grouping does highlight the following: it validates, to some extent, the assumption that these are a different group of vessels based on usewear type and instils confidence in their identification as those used in the dry cooking mode for the Early period at TMQC. Indeed, the propositions laid out by Velde and Druc (1999) should be further tested to better understand the difference in intended function and production traditions. For the purposes of this study I draw upon them, and the other aspects discussed above to compare the TMQC ceramic complex to sites in Shandong (chapter 11).

Summary

The results of the analysis presented above can be summarized in the following manner:

- Analysis of the ceramic vessels found at TMQC reveals that there are small differences between periods in terms of assemblage composition where *guan* vessels, abundant during the Early period, are almost non-existent during the later Middle period. These findings, however, should not be taken as reflecting actual preference of the site inhabitants and are due, perhaps, mostly to the areas excavated and published in the 1980s. Other observations can be made with more confidence: the first being the noticeable difference between Early and Middle periods is the absence of vessels made with red paste. The second is that those vessels expected to have usewear remains related with cooking, do indeed reflect them (mostly *li* and *yan)* while serving vessels (such as *pen, gui* and *dou*) do not for both periods examined.
- A common average *shengwen* corrugation cord width was observed both throughout the sites many vessel types and throughout both periods. This is taken here to indicate the tradition of production or even single production sites of ceramic manufacture that existed at this site and were continually observed through time. Only the large *weng* vessels had somewhat large mean width sizes.
- During the Early period *li* cooking vessels were somewhat larger than those of the Middle period (7.2 and 2.7L volume, respectively), though both reflected a scenario where overall two *li* size groups existed, on the basis of their size and volume. These volumes can be translated in to adult male daily millet consumption values that range from 1.1-1.7 for the middle period and 3.2-4.9 people that could be fed from one cooking episode using these dishes.
- These amounts represent what a male adult would require in a given day and show the possible limits of eating party sizes and consumption practices for each period. While Early period cooking vessels could have been used to feed a number of grown adults and children with

millet porridge at one sitting, or set aside to be consumed over time by a single family, Middle period vessels would allow, at most, for a single family to eat the cooked food in one sitting or for feeding a single person throughout one day.

- That being said, during the Early period both smaller sized *li* vessels were found alongside these larger vessels and could indicate changing scenarios of communal eating. Families may have oscillated between the large supra family eating practice and the smaller single family eating tradition. Since *gui*, *bo* and *dou* do not increase in size between periods it seems less plausible that families were cooking food separately and then pooling it together for large meals, as was observed by Haapanan at Anyang.

- <u>Usewear</u> analysis performed on the *li* cooking vessels shows that the main difference between the two periods was a mix of dry and wet cooking modes during the Early period and a focus on the wet cooking mode during the Middle period; Early period cooking mode was not connected to vessel size.
- Carbonization marks on the bases of wet cooking mode vessels indicate a reduction of liquid contact to the point where food burned and charred the vessel for both periods. Both period sherds reflect both charred remains on the neck and shoulder as well as none at all. A number of 'no internal carbonization' patterns indicated scenarios where heat intestines required for the charring of the vessel sides was not reached or that water was boiled in the vessel and food boiled in them (perhaps like gnocchi).
- Both periods vessels have distinctive heavy sooting patterns on their external sides, which indicate a large smoky fuel source or strong intensity of heat. Distinctive oxidization marks on the bottom of the vessel indicates a strong controlled flame placed under the base of the vessel.

Thus, it is less plausible that vessel walls did not reach these temperatures for the smaller Middle period *li* vessels though they might have for the Early period vessels.

- During the Middle period the *li* vessel also exemplify a pattern where thicker pilafs might have been made as evidenced by vertical oxidization patches on the vessel sides. It is possible that during the Early period a mix not only of dishes existed at the site, but of cooking methods as well, where some ate and prepared the millet porridge in different ways ranging from perhaps thicker stews to thinner soups.

- Technical analysis of the ceramics revealed a number of interesting finds as well. The first being the overall differences between vessels of cooking and serving function in terms of inclusion numbers, sorting levels and their size. The former, cooking vessels, exhibit a higher temper level than the latter, as expected. The percent of voids in the Middle period cooking vessels is interesting, but might relate to a change in the ceramic production tradition than an actual desired technical function as this is observed for all other vessel types as well for this period. Middle period vessels have higher sorting values and indeed higher percentages of pastes without inclusions in them in respect to the Early period as well.
- The PCA analysis revealed a connection between different technical properties and showed a mix of relationships that did not seem to change much between periods. Only *li* and *dou* vessels seemed to cluster in any meaningful way and retained the opposite technical compositions: the former mostly linking temper amounts, large temper particle sizes, low sorting values and size of inclusions.
- When the *li* vessels of both periods were plotted on the same PCA analysis, the dry cooking mode was found to have been conducted in vessels that did not have parallel inclusions or voids, which are better suited for long simmering process. They also did not have large and

interconnected voids that would make their combination better suited for high heat conductivity, but would in fact make for a more thermal resistant vessel. The fact that inclusions are not oriented in any specific way in these vessels, however, might reflect a scenario where potters were aiming at improving thermal stress resistance.

- Middle period *li* cooking vessels did not cluster in any one way and might indicate that potters did have a specific cooking style in mind for the vessel and that they were used for wet cooking modes by the inhabitants regardless. These findings also might reveal a scenario where consumption might have influenced production during the Early period, but to a far lesser extent during the Middle period where potters simply continued to make cooking vessels in their traditional ways.

Chapter 10 - Shandong and the Zhou in the Far East

Introduction

In the Shandong peninsula the Zhou expansion is considered to have been the second wave of Huaxia colonizers, preceded by a Shang expansion hundreds of years before it. In fact the Far East, as the Zhou considered it, is an area believed to have been heavily influenced (if not directly conquered) as a result of earlier Shang dynasty campaigns. Thus the narrative many Chinese archaeologists have followed has been to see both the local peoples inhabiting the Shandong peninsula to have had an initially complicated relationships with the Zhou colonizers. Some first joining the Western Zhou forces in their initial war against the Shang, both in the Central Plains and in Shandong, while others sided with the Shang even after the Zhou ascended to power and quelled the rebellion led by prince Wu Geng and the Shang loyalists. Following the expansion into the Shandong region a number of polities were quickly established, several by the royal family, or Ji clan members, and others by local groups, each forming a unique relationship with the Zhou court (Shaughnessy 1999: 311–313).

Many of these states will go on to play important roles during the Later Eastern Zhou period, the most notable of them were Qi 齐 and Lu 鲁, the latter Confucius' home state. Reconstructing their beginnings have been a topic of considerable importance for both historians and archaeologists and they have played an important role in understanding the Zhou expansion. Later historical texts, such as the *Guoyu* 国语 *Zuozhuan, Shiji* and others, discuss the origins of these states and while their circumstances vary, they place their establishment during the Western Zhou period. Archaeologically, this has not been a straight forward task, to say the least. The problem revolves around not only the amount of credence these texts are given when describing such early periods, but also in how the archaeological material is approached. As discussed extensively throughout this work, material culture assemblages, mostly ceramics, are taken to reflect ethnic identity, and therefore when Zhou style artifacts are found they are seen to reflect Zhou people or the acculturating effects of the Zhou.

In fact as Shandong and the people inhabiting it will eventually become part of the greater Chinese civilization, the earlier Shang expansion is considered an important stage in this process as well – as the Shang are taken to be the Han progenitors of that time. Since the mandate of heaven moved from the Shang to the Zhou, the latter are seen to be continuing the proper arc of history and with it the extension of the original enterprises put forward by the Shang before them.

The actual process of expansion and colonization has been a topic of much debate, though most scholars have discussed, mostly, the motivation of the Shang and Zhou elites and viewed their influences as inevitable and total. In fact the local people are rarely given much agency in this process and only their rate of acculturation by the 'powers from the West' are debated. Indeed the actual understanding of who these people are is a central theme of research, as many texts discuss the relationships between locals and the Here most notably ethnic contingency have been the Dongyi 东夷, a barbarian group to the east of the Zhou and Shang powers. Linking the Dongyi to archaeological remains has be no less important to the archaeology of Bronze Age Shandong.

These topics will be the focus of the chapter at hand, which will present an overview of the arguments, studies and debates in the field, as well as a survey of the extensive archaeological work carried out in the region over the recent decades. The Shandong peninsula is commonly divided into two natural regions by the Jiaolai 交来 River: the Western Jiaodong 胶东 peninsula and the mountainous area in the East, where the sacred mount Tai 泰山 lies (Figure 10-1). These two larger regions can be further divided in to sub-regions of 1) the plains to the north, stretching from Jinan to the Wei river 2) the Jiaolai plains to the East between the mountains and the 3) Jiaodong peninsula and the Rizhao coastal region to the southeast (Li 2006: 301–303).

The main archaeological work conducted in this provenance has focused on the foothills and plains as well as along coastal lines. Here, for the most part, they will be presented in sub-regional sequence. I begin by discussing the main debates surrounding the identification of the Dongyi people with local archaeological cultures, first the Yueshi 岳石 and then Zhenzhumen 珍珠们, followed closely by discussions on the Shang arrival to Shandong. As many scholars use the Shang to denote an historic time and dynasty dated from roughly (1600 -1046 BCE) it is not uncommon to refer to both Erligang (1600-1250 BCE including Huanbei) and Yinxu (1250-1046 BCE) archaeological cultures collectively as Shang. To avoid confusion, I note which of the archaeological cultures I am discussing when the term Shang is mentioned. A similar review for Western Zhou materials is provided, followed by a discussion on the some of the advancements and continued problems with the study of this process.

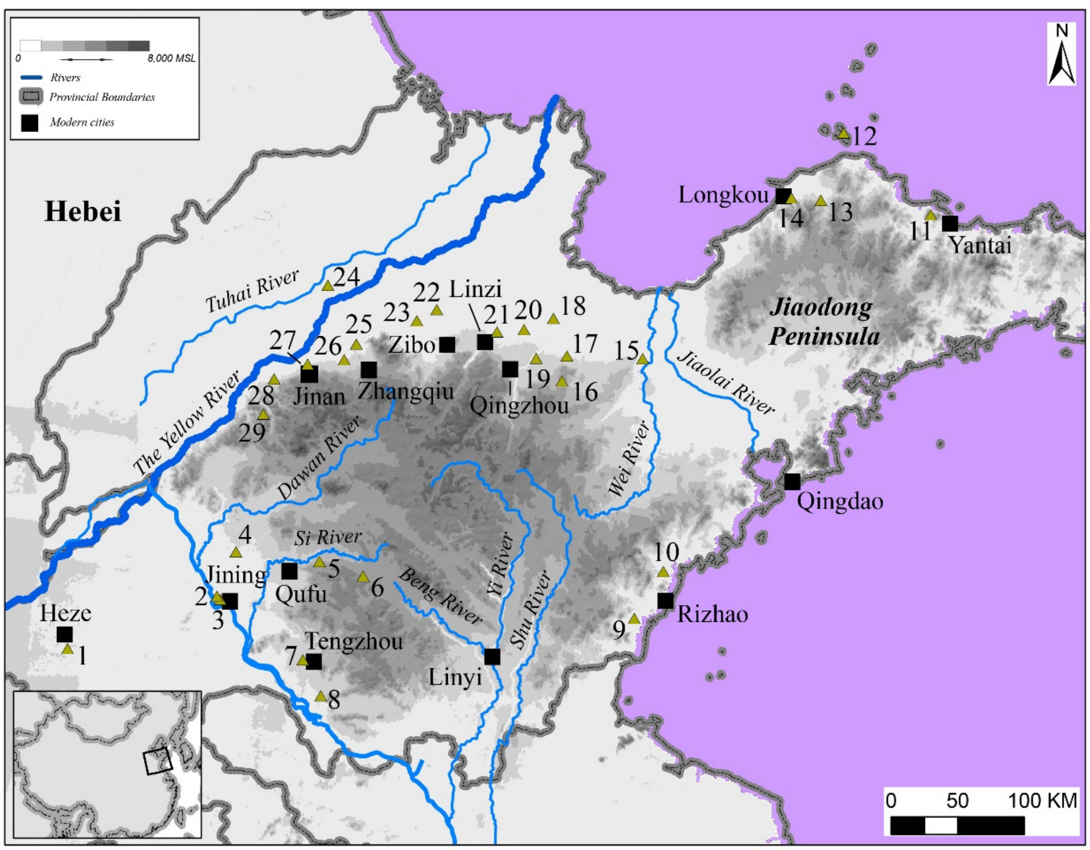


Figure 10-1 - Shandong sites mentioned in the text: 1) Anqiuhuidui 2) Panmiao 3) Fenghuitai 4) Xiwusi 5) Yinjiacheng 6) Tianqimiao 7) Zhuanglicun 8) Qianzhangda 9) Yaowangcheng 10) Liangchengzhen 11) Zhishui 12)Zhenzhumen 13) Guicheng 14) Liuzizhuang 15) Huichuanzhuang 16) Yujiahe17) Houyuliu 18) Gucheng 19) Subutun) 20) Fenghuangtai 21) Heyato and Kanjiazhai 22) Shijia 23) Dinggong 24) Liutaizi 25) Ningjiabu 26) Chengziya 27) Daxinzhuang 28) Wangfu 29) Xianrentai

Prehistoric Shandong - The Yushi Culture and the Dongyi contingency

The Yueshi 岳石 culture (1900-1500 BCE) features prominently in the discussion on the origins of Chinese civilization. It is best presented by looking at David Cohen's (2001) work, which set out to understand how this culture is linked to specific ethnic groups and political entities . Cohen's study was heavily influenced by of his own advisor, K.C. Chang, whose research on the Panmiao 潘廟 site near the city of Shangqiu 商丘 in Eastern Hunan, lead him to identify the Yueshi stratums as the Proto-Shang ancestral homelands – the great capital city Dayi Shang 大邑商 (and see Murowchick and Cohen 2001). This Eastern origin for the Shang people differed from those put forward by other noted scholars such as Zou Heng (1980) and Yan Wenming (1989) who found the Proto-Shang as originating in the East and viewing Yueshi as a contemporaneous culture with the Xia and the Shang dynasties, yet very much outside of them. In fact the Yueshi culture was seen as the Dong Yi 东夷 or the Eastern Barbarian hoards mentioned in later historical texts; these were mostly enemies of the greater Chinese civilization groups all throughout the early Bronze Age and well into the later part of the 1st millennium BCE (Hsu 1999: 550). While scholars where eager to attribute archaeological cultures, based mainly on ceramic assemblages, to ancient peoples mentioned in historical texts, Cohen's work was mindful of the many problems of 'linking pots and people'. In it he sought to account instead for the interrelationships between material culture patterning and social identity, and with it to present the deep cultural roots of what would become the Shang political entity.

Archaeologically, the Yueshi culture is distributed mainly in Eastern Shandong, Western Henan and the Northern part of Jiangsu province. Based on ceramic styles and vessel forms the Yueshi culture is believed to have been derived from the Shandong Longshan and surrounding ceramic cultures (Fang 1988). In comparison to the earlier Longshan culture, the Yueshi is considered to represent a period of cultural atavism as well as decreased social complexity and political centralization. While some walled sites existed, continuing the tradition of the earlier Longshan period, the total number of sites sees a considerable drop. Yueshi ceramics are thick and heavy, quite different from the finely made black-ware ceramic assemblages of earlier periods. Cooking vessels are dominated by *ding* and *yan* steamers, and containers included square *he* boxes and *zun*, in marked contrast to contemporary ceramic assemblages further West, which are dominated by *li* tripods (Fang 2013: 476). In addition very few imported prestige items have been found in Yueshi contexts, common in the earlier periods and taken to indicate the existence of large elite networks of trade and exchange (Liu and Chen 2012: 275–276). Metal objects (mostly arrow heads, ornaments, knives and drills), locally produced, are considered inferior to contemporary Central Plains items as well (but c.f. Shelach 2015: 184).

For those viewing the cultures of the Central Plains at this time as reflective of the Shang, and the Yueshi culture as the Dongyi, these finds are taken to also further reflect the traditional narrative of superior development of Chinese civilization in the Central Plains. In fact Yueshi artifacts, ceramics and stone tools, including a distinct *ju* hoe artifact type, have been found further to the East in Shang contexts, indicating trade relationships or even spoils acquired from wars between the Shang and Yueshi culture/Dongyi peoples (Liu and Chen 2012: 267-277). Thus, one could argue that the fact that no Shang artifacts were found in Yueshi contexts could mean that only the former were victorious when altercations broke out. Other scholars, such as Li Boqian and Yang Shaoping have advanced the ideas that the Yueshi culture (and other Shandong based cultures) greatly influenced the development of the earlier Xia (Erlitou archaeological culture) with contributions of rammed earth construction, fast wheel ceramic production, jade, horn and ivory craftsmanship and even that certain ritual traditions, such as coffin burial systems and dog sacrifices, were imported from the East (See in Cohen 2001: 34-44; though Liu 2004 and Xu 2009 see many of these achievements as endemic Erlitou developments).

Whether or not the Shang and Yueshi developed independently as a separate cultural, political and ethnic group (or that the former grew out of the latter), later period Shang culture, beginning with Erligang and then Yinxu archaeological cultures (Yinxu equaling Shang, being an identification agreed by most all archaeologists working in China) are believed to have expanded into Henan and Shandong, a process which also resulted to have brought about the demise of the Yueshi culture around 1500 BCE[77] (Yan 1989; Fang 1988). In addition the Zhenzhumen 珍珠门 culture, derived from the Yueshi, is believed to have existed in Western Shandong until the late Shang Yinxu period, but was pushed back to the Eastern parts of the peninsula during the Western Zhou arrival and were eventually acculturated by the Zhou in the Springs and Autumns period (and see discussion further below).

As Cohen (2001: chapter 7) notes, the overarching framework of these arguments is the combination of a Central Plains-oriented development of Chinese society (in this case the Shang), with a desire to connect later historical texts to the Dongyi people. In other words this argument is founded, at the same time, on both traditional narratives of the development of Chinese civilization in the Central Plains and their expansion into the periphery as part of the greater and eventual Sinicization process, alongside the identification of barbarian elements on the outskirts of Chinese society (here the Dongyi, mentioned in later historical texts), with ceramic assemblages, that are then projected back in time to the Yueshi and Zhenzhunmen archaeological cultures.

That being said, when looking at the texts and inscriptions of both the Shang Yinxu and Zhou periods, a certain 'other' element is described to have existed in the regions to the East of the main power centers of these polities. Yet beyond a generic overarching label, the Dongyi cannot be seen as any

[77] In the latter model one would have to accept that the Shang developed from the Yueshi in the East, then the Shang branched off, moved to the Central Plains, vanquished the Xia, established a political entity in the Central Plains and finally came back to vanquish the descents of their common ancestors. This exercise in geographic and historical reasoning might seem odd, but is in fact common in Chinese archaeology. Its roots are based in a desire to link peoples and sites mentioned in historical texts to specific archaeological cultures. We have seen similar arguments in chapter 5 for the Proto-Zhou as well as the Western barbarians.

real "self-aware social category" (Cohen 2001: 247). Indeed Shang oracle bone inscriptions mention the Renfang 人方 to have resided in the Eastern regions and the royal companies against these people there. This group is taken to be the Dongyi by a number of scholars based on etymological similarities between the characters *yi* 夷 and *ren* 人. Whatever these groups called themselves, it is quite clear that some form of interaction took place between these regions. In fact Keightley (2000: 87-88) notes that the Shang seem to have been quite preoccupied with the East and the peoples inhabiting this region, since this cardinal direction is referred to in greater abundance than any other (though the East *dong* 东, may have been the actual name of specific location as well). In bronze inscriptions from the Western Zhou period there are references to the Dongren 东人 or Dongshi 东尸, another character of related origins or source, though these identifications seem to revolve mostly around the connection of later historical narratives that speak of the development of the Yi and other groups inhabiting these regions, to earlier periods, albeit, with limited historiographic evidence (Cohen 2001: 248-277).

Consequently whether the Dongyi are taken to be a single political entity or an agglomeration of groups of 'others' who resided in the Eastern margins of the Central Plains civilizations, clearly interactions took place between these two regions. As noted above, material goods were certainly moving between regions and it is quite possible that people migrated as well. In fact based on archaeological data found in recent decades, both Erligang and Yinxu material types, as well as later Zhou styles, are all found in abundance in Shandong. The Dongyi people and their place in Chinese history is but one part of this story, and as problematic as the above arguments are, they have played a major role in the reconstruction of the history of this region and how these interaction between the local groups and Huaxia culture on a whole is understood. In what follows I present first the archaeological evidence from these periods in conjecture with some of the interpretations given for them by leading scholars, followed by a discussion on the process and motivation for the expansion.

Shang Archaeological Material (Erligang and Yinxu periods) in Shandong

Early work undertaken by Li Ji at Chengziya 城子崖 in the 1930s, an important Longshan period site to the east of Zhangqiu 章丘 city, yielded a number of ostracons with what appeared to be a rudimentary form of what would become the written language found at Yinxu the Shang capital. This was initially taken as primary evidence for Shang occupation of this region and additional work in the 1930s discovered Shang bronzes and graves in the site's vicinity, and work culminated in a collaboration between Canadian, English and Chinese scholars and the launching of a large scale survey across the site and its vicinity. The most important result of this project was the discovery of the Daxinzhuang 大辛庄 site, near the modern day city of Jinan (Drake 1940).

A series of excavation commenced in the mid-1950s (with important work still ongoing today), which established the importance of this site for the Erligang and Yinxu Shang periods in Shandong. To date the project has unearthed and published over the years a large number of the site's impressive domestic remains. Houses, mostly round structures, were constructed with stamped earth or plastered floors and furnished with doors facing north and east. Surface remains contain many layers hinting at long occupation periods (Shandong et al. 1995). Graves display many of the traditional Shang characteristics including waist pits, dog burials and high status individual being placed with bronze vessels (Shandong et al. 2004), but ceramic assemblages, in contrast, reflect a mix of traditions. The dominant ceramic style is grey in color and representative of a Shang Erligang and Yinxu types, with *shengwen* corrugation marks, while the second is reddish-brown and of a smooth surface – seen to be local in origin and a variant of Yueshi during the earlier Erligang period, thus more strongly connected to the Zhunzhemen and the Dongyi variant later on (see in Xu 1999)

Daxinzhuang is considered to be an important settlement from the middle Erligang through the terminal Yinxu periods and one that also functioned as a staging ground where the Shang expansion was orchestrated and launched from (Fang 2013: 477). The fact that eight pieces of inscribed oracle bones in the Yinxu style were found at the site (used in the standard pyromancy ritual for prognostication) is good evidence for the importance of this site at least during the Later Yinxu period (Shandong et al 2003 - prior to this find one single piece from Zhengzhou 郑州 with no secure context, was the only oracle bone of its kind found outside of Anyang). Built in an area devoid of other Yueshi culture sites, in this model the Shang set up the Daxingzhuang settlement first and then set up to conquer and dominate the Yueshi people in the surrounding areas (Fang 2013: 478-479).

Indeed this replacement of Yueshi material by later Shang period remains is seen to have taken place at a number of other sites throughout the western parts of Shandong in the subsequent late Erligang and Yinxu periods (Liu and Chen 2003: 113-116; Fang 2013: 477-478; Li Xueqin 2005: 378-379). The Yinjiacheng 尹家城 site Located near Sishui 泗水 county, spans an area of about 4,000 square meters, with remains from Dawenkou, Longshan, Yueshi, Erligang and later Western Zhou Dynasty periods as well as the Warring States Period, Han and the Tang and Song Dynasties (Shandong 1985). Selective excavations found three house foundations and 52 pits, a number of copper arrowheads, stone tools, bones, horns teeth, a clam and pottery. As the Erligang period layers cut through the earlier Yueshi stratum, the excavator's take this as a good indication of both the time period of the Yueshi demise as well as those who instigated it (Shandong 1990).

Nearby, the small site of Tianqimiao 天齐庙 contained ceramic remains spanning the Dawenkou, Longshan and Yushi culture types with the Erligang type stratum superimposed atop them. The Erligang period remains include ash pits house foundations, and tombs containing dog sacrifices (Guojia 1994). The Anqiugudui 安邱堌堆 site, located in Heze 菏泽 City, covered about 2,500 square meters of which about 1/10 have been excavated. Remains include mainly ash pits, pottery kilns, and pottery relics. The site spans the Longshan, Yushi and Shang Culture with the later dated to early Erligang to Yinxu IV (Beijing 1987).

Other sites reflect a discontinuity from the Yueshi to the later periods. The Dinggong 丁公 remains in Zouping 邹平 County span a large area of about 180,000 square meters, including Dawenkou, Longshan, Yueshi, Yinxu and the Han Dynasty cultural relics. The thickest layers and most abundant finds are dated to the Yinxu period and include house foundations, waste pits, wells and tombs (Shandong 1982; 1992). Located in the Jining City suburbs, the Fenghuangtai 凤凰台 site, yielded the remains of six waste pits with ceramics, bone and stone tools of Longshan culture, Yueshi, and Yinxu phases I-II, as well as Eastern Zhou and Han Dynasty relics (Guojia 1991a). Other sites contain only Yinxu materials without previous occupation such as Panmiao 潘庙 (Guojia 1991b), where dozens of ash pits, two graves and a single house structures with Yinxu period I-II remains were found, and Subutun 苏埠屯, a rich graveyard dated to the Yinxu phases III-IV near modern day city of Qingzhou 青州 (Shandong and Qingzhou1989). The 10 fully excavated graves from this site are quite impressive and were constructed in various shapes, which were reserved for the rich and famous at the Anyang graveyard: they were furnished with ramps leading down to them, bronze vessels, human and dog sacrifices as well and the only four ramped tomb found outside Anyang (Campbell 2014a: 143-145).

Like Daxingzhuang, The Sibutun site is considered to have been an important site in another important area, the greater Zibo 淄博 region where the Qi 齐 state of the Zhou period will eventual come to power. It is unclear however if this region was governed first by a Shang contingency, perhaps a military overlord, that was subservient to the Yinxu court, or by a local group allied with the Shang to the west, who were ceremoniously bequeathed these items by the Shang, but were largely independent, even while they maintained a political alliance with the Yinxu Shang (Feng 2013: 484; Campbell 2104a: 145).

Not far away at the site of Shijia 史家 in Huantai 桓台 county, directly north of Zibo, a large residential site was found with occupation layers dating from the Longshan through to the warring states period (Zibo et al. 1997). The Yueshi culture layer included a number of waste pits and graves and most interestingly an underground wooden alter of sorts for sacrificial offerings. No Erligang occupation phase was found, but the site seems to have been settled during the Yinxu I-IV periods. During this time a moat was added around the settlement and a large number bronzes, including some with Shang clan insignia, were found in the graves at the site. Four ritual sacrificial pits were excavated, three included the remains of pigs and one a number of human victims. How these rituals relate to earlier Yueshi ritual traditions is unclear, but the excavators have viewed this site as another important center, alongside Daxingzhuang and Sibutun of this northern part of Shandong (Zibo et al. 1997: 16-17).

To the South, at the Qianzhangda 前掌大 site near the modern day city of Tengzhou 滕州, over 100 burials, alongside residential remains, including ash pits and wells, have been unearthed. Late Erligang material has been found at the site, but the graveyard, the focus of the excavations, spans the late Shang Yinxu and Early Western Zhou periods and no previous Yueshi remains were found (though a small Longshan site was unearthed, Zhongguo 2005). A number of scholars have identified this site as the capital of the Shang period Xue 薛 or Yan 奄 state, both of which are mentioned in oracle bones inscriptions as important poliites that maintained formal relationship with the Shang (see discussion in Wu 2013: 43–45).

Campbell (2014a: 147-149) sees the Qianzhangda site as a variant of the Anyang Shang culture where, based on the remains of burial remains at the site itself, a mix of typical Anyang Shang traditions were found: these are mostly in the form of bronzes and ceramics and chariots, alongside other influences like lacquerwares and Yueshi style ceramics, as well the omission of *fu* and *jue* drinking cups that were more commonly placed in Shang graves to the West. Campbell sees this as reflecting a complex situation where either elites were installed in this region to oversee the local population or that the adoption of these materials was selective and incorporated into local traditions. In any case this continuation of Yueshi traditions shows the complex negotiation these contacts involved, even during this late period, and that simple ethnic ascriptions based on material culture and development of political reconstruction and interplays of power is higly problematic (Campbella 2014: 159-160). I return to this point in the discussion component of this chapter and turn now to an overview of the second local archeological culture, the Zhenzhumen, who the Shang, and later on the Zhou, would come in contact with.

The Zhunzhimen Culture

The mixed strategy of replacing local elites with Shang people or supporters, discussed by Campbell above, as well as others, rather than a total cultural replacement is becoming commonly acknowledged. Yet, at the same, the Shang arrival is still seen to have resulted in a steady push of the local inhabitants, i.e. those that would not be assimilated into the new Shang Yinxu order, further East (e.g.,, Fang 2013: 479-485; Chen 2007; Luan 1999). Archaeologically, the material culture assemblages that represents these local non-Shang peoples are the Zhunzhimen culture, also seen to be the Dongyi who spanned the Yinxu Shang and Western Zhou periods. This is mainly based on the continuation of certain ceramic elements of earlier Yueshi culture, seen as the earlier period (Erligang) Dongyi people (and see discussions in Liu 2001; Yan 1989; Li 2005: 375-276).

The culture received its name when work at the Zhenzhumen site in Changdao 长岛 County in the 1980s (Beijing et al. 1983) yielded a new and distinct ceramic style, as well as a number of circular waste pits and shell mildens. A number of badly preserved simple circular house foundations, as well as seasonal pens for herding animals, were found as well. The site contained two types of ceramics assemblages: 1) plain handmade ceramics of brown or reddish color with notable large mica inclusions, with *li, yan, ding, pan, guan* and *gui* as the predominant types, alongside 2) a finely sifted material with relatively few inclusions of grey color, taken to be Shang or later Zhou imports or influences. The vessels themselves mostly *li, guan, pan* and *dou* are similar in shape and style to Zhou and Shang styles decorated with *shengwen* corrugation marks (Wei 2015: 24-25).

Continued excavation and survey efforts have yielded new information about the distribution of the Zhenzhumen culture, indicting a main cluster in the Jiaodong peninsula to the West of the Wei River and on the southern coast of the Shandong peninsula, though few sites have been excavated beyond several test pits. The Huiquanzhuang 会泉庄 site near Weifang 潍坊 yielded 16 waste pits with ceramic remains, mostly of the reddish-brown material described above, alongside and a number of greyware vessels dated to Yinxu III-IV periods (Liu 2000). Work at Louzizhuang 楼子庄 in Longkou 龙口 County revealed a number of house foundations, as well as several waste and storage pits with ceramic sherds and carbonized millet, providing some of the only information on the substance patterns of this culture (Wang 2006). In addition, a single sacrificial pit with the skeleton of a horse and human adult were found, the only one of its kind and taken by some to indicate contacts with the Shang to the West, perhaps as an emulation of their rituals (Fang 2013: 489)

Unlike their counterparts to the West, very little bronze artifacts have been found, with only one *mao* spearhead known from a Zhunzhemen context, perhaps imported (Fang 2013: 488), leaving most tools to have been made of stone or bone[78]. A small amount of Zhenzhumen style artifacts were in fact found at Shang Yinxu period sites to the West, including Daxinzhuang, though only in the earlier periods. During the terminal Yinxu IV Shang period phases almost no Zhenzhumen ceramics are found (Wei 2015: 25). Renewed excavations at Houyuliu 后于刘 in Cahngle 昌乐 county have

[78] Though due the small amount of graves excavated this is to be expected and indeed at most all of the residential contexts of the Shang or Zhou site discussed here no bronze artifacts were found outside of a mortuary context.

revealed two house structure types that further complicate our understanding of Zhenzhumen and Shang interactions: the first is a large square house with typical grayware Shang style ceramics, while in the smaller circular structure only the reddish-brown standard Zhenzhumen assemblage was found (Wei 2015: 26). Whether the elites of this site chose to include (or could even access Shang materials), or that actual Shang people came to leave and perhaps even govern these sites, remains unclear.

Nevertheless, interactions during the later Zhou period is seen as more direct and total in its outcome. At Chenjiahe 陈家河 site near Linqu county 临朐, early Middle Western Zhou period remains show a mix of both Zhou style ceramics along with a very small amount of plain brown ware ceramics that all by disappear in the after the other Middle Western Zhou stratum (Wei 2015: 27). Similarly at Zhishui 芝水 near Yantai 烟台 city initially discovered in the 1960s, but excavated only in the 80s, a small site of 12,000 square meters was excavated yielding nine waste pits containing a majority of reddish brown ware and a small number of greyware, along with several stone as well as bone tools and ornaments (Beijing and Yantai 2000). Chronologically, the site has three layers: Yueshi, Zhenzhumen and Middle Western Zhou, indicating for some the process of an Eastern 'push' of the first two during the previous Shang period and final colonization during the Western Zhou period (e.g., Zhang 2010; Fang 2013; Li 2006: 312-314). Finally, the Nanhuangzhuang 南黄莊 Culture, believed to have been derived from the Zhenzhumen and dated to the Middle Western Zhou through the Early Eastern Zhou periods, is mostly confined to the Jiaodong peninsula and is believed by some to represent the outcomes of the Western Zhou expansion (Li and Wang 1988). The Nanhuangzhuang remains a constant point of debate, both in its classification and periodization, as well as its relationship with the Zhou arrival, itself evidenced only by sporadic findings of bronzes, ceramic vessels and graves in the greater Jiaodong peninsula. Thus, denoting whether or not Zhou peoples actually inhabited these regions, even for those firmly placed in culture history paradigms, remians unclear (Wu 2013: 135-140 and see more below).

Shandong during the Western Zhou – Formative States and how the East was Won

The Zhou expansion, like the Shang (Erligang and Yinxu) expansion before it, was a complex process, where its rate and success are still being discussed and debated. Still, all scholars agree that the when the Zhou arrived to Shandong they were met with both local groups (i.e. the Dongyi/Zhenzhumen conglomerate) as well as remnants from the previous Shang wave, each providing varying degrees of support to the new Zhou establishment. Fang (2013: 486-488) points out that many of the earlier Shang centers, most importantly Daxingzhuang and Subutun, did not continue into the Zhou period, but that instead other centers of administration were constructed in their place. In fact the Shang expansion is even taken to have been cut short by the change of the regime and the Zhou arrival: The Shang rebellion that rose up and needed to be quelled is seen by some to have been reinforced by sympathizers from Shandong, support that needed to be quelled if the new Zhou state was to succeed in asserting its dominance (Li 2006: 306-307).

The way the Zhou entered Shandong and how they set about its colonization and control is reconstructed through a complex integration of later historical texts, in conjecture with information in bronze inscriptions ranging in date from the Western Zhou period and, mostly, the later parts of the Eastern Zhou and Han periods[79]. A number of Western Zhou bronze inscriptions do discuss campaigns in the East against barbarian tribes (Cohen 2001: 293–307; Shaughnessy 1991: 178). For example the Ran *fangding* 方鼎 mentions a war directed by the Duke of Zhou against the Dongyi tribes and the Qin *gui* 禽簋 recounts the successful expedition against the state of Yan 奄, also during the reign of the Duke of Zhou (i.e Early Western Zhou; in Li 2006: 307). Linking these locations to specific archaeological sites is not a straight forward task and disagreement is common.

[79] These include the Shangshu, Yi Zhoushu 逸周書, the Shi Jing 诗经 Zuozhuan Hanshu 汉书 and the Zhushu Jinian 竹書紀年.

While some scholars view the site of Qufu 曲阜, what will become the Lu 魯 state's capital, as the previous Yan state's seat of power, others see the Qianzhangda site as its center. Since the son of the Duke of Zhou, Bo Qin 伯禽, is later believed to have been behind the establishment of the state of Lu in place of the rebelling Yan state who his father's successfully campaigned against, many others have viewed the site of Qufu also as an earlier Shang state. Impressive as the remains of the Qufu site are, with its massive walls, bronze and ceramic worships, as well as a rich elite graveyard (Shandong 1982), the earliest remains date only to the Late Western Zhou periods. Keeping this chronological gap in mind, other scholars point to the site of Qianzhangda, with both its Shang and Zhou cemetery remains as the early Lu state capital (before it was moved to Qufu and see overviews in Falkenhausen 2006: 175–176; Li 2006: 307-308,314-315; Feng 2013: 487-488; Zhongguo 2000).

Indeed, we would do well to remember that besides the heavy reliance on later historical texts, themselves contributing mostly to the perspective that seeks to understand the process by which this region became part of the greater Chinese civilization, it is quite possible that the Western Zhou had far less power than they are assumed to have held during this early time. The state of Qi 齊, found near the modern day city of Linzi 临淄, would also become one of the most important states of the Eastern Zhou period. Its ascension to the prominent role of Ba 霸 leadership, or acting lord and leader of the Huaxia states, was in part a result of its commitment to defend the collation polities against marauding barbarian tribes (Hsu 1999: 550-557). The great wall of Qi, constructed during the Eastern Zhou period, stretches across from Jinan and the banks of the Yellow River to the coastal city of Qingdao in the east for over 600 km (Zhongguo 2004: 272). Archaeologically, the remains of the Qi capital contain a massive wall enclosing the city and inner wall for a palatial area with rammed earth foundation, though all seem to date to the Eastern Zhou period. The earliest layers at the site have been dated to the Late Western Zhou such as parts of the Northern city wall and perhaps even to the late Middle Western Zhou period (Shandong 2014: 219-223, 360-363).

The actual origins of the state of Qi, like Lu, are debated as well, with some seeing its rulers as local people of Dongyi origins who would incorporate Zhou and local culture to become the Qi (e.g., Wang 1994). In light of the multiple ceramic styles at the site, scholars even view the Qi capital, throughout its entire history, as a cosmopolitan and multiethnic city (e.g., Du 1989). Recently Wu (2013: 76-87) has proposed to view the site of Chenzhuang 陈庄, situated 35 km northeast of the Qi capital in Linzi, as the original burial ground of the Qi dukes, who were tasked with establishing this state by the central Zhou court, as two bronzes found there contained characters of possible Qi connection. This identification would preclude a local element from having established the Qi state by identifying its location elsewhere during its earliest periods. A number of pits and graves with Early Western Zhou materials found at Heyatou 河崖头 and Kanjiazhai 阚家寨 just outside the city walls, however, have lead the excavators to view Linzi as the site of the early period Qi state as well (Shandong 2014: 365)[80].

When surveying the Western Zhou sites in Shandong, both continuations from early settlements as well as the occupation of new areas becomes evident. The Ningjiabu 宁家埠 site near Zhanqiu 章丘 city (between Jinan and Zibo) yielded the remains of Longshan, Shang Yinxu as well as Western and Eastern Zhou stratums (Shandong 1993). Excavations in the late 1980s opened more than 250 squares covering an area of 6300 square meters. House foundations, waste pits, wells and graves make up the majority of the site's remains. House F8 was well preserved with a living floor, walls, foundations, post holes and a hearth. The Shang and Zhou stratums were divided by the excavators to Yinxu IV phase and late Early Western Zhou as well as the early Middle Western Zhou periods (Shandong 1993: 27-47).

[80] Chenzhuang is the second site analyzed in this work and will discussed briefly in the next chapter.

Located on the outskirts of Jinan city, the Wangfu 王府 site is 150,000 square meters large with occupation phases of Yueshi, Shang Yinxu and two Western Zhou stratums, the first a late Early to Middle period and the other Late Western Zhou period. The site is also occupied in subsequent Eastern Zhou and Han periods, though not continually. Remains include a house structure, two relatively whole pottery production kilns and a number of waste pits (Shandong 2000). The Ningjiabu site mentioned above, contained Late Shang Yinxu period materials, but only clear Middle and Late Western Zhou stratums (Shandong 1993). Similarly the site of Fenghuangtai 凤凰台 Near Qingchou yielded a number of house structures and pits dating to the late Shang Yinxu and Late Middle Western Zhou periods (Shandong 1989), while at Tianqimiao in Sishui county Longshan, Yueshi and Shang Yinxu period stratums were found, but only Late Western Zhou period remains were unearthed and was comprised of a number of waste pits (Guojia 1994).

Several of the Western Zhou period sites consist solely of graves not found with any clear residential contexts. The rich graves of Liutaizi 刘台子 in Jiyang 济阳 County to the north of Jinan were constructed with an *ercengtai* stepped ledge, where burial goods were placed, including bronze ritual vessels, *ding* and *gui* as well as *ge* axe heads. Several graves where furnished with dog sacrifices while others contained human victims. The graves also contained inner and outer wooden coffins (Dizhou and Jiyang 1981; 1985). Tomb 6 was particularly large and contained a large number of burial goods including 20 ritual bronze artifacts (Shandong 1996). Inscriptions on several bronzes might indicate that these were the rulers of the Feng 夆 state known from later historical texts to have inhabited this region (Shandong 1996: 25-27), though other have found the characters to denote instead the personal names of those who had used them in life and perhaps even in death (and see in Li 2006: 305).

The graveyard at Yuejiahe 岳家河 in Changle County contained over 50 graves, the vast majority of them dated to the Eastern Zhou period. Three graves were dated to the later Western Zhou period indicating perhaps the earliest occupation phase of this site. The interred were placed within tombs constructed with stepped ledges, niches and waist pits, several of which contained dog sanctifies. The vast majority of offerings were ceramics vessels (Weishi and Changle 1990). The Houli 后李 site, only 2.5 km north of the Qi state, was quite large and several hundreds of Early Western Zhou period graves have been reportedly found, though no final report has come out and many of the graves have not been dated (Jiqing 1992; 1994).

In the South-Western regions of Shandong province a number of sites were found as well. These include the Qianzhangda site, which yielded both a Shang and Western Zhou cemetery and the Lu state remains at Qufu mentioned above, as well as other important centers. At Xianrentai 仙人台 in Changqing 长清 county over 630 square meters have been excavated. The site contains Yueshi period layers as well as Late Western Zhou and Han stratums. Eight structures were unearthed, three round and five square with all their entrances facing south. Inside one of the houses a stove was found. Three graves with mostly ceramics vessels were found as well had ceramic vessels and dated to the Late Western Zhou (Shandong 1998). The Zhuanglixi 庄里西 site, about one km from Tengzhou 滕州 city yielded Longshan, Yueshi, Western and Eastern Zhou remains. A number of graves dated to the Middle and Late Western Zhou were found as well, as were the remains of later period Eastern Zhou graves and a large habitation site. The graves were well furnished with inscribed bronze vessels, jades, ceramics and several graves contained waist pits (He 1996). At Junjiacheng, mentioned above, a large pre-Zhou period occupation phase was found as well. Stratum V is dated to the Middle through Late Western Zhou. A number of pits as well as structures, which only barely survived, include postholes and stoves. Two small graves were also found with relatively few grave goods in them.

The large Xiwusi 西吴寺 site in Yanzhou County was the target of intensive excavation work where over 3250 square meters site have been uncovered. The site had a large Longshan period occupation phase as well as Late Western and Eastern Zhou layers. A number of structures and grave were found at the site though most of them date to the later periods. Of note is a large sacrificial pit found with the rmians of whole animals, oxen, pigs, deer and dogs, ritually slaughtered and buried in them. As the sites is only 20 km away from Qufu the excavators note the possibility that this was the residence of one of the noble families of the Lu state (Zhongguo 1990).

Motivations of Expansion – Shang and Zhou Presence in Shandong

What where the reasons for the Shang and Zhou expansions into Shandong? That is beyond the desire shared by all states, empires and more loosely defined complex polities to expand and conquer their neighbors (Algaze 1993; Haas 1982; Sinopoli 1994; Spencer 2010; Turchin 2009). A large number of scholars have viewed the motivation of the Shang expansion, as early as the Erligang period (though not as well documented), to have been connected to a desire to extract marine resources, mainly salt, from the rich coastal sites around the Bohai bay (see in Wu 2013: 47-49; Liu and Chen 2012: 364-365; Yan 2013). Indeed in recent years a great deal of research has been invested to better understand ancient salt production in this region (Shandong 2010a; Shandong et al 2010; Shandong et al 2011), as well as specific studies to shed light on the use and function of the main vessel types used for its extraction - the *kuixingqi* 盔形其 or helmet shapped vessel (Wang and Zhu 2006; Cui et al. 2010; Fang 2004; Li et al 2009). Liu and Chen (2003: 114-115) also note that while Shandong is poor with copper resources needed for the production of bronze, controlling the Si river in the southwest would have provided an important connecting route with the Yangzi River to the south and with it the ability to move large quantities of copper, led and tin up north.

How these resources were controlled, if at all, and the way extraction and shipping process was organized is less clear. To begin with, many of the important Shang centers are situated many kilometers to the south of these salt producing sits (such as Daxinzhuang, Subutun and Shijia). An important study in this regard is Wei (forthcoming) who notes that during the Yinxu period at Dahuangbeiyang 大荒北央 as well as Shuangwangcheng 双王城, two major salt producing sites, no habitation remains are found in the form of permanent residences, waste pits or burials, indicating that these must have only been periodical sites for the exploitation of salt resources. This is in stark contrast to the Western Zhou sites, such as Nanheya 南河崖 and Dahuangbeiyang 大荒北央, where habitation remains are abundantly found. In addition, ceramic vessels were made locally during the Zhou periods and were more highly standardized in shape, form and size, investments that required either a more centralized entity overseeing the salt extraction process, or larger degrees of communication between specialized ceramic manufactures and the actual salt extraction and production components of this process.

Other studies, such as Su et al (2013), have looked at the correlation between environmental conditions, mostly precipitation levels and agricultural production, and their connections to settlement pattern and distribution. This study found that while a relative flourishing existed during the Longshan period, later, at the time of the Yueshi culture, a marked decrease in site numbers can be seen, which only recovered during the Shang and Zhou periods (Guo et al. 2013: 684–685). While site distribution shows a similar predisposition towards settlement on lands suitable for agricultural production for all periods, this drop is taken to be the result of lower temperatures and increasing flooding events – environmental conditions not suitable for sedentary agriculture and thus leading to different reasons for the Yueshi decline even prior to the Shang arrival (Guo et al 2013: 691-692).

Unfortunately, no distinction is made between Shang and Zhou periods to provide for a more fine-tuned analysis. Additionally it is important remember that many of these types of studies, as well as Wagner et al. (2013) or Liu and Feng (2012), utilize data from non-systemic surveys and published reports that do not report site sizes nor the ways in which the data were collected (systemic, regional, site specific and so on) – variables all too important when reconstructing ancient settlement patterns.

In contrast, Underhill et al. (2008) provide a long term trajectory of development for a single area in Shandong, the Rizhao 日照 coastal region in the southeastern part of the peninsula and one which up until now has not been featured in our discussion. Results from this multi-year, collaborative and full coverage survey found that during the Longshan period two main settlements, Liangchengzhen两城镇 and Yaowangcheng 尧王城, were the epicenters of sociopolitical life. This peak was followed by a marked decline during the Yueshi period and a dispersed distribution of sites – similar to what has been observed in other parts of Shandong. In contrast, however, Shang sites are relatively scarce as well (mostly Yinxu culture with almost no earlier Erligang period sites) and those that are found are relatively small (under 2 hectars; in Underhill et al 2008: 13-15). High site numbers return during the Western Zhou period were hundreds of small sites dot the landscape, and while Liangchengzhen and Yaowangcheng sites are still regional centers, they are smaller and they present less centripetal force over their hinterlands. Additionally, a preference for settlements near diverse environmental zones of variable resources is evident as well, as is a preference to settle in areas that could be more easily defended indicative, perhaps, of the more turbulent sociopolitical situation of the Western Zhou period (Underhill et al 2008: 18).

As the Rizhao area is somewhat naturally secluded by the mountain ranges to its north and west, this region is not seen to have experienced the same level of contact other parts of Shandong did, possibly even as late as the Eastern Zhou when the Qi state wall left much of this area outside its borders (Fang et al. 2015: 9227-9228). In fact Feinman et al. (2010: 4853-4855) note that only with the Qin conquest was this region finally transformed and eventually incorporated into the greater Huaxia sphere. That being said, contact did exist in the form of traded goods, notably bronze ritual vessels, leading Underhill (2002) to suggest that bronzes found in tombs in this region may represent a strategy of gift giving by Zhou political powers to gain favor and support with local elites. Li (2006: 313-317) has noted that the omission of information on the Rizhao region in many of the bronze inscription might have been because this area was not firmly under the control of the Zhou court and as such did not want to commemorate them.

Cleary the Zhou expansion did not wipe out the local people who inhabited the Rizhao regions or any other parts of Shandong. The Dongyi and the many groups and polities that dotted the land after the fall of the Western Zhou court remained an undisputed reality engaged in warfare, marriage and trade with their Zhou neighbors well into the Eastern Zhou period (Hsu 1999: 548-550). Wu's (2013) work has put forward the argument that the Zhou expansion resulted in the formation of secondary states, both by the Zhou directly and in reaction to their influence, and in her work pays special attention to the development of these polities into the later Eastern Zhou periods. The Qi state is given as an example of a traditional state established by the Zhou central court under the Fengjian system, as evidenced by the Chenzhuang graves containing bronze vessels, though one where a Zhou culture was limited to upper echelons of society and would only take hold during the Eastern Zhou periods (Wu 2013: 95-106). The second state type are those formerly Shang states who sided with the Zhou and enjoyed their support. The provided case study is the Ji (first 紀 and then 己 or 曩) polity of northeastern Shandong identified at the site of Gucehng 古城 in Shouguang 寿光 (surprisingly not the Daqiangzhuang site). At its core, this case study is a discussion on the entomological origins of the Ji character and proceeding to find data in the oracle bones and bronze vessels inscription from the Shang and Zhou periods, as well as observing the locations where bronze artifacts with Ji embalms have been found. Through this approach an intricate history of the political relationship between the Zhou and the Ji lineage in Shandong is reproduced, following Ji history from its rise and decline (and see Wu 2013: 194-240).

The third type of state were those of Dongyi origin, in other words polities ruled by indigenous local elements that were formed in response to the expansions and maintained varying degrees of political interaction with the Zhou. The recently surveyed walled settlement of Guicheng 归城, believed to be the location of the state of Lai 莱, is the primary example for this state type. Dated to the Middle Western Zhou down to the later Springs and Autumns periods, Guicheng is seen as good evidence for the increased impact of the Zhou expansion (and by others e.g., Zhongmei 2011; Li et al. 2014). Bronze inscriptions present Lai as a military ally of the Zhou court and one whose power would grow further in the Early Eastern Zhou period. The Guicehng site elites adopted many of the Zhou mannerisms, such as graves with ritual bronzes. These practices included also non Zhou styles, mainly massive human sacrifices and even locally casting their own bronze ritual vessels (Wu 2013: 162-169).

Wu's work is a refreshing attempt at providing a more nuanced reconstruction of the Western Zhou expansion in Shandong, both regionally, as she observes the sub-regional developments of different areas of the peninsula, as well as temporally, providing long histories spanning the Shang through the Eastern Zhou periods. Yet this work is not without its problems. To begin with it assumes a strong centralized Zhou court orchestrating actions far off in the West and then having them faithfully carried out in the East (The title of her work actually defines the Zhou polity as an empire). This is in part due to the strong textual predisposition of her work and the bewildering historical connections Wu makes at times as she jumps from text to inscription and back to later historical text, in her attempts to provide these long historical reconstructions. This approach is not unique to Wu's work and is in part related to the notion of 'a cumulative Han culture' discussed in chapter 3 where scholars view the development of Chinese civilization as a continual uninterrupted process, and which in turn allows the almost uncritical consultation of later texts to reproduce the deeper prehistorical past. Yet to use this approach as both a starting point for the investigation of the Western Zhou i.e. that it was an empire – an important and powerful political entity – and with it to also find that the Western Zhou were in fact a powerful political entity is problematic, to say the least.

Secondly, the archaeological evidence Wu employs is confined to artifacts used by the upper classes. Consequently this study has far less to say in regard to its effects on the vast majority of lower classes, especially problematic when we remember that the level of acculturation of these polities and the people comprising them is the aim of Wu's work. That being said, Wu's (2013: 173-174) observation, that while the ceramic assemblages found at the Guicheng survey yielded well known Zhou style ceramics, the marked low numbers of *li* vessels – found in great numbers at other Zhou sites – can be seen as selective incorporation of this material and a local-specific integration of foreign materials. Unfortunately, this is not followed up elsewhere or discussed in relationship to the people using them, themselves assumed to be non-Zhou through the application of data from later textual analysis. Indeed, even this observation remains in the realm of pots=people argumentation, an important component of her study. This is to say that for Wu, Zhou style ceramics, bronzes and mortuary practices are all taken as directly reflective of Zhou ethnic people and their influence, even when they are found among larger assemblages and higher quantities of non-Zhou artifacts.

As was mentioned above, this approach is one that is quite widespread in Chinese historically related archaeology and one which has been the subject of out discussion in Chapter 3. Indeed Li Feng (2006: 308-311) takes the findings of bronze vessels and inscription in the Eastern parts of Shandong as good evidence for the penetration of Zhou influence, though he views ceramics and the existence of two stylistic traditions, Zhou and Zhenzhumen, as evidence for the existence and persistence of local groups (Li 2006: 312-314). Feng Hui (2013: 487-489) too relies heavily on later historical texts and material finds of Western Zhou style in his reconstruction of the Western Zhou influence and power in Shandong. Moreover, scholars are more than willing to clump together the Erligang and Yinxu ceramic material cultures when discussing political motivation and desires, as they are both collectively considered to reflect the Shang dynasty and polity, even while these polities operated in very different ways (Bagley 1999; Campbell 2009, 2014; Thorp 2006).

The aforementioned discussion on the problems with ascribing ethnicity on the basis of material culture groupings need not be reiterated here, yet it is important to note that Falkeahsuen's (2006: 188-199) argument that archaeologists should not take waist pits, dog burials, ceramic styles, bronzes or other elements as directly and confidently reflecting ethnic ascription, was conducted in part on the Qufu burial assemblages. Additionally, more than anywhere else in China, the ceramic sequences and taxonomies of Shandong for these periods are still not agreed upon, resulting in a scenario where scholars identify an ever-growing number of new cultures as well as local variations of Zhou and non-Zhou assemblages (and see overview in Shandong 2004). At Beishanma 北沈马 in Linzi, for example, the remains of Yueshi, Shang Yinxu and Early Western Zhou period remains were found. The site yielded a large number of waste pits, kilns and house structures alongside three graves with Western Zhou materials. The ceramic vessels of the Late Yinxu period and Early Western Zhou stratums were so similar that they could only be separated on the basis of relatively dating the strums they came from (Ren et al 2006: 109-110). Indeed as Fang (2013: 485) notes the state of present data does not allow for a reconstruction of the nature of Shang expansions to this region, which goes beyond an assertion that the material found is Shang in style (ceramic, bronzes and burial types), and certainly not one where the ethnicity or the nature of interactions between local groups and the Shang center in Yinxu can be confidently described[81].

Alas, following this discussion we have to gain much insight into the actual acculturation process the Shandong region saw i.e. how the inhabitants were incorporated into Zhou society. How they become Zhou or rejected part, all or only some of its materials and practices. The existence of clear markers of Zhou or Shang materials are problematic and indeed if anything the Shandong case, as a whole, shows a mix of styles which should be taken as reflecting the fluidity of these markers in the eyes of

[81] Why this type of argument is not extended by Fang to the Western Zhou period is not clear to me; though I suspect that for him, as it is for so many others, the Zhou hold a special place in the historical development of Chinese society and as such their dominance in not something that needs to be found, but is instead assumed until proven otherwise.

the locals and even the Shang and Zhou new arrivals. Li Min (2008) has argued that the Shang themselves at Daxingzhuang were not merely replicating the Shang centers to the East, but instead merged with local populations and allowed them to manipulate their practices including ritual divination as well as the place of cows and pigs in mortuary and consumption patterns. Li's work reminds us that not only was there no one way in which the Shang were received, they was also more than one way of being Shang as well.

Similar work has yet to be done with Zhou materials in Shandong and will be the focus of the next chapter. What will be conducted is a study of usewear of ceramic vessels in Shandong over the Shang Yinxu to Early and Middle Western Zhou periods, to understand the impact of their expansions. Rather than take these artifacts as reflective of one ethnic group or the other, this study views them as chronological markers first and ones that need to be investigated to reveal the manner in which they were used and thus, in turn, how they shaped and reshaped local communities of practices.

Chapter 11 - Shandong Ceramic Analysis

The four sites in this analysis are: Fanjia 范家 and Boxing 博兴 (aka Dongguan), both Shang period sites and Chenjiahe 陈家河 and Chenzhuang 陈庄 dated to the Western Zhou, the first the Early Western Zhou and the latter to the early period of the Middle Western Zhou (Figure 11-1).

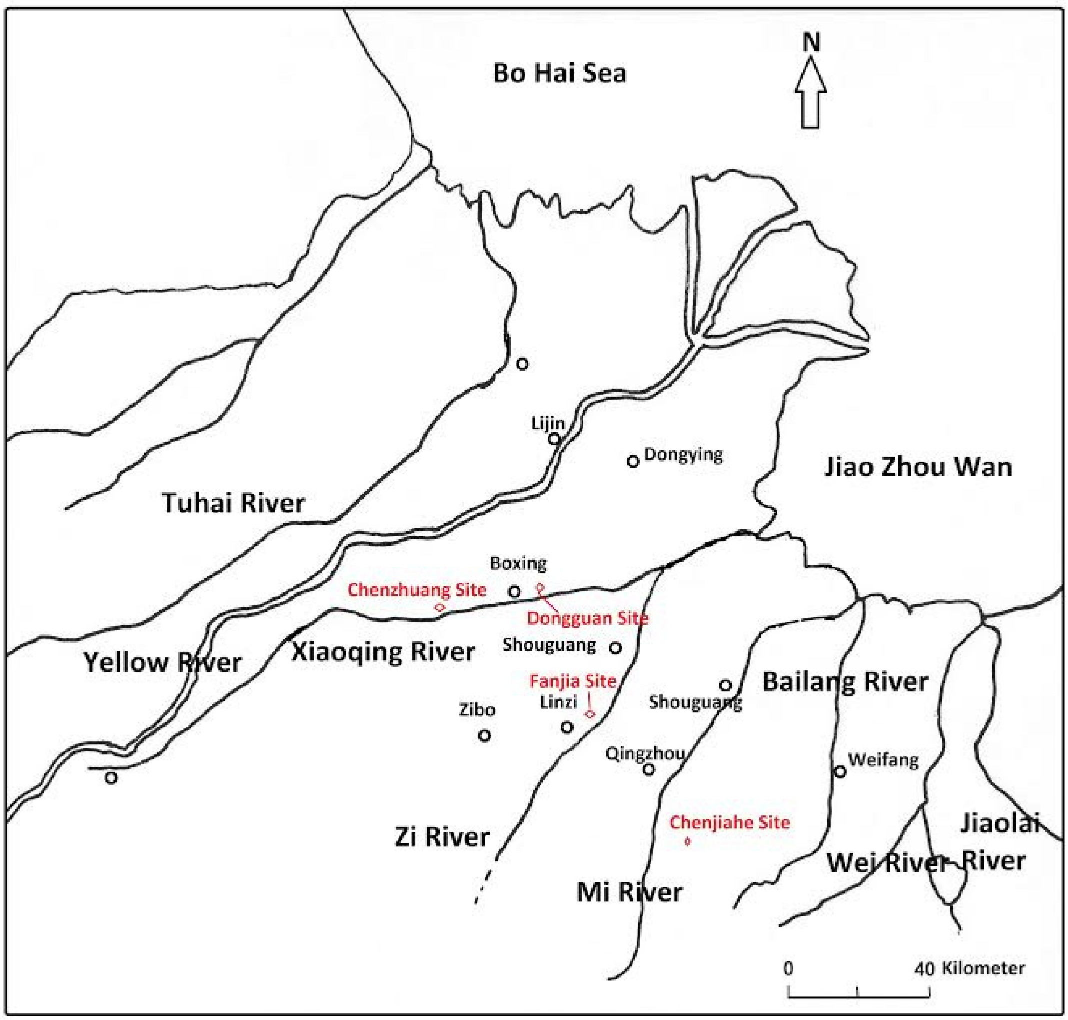


Figure 11-1 - Map of four Shandong sites analyzed in this study

The site of Fanjia 范家 is located, northeast of Linzi 临淄 city and was first discovered in 2013. Surveys at the site revealed an area of roughly 25,000 m² and excavations have focused on the southeast part of site, were the remains of a rammed wall and trench were found. Based on coring work in this area, it was established that this was also where the most promising residential remains were to be found and thus the focus of initial excavations. Three houses and 26 waste pits have been unearthed and their contents analyzed, dating the remains to the Late Shang period (Yinxu III). The excavated remains comprise roughly 10% of this large site. Subsequent excavation are planned to commence in the upcoming years and preliminary site report is being prepared. Further away from the rammed earth wall, the excavation area also revealed a part of cemetery including 18 burials, dated from the Early Western Zhou to Han Dynasty.

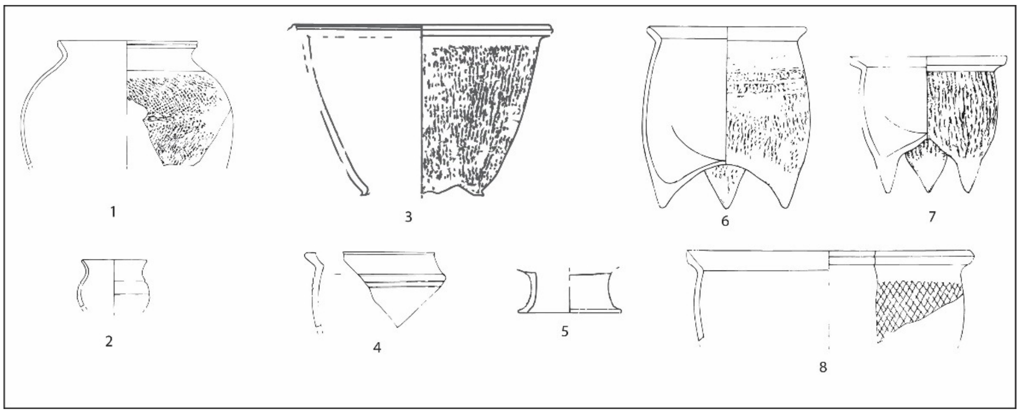


Figure 11-2 - Fanjia main ceramic vessel types: 1&2)guan 3)yan 4)gui 5)dou 6&7) li 8)pen (reproduced with permission of the Shandong cultural relics bureau)

The site of Boxing 博兴, also known as Dongguan 东关 is situated to the east of the county capital along the banks of the Xiaoqing 小清 River. It was first discovered in 2009 when a survey at the site revealed an area of roughly 10000 m². Excavations during the 2009 seasons completely excavated the site in almost its entirety and found six house and 70 waste pits. The remains were analyzed and contents dated to Yinxu IV. At the nearby site of Zhaibian 寨卞 Early excavations in 1992 focused on unearthing the large remains of a rammed earth wall and establishing its chronology for the late Yinxu period (Wei et al 2013).[82]

The site of Chenjiahe 陈家河 is located to the southeast of the modern day city of Weifang 潍坊 in Linqu 临朐 county and 4km to the east of the Mi 弥 river. It was first discovered in 2009 when surveys

[82] Unfortunately at the time this was written I was unable to obtain drawings for the Boxing site.

at the site revealed an area of roughly 15,000 m². Excavations during the same year were able to unearth and completely excavate the site in its entirety and found one house and 90 waste pits as well as a relatively complete kiln. The remains were analyzed and dated to the Early Western Zhou period, as well as a small portion, about five waste pits, to the early Middle Western Zhou period (Wei et al Forthcoming). As the assemblage contains a number of Zhunzhimen ceramics, which have been associated with the Dongyi people (discussed in chapter 10). Chenjiahe is seen by some as reflecting a continuation of local tradition among Western Zhou inhabitants or as local groups accepting Zhou style ceramics (Shandong Manuscript in preparation)

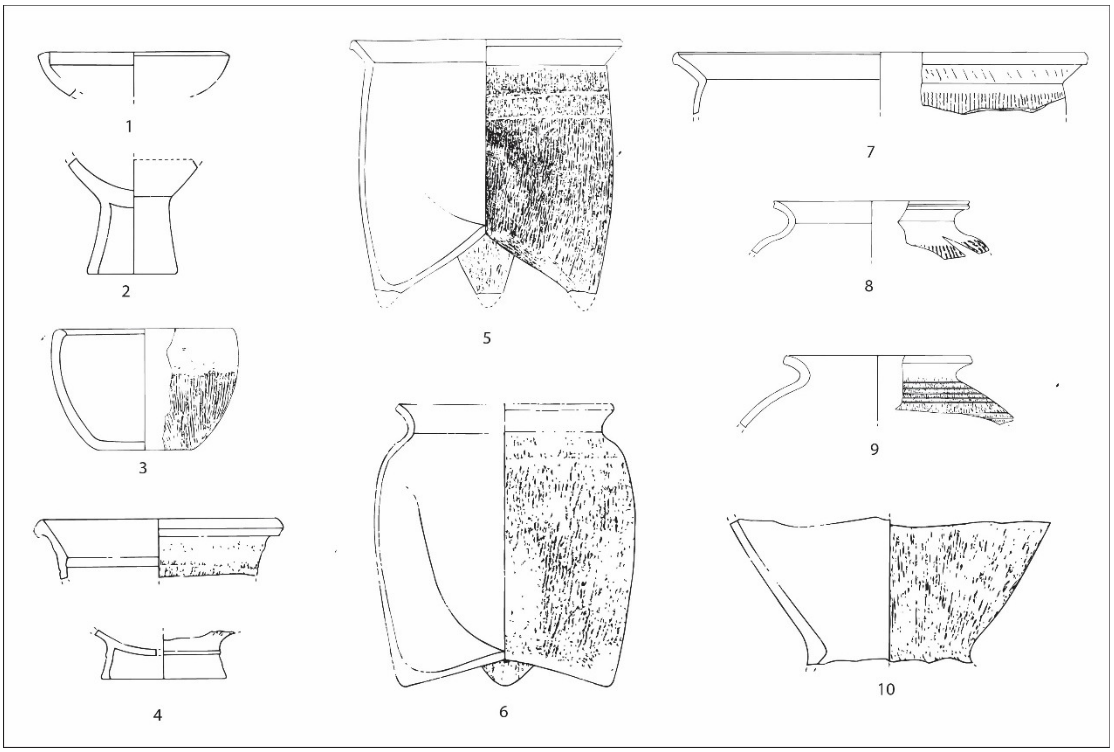


Figure 11-3 - Chenjiahe main ceramic vessel types: 1&2) dou 3) bo 4) gui 5)&6) li 7) pen 8&9)guan 10)yan (reproduced with permission of the Shandong cultural relics bureau)

Chenzhuang 陈庄 is the best studied and published of the four sites in this analysis. The site is located to the Southwest of Gaoqing 高青 county. It was first identified in 2003 as part of survey efforts in the region and excavated intermittently in 2008 (Shandong 2010b). Surveys at the site reviled a large rammed wall enclosure of over 30,000 m² with some walls as wide as 10 meters (Shandong 2011: 122).

Excavations at the site have revealed seven houses, and several hundred waste pits as well, in an area comprising roughly 30% of the entire residential site. In addition a cemetery with horse and chariot pits and large graves, several of them acompnied by ramps, with rich bronze ritual vessel remains have been unearthed. As discussed in the previous section the later has been focus of much of the work done at the site and its connection the establishment of the Qi state (Li et al 2011; Wei 2010). Stylistic and inscriptional evidence of bronze ritual vessels found at the graveyard display a mix of Early and Middle western Zhou dates while the ceramic evidence from the residential site comprises ceramics, the vast majority of which, are dated to the Middle Western Zhou period and a small number to the late Early Western Zhou period (Shandong 2010b: 34).

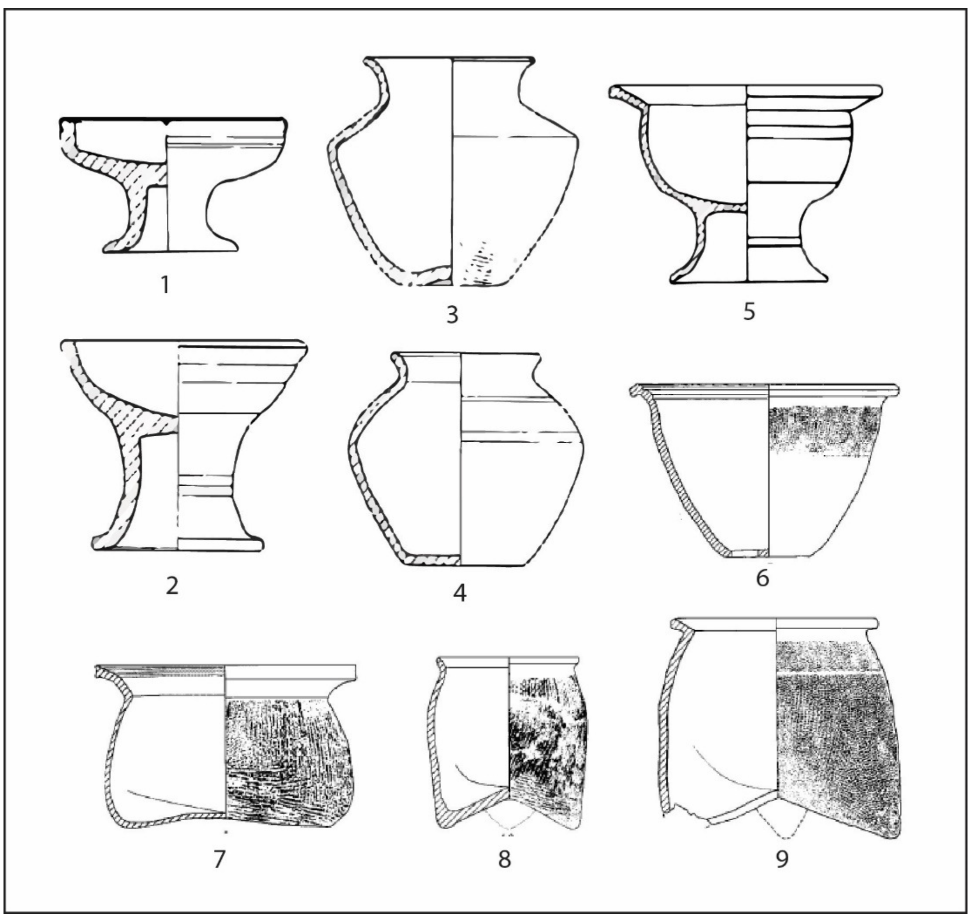


Figure 11-4 - Chenzhuang main ceramic vessel types: 1&2) dou 3&4) guan 5)gui 6)zeng 7-9)li (redrawn from Shandong 2011: 109-11)

Basic Statistical Analysis

The study was conducted on all available ceramics from residential contexts of the four Shandong sites: All ceramic remains were excavated from trash pits *huikeng* 灰坑 and represent residue from discarding activity of the residential areas from the respective sites. I have done my very best to include all excavated material for each of these sites and was in fact the case for all sites apart from Chenjiahe, where two waste pits recorded by the excavators could not be found. As with TMQC, I begin with a presentation of some basic statistics of each one of the sites and then move to intra site comparison from the earliest to the latest period (Boxing, Fanjia, Chenjiahe and Chenzhuang).

Boxing 博兴 (YinxuIII)

Vessel	N	**Grey (n and %)**	**Black (n and %)**	**Red (n and %)**	**Inner rim diameter (Mean/ median)**	**Inner rim diameter (SD/SE)**	**Outer rim diameter (Mean/ median)**	**Outer rim diameter (SD/SE)**
鬲 *li*	120	34(28%)	33(28%)	53(44%)	13.87(14)	1.7(0.18)	18.35(18)	2(2.04)
盆 *pen*	12	2(17%)	1(8%)	9(75%)	24.83(25)	2.56(1.04)	30.66(31.5)	1.96(0.8)
罐 *guan*	41	3(7.5%)	3(7.5%)	34 (85%)	17.46(17)	4.68(0.82)	20.27(20)	4.97(0.86)
簋 *gui*	6	0	0	6(100%)	26(26)	1.4(1)	28.3(31)	4.6(2.66)
甗 *yan*	6	1(17%)	2(33%)	3(50%)	25.8(26)	4.6(2.05)	30.4(32)	4.39(1.96)
豆 *dou*	4	0	1(25%)	3(75%)	12.5(12.5)	0.75(0.5)	14(14)	0
盔	7	0	3	4	13.71(14)	1.88(0.71)	16.28(16)	2.36(0.89)
All	**196**	**40(21%)**	**39(22%)**	**109(57%)**	\	\	\	\

Vessel	N	**Cord marks *Shengwen* (Mean/median)**	**Cord marks *Shengwen* (SD/SE)**	**Cord marks *Shengwen* CV/%**	**Cooking - usewear N and (%)**	**Wall thickness (Mean/median**	**Wall thickness (SD/SE)**
鬲 *li*	120	0.28(0.3)	0.09(0.009)	33% (83%)	96(80%)	0.87(0.84)	0.13(0.01
盆 *pen*	12	0.2(0.2)	0.04(0.01)	20% (92%)	7(58%)	1.16(1.03)	0.29(0.08
罐 *guan*	41	0.21(0.22)	0.06(0.01)	32%(85%)	5(12%)	0.94(0.95)	0.21(0.03)
簋 *gui*	6	0.15(0.15)	0.02(0.02)	19%/(33%)	0	0.96(0.96)	0.17(0.07)
甗 *yan*	6	0.2 (0.19)	0.02(0.01)	16%(66%)	6(100%)	0.94(0.91)	0.14(0.06)
豆 *dou*	4	\	\	\	0	0.86(0.85)	0.06(0.03)
盔 *KXQ*	7	0.23(0.22	0.04(0.01)	\	1(14%)	1.06(1.04)	0.15(0.05)
All	**196**	**0.26(0.25)**	**0.08(0.007)**	34% (78%)	**114(58%)**	**0.92(0.9)**	**0.18(001)**

Table 11-1 - Boxing discriptive statistics

The rudimentary statistics in Table 11-1 present some immediate information: the vast majority of vessels are *li (62%)* and *guan* (20%) comprising more than 82% of total shreds analyzed. The small amount of serving dishes (*dou* and *gui*) might reflect a situation where meals were cooked and served in individual *li* vessels or that relatively small family groups ate together a small number of dishes. Unsurprisingly *guan* and *pen* have the highest SD for rim opening circumference measurements as they represent a large number of different vessels that fall under these categories (as discussed in chapter 9). However while *guan* (12%), *dou* (0%), and *gui* (0%) types had relatively low or no amounts of usewear (including burning, smudging and internal carbonization marks), to be expected for serving dishes or vessels used for storage, the *pen* (58%) type vessels had a non-negligible amount of sherds that displayed cooking related usewear remains. This indicates, perhaps, that these vessels were used for cooking. The *li* (80%) and *yan* (100%) types had much higher amounts of cooking usewear remains we would expect for cooking.

Statistically, the median shows that the mean is a good representative of the overall variation in all the categories. The overall mean of categories for the site and all vessels are the same as well (less than one standard deviation). Also note that since legs and bases were incorporated here, the actual number of vessels that have *shengwen* corrugation marks might be much higher as *shengwen* did not always preserve on this part of the vessel nor did it extend down to the legs from the upper part of the body. The *kuixingqi* 盔形器 vessels, related to salt production activates, are interesting, but were only found at this site in small numbers and are not discussed further here. A simler overview is provided below for the three other sites in this analysis.

Fanjia 范家 (Yinxu IV)

Vessel	N	Grey (n and %)	Black (n and %)	Red (n and %)	Inner rim diameter (Mean/ median)	Inner rim diameter (SD/SE)	Outer rim diameter (Mean/ median)	Outer rim diameter (SD/SE)
鬲 *li*	148	50(33%)	47(32%)	51(35%)	14.22(14)	3.6(0.41)	19.34(19)	4.2(0.49)
盆 *pen*	17	1(4%)	6(34%)	10(62%)	27.13(27)	4.67(1.18)	32.27(32)	5.03(1.26)
罐 *guan*	58	7(13%)	24(42)	25(45%)	17.02(17)	4.58(0.71)	19.97(20)	4.79(0.73)
簋 *gui*	15	1(7%)	3(20%)	11(73%)	28.5(29)	3.2(1.21	33.57(35)	2.43(0.92
甗 *yan*	22	7(31%)	9 (40%)	6(27%)	32.4(33)	3.65(1.15)	39(39)	3.88(1.22)
豆 *dou*	5	0	0	5(100%)	14.75(15)	2.27(1.1)	16(16)	2(1.15)
All	**265**	**66(25%)**	**89(34%)**	**107(41%)**	\	\	\	\

Vessel	N	Cord marks *Shengwen* (Mean/median)	Cord marks *Shengwen* (SD/SE)	Cord marks *Shengwen* CV/%	Cooking - usewear N and (%)	Wall thickness (Mean/median)	Wall thickness (SD/SE)
鬲 *li*	148	0.34(0.34)	0.08(0.007)	33% (78%)	137(92%)	0.89(0.91)	0.16(0.01)
盆 *pen*	17	0.32(0.27)	0.11(0.02)	35% (100%)	8 (47%)	0.9(0.87)	0.11(0.03)
罐 *guan*	58	0.31(0.31)	0.06(0.009)	84%(85%)	16(26%)	1.01(0.98)	0.26(0.03
簋 *gui*	15	0.28(0.26)	0.06(0.03)	27%/(45%)	1(9%)	0.95(0.96)	0.13(0.04)
甗 *yan*	22	0.30(0.3)	0.06(0.01)	22%(80%)	22(100%)	1.14(1.18)	0.18(0.05)
豆 *dou*	5	\	\	\	0	1.11(1.03)	0.25(0.12)
All	**265**	**0.32(0.32)**	**0.08(78%)**	**25% (78%)**	**177(66%)**	**0.95(0.93)**	**0.21**

Table 11-2 - Fanjia discriptive statistics

As at Boxing, the vast majority of vessel types at Fanjia were *li* (56%) and *guan* (22%) comprising together over 78% of the total sherds analyzed. Again the small amount of serving dishes (*dou* and *gui*) might reflect a similar cooking and eating preferences observed for Boxing (i.e. small eating parties consuming perhaps several tpyes of dishes) though it is also possible that serving dishes of perishable materials did not preserve in the archaeological record. Note again that the *guan* and *pen* vessel types have the highest SD for vessel opening circumference, representing large variation of vessel sizes among this group. Usewear analysis revealed that for *guan (*16%), *dou* (0%) and *gui* (7%) relatively low amounts of cooking related usewear were found, to be expected for serving dishes and containers used for storing grains and liquids, while *li* (92%) and *yan* (100%) types had much higher amounts, as is expected for cooking vessels. The *pen* (47%) type vessels had a non-negligible amount of sherds that might indicate they were used for cooking as well. More than any of the four Shandong sites Fanjia had a relatively large amount of *yan* steamers. Where other sites had smaller single digit numbers of steamers, at Fanjia they comprise almost 10% of the ceramic assemblage.

Chenjiahe 陈家河 (Early Western Zhou)

Vessel	N	Grey (n and %)	Black (n and %)	Red (n and %)	Inner rim diameter (Mean/ median)	Inner rim diameter (SD/SE)	Outer rim diameter (Mean/ median)	Outer rim diameter (SD/SE)
鬲 *li*	53	10(18%)	6(11%)	37(69%)	22.08 (20)	4.71(0.94)	26.6(25)	5.49(1.09)
盆 *pen*	28	4(14%)	4(14%)	20(72%)	36.46(36)	5.99(1.45)	38.39(41)	11.72 (2.55)
罐 *guan*	61	24(38%)	4(4%)	33(54%)	16 (14.5)	5.2(0.84)	18.53(18)	5.58(0.05)
簋 *gui*	25	14(56%)	6(24%)	5(20%)	24.81(24)	4.06(1.22)	29.6(26.5)	4.5(1.3
甗 *yan*	15	6(40%)	1(6%)	8(53%)	37.5 (38)	3.08(1.25)	42.16(42)	3.65(1.49)
豆 *dou*	9	5(55%)	1(12%)	3(33%)	15(15.5)	2.75(1.12)	16.83(17)	3.06(1.24)
All	**189**	**60(31%)**	**18(23%)**	**83(43%)**	\	\	\	\
Vessel	N	**Cord marks *Shengwen* (Mean/median)**	**Cord marks *Shengwen* (SD/SE)**	**Cord marks *Shengwen* CV/%**	**Cooking - usewear N and (%)**	**Wall thickness (Mean/median**	**Wall thickness (SD/SE)**	
鬲 *li*	53	0.17(0.16)	0.05(0.007)	30% (84%)	50(94%)	0.87(0.91)	0.2(0.04)	
盆 *pen*	28	0.18(0.19)	0.05(0.01)	35% (100%)	29(46%)	1.106(1.08)	0.27(0.05)	
罐 *guan*	61	0.16 (0.16)	0.05(0.07)	35% (83%)	15(24%)	0.89(0.88)	0.20(0.02)	
簋 *gui*	25	0.16(0.16)	0.05(0.05)	44%/(40%)	2(8%)	0.89(0.9)	0.19(0.04)	
甗 *yan*	15	0.16(0.16)	0.03(0.009)	20% (100%)	11 (73%)	1.16(1.05)	0.25(0.07)	
豆 *dou*	9	\	\	13% (25%)	1(11%)	0.85(0.85)	0.15(0.04)	
All	**189**	**0.16(0.16)**	0.05**(0.004)**	**34% (72%)**	**106(56%)**	**0.93(0.91)**	**0.21(0.01)**	

Table 11-3 - Chenjiahe discriptive statistics

In contrast to the earlier Shang period sites, at Chenjihe *li* and *guan*, while still the two largest vessel type groups, drop in their amounts and are only each 29% (*li)* and 35% (*gaun*) of the assemblage, respectively, accounting for around 66% of all unearthed sherds. The *pen* rim vessel opening circumference is quite large in respect to the earlier periods, indicating larger volumes as well. Distribution is quite dispersed and the outliers in this sample are quite extensive. Nonetheless the trimmed mean (95%) calculated for external rim vessel opening circumference is even larger at 40.5cm. The difference between median and mean sizes of rim vessel opening circumference for *yen* vessels is almost one whole standard deviations and thus should not be taken to faithfully represent the spread of this vessel type. Usewear remains related to cooking are as expected with overwhelmingly large numbers of *yan* (73%) and *li* (94%) vessels displaying soot or internal carbonization. Other categories are quite low with *dou* (11%) *guan* (24%) and *gui* (8%) vessels providing very little marks even when identified. At Chenjiahe, as at Fanjia, *pen* vessels displayed cooking usewear marks (44%) reflecting, perhaps, again the possible use of these vessels in cooking functions. The *shengwen* corrugation width mean size is relatively small (indicating a more narrow cord) in comparison to earlier periods, with a site average of 0.16cm minted among all of the vessel categories (both standard deviations and standard error ranges are fairly low as well).

Chenzhuang 陈庄 (Early Middle Western Zhou)

Vessel	N	**Grey (n and %)**	**Black (n and %)**	**Red (n and %)**	**Inner rim diameter (Mean/ median)**	**Inner rim diameter (SD/SE)**	**Outer rim diameter (Mean/ median)**	**Outer rim diameter (SD/SE)**
鬲 *li*	64	19(30%)	22(34%)	23(36%)	19.29(18)	4.25(0.57)	24.8(24)	5.04(0.68)
盆 *pen*	22	17(80%)	5(20%)	0	33.21(32)	5.61(1.28)	39.9(38)	6.31(1.44)
罐 *guan*	34	12(35%)	13(38%)	8(28%)	16.3(15)	5.31(0.9)	19.87(19)	5.8(0.98)
簋 *gui*	8	8(100%)	0	0	20.2(21)	3.34(1.46)	27.6(27)	2.3(1.02)
甗 *yan*	4	1(25%)	2(50%)	1(25%)	32.5(31.5)	2.38(1.19	39.66(39.5)	2.44(1.04)
豆 *dou*	31	24(80%)	6(16%)	1(4%)	15.11(15)	3.15(0.76)	17.52(17)	3.5(0.8)
All	**160**	**82(52%)**	**44(27%)**	23(36%)	\	\	\	\

Vessel	N	**Cord marks *Shengwen* (Mean/median)**	**Cord marks *Shengwen* (SD/SE)**	**Cord marks *Shengwen* CV/%**	**Cooking - usewear N and (%)**	**Wall thickness (Mean/median**	**Wall thickness (SD/SE)**
鬲 *li*	64	0.27(0.27)	0.06(0.008)	23% (80%)	56(87%)	0.73(0.73)	0.16(0.02)
盆 *pen*	22	0.24(0.24)	0.07(0.01)	30% (61%)	5(22%)	1.11(1.06)	0.31(0.06)
罐 *guan*	34	0.23(0.23)	0.05(0.01)	25% (63%)	4(12%)	0.9(0.85)	0.24(0.04)
簋 *gui*	8	\	\	44% (40%)	1(12.5%)	0.81(0.80)	0.13(0.04)
甗 *yan*	4	0.27(0.25)	0.05(0.02)	22% (100%)	3(75%)	1.04(1.01)	0.27(0.13)
豆 *dou*	31	\	\	\	2(6%)	0.83(0.82)	0.29(0.05)
All	**160**	**0.26(0.26)**	**0.06(0.005)**	**25% (55 %)**	**49(39%)**	**0.87 (0.825)**	**0.26**

Table 11-4 - Chenzhuang discriptive statistics

As was observed at Chenjiahe, at Chenzhuang *li* and *guan*, while still the two largest vessel type categories (with 40% and 21% of the assemblage totaling at 61%), are less frequent than at the earlier Shang period sites. This might be due to differing communal practices of eating where the large amount of *dou* 18% and the larger size of the *li* cooking vessels over all might represent a large meal being cooked and then distributed in individual serving vessels (and see more below in the *li* analysis section). Unlike at Chenjiahe and the two earlier Shang period sites, *pen* vessels at Chenzhuang, representing 14% of the assemblage (and still large in comparison with the other sites) had a very small amount of use wear remains (22%). They are similar in in this respect to other non-cooking vessels and might represent and different use (such as a communal eating bowl). This might be seen as a break from earlier periods where *pen* was extensively used for cooking purposes and closer to what was observed at TMQC, where it was not. The *li* (87%) and *yan* (75%) cooking vessels continue to show high quantities of usewear remains and serving vessels, as expected, do not. The *shengwen* corrugation width mean is wider in comparison to that seen at Chenjihe with a site average of 0.26cm (standard deviation and standard error range are fairly low as well).

Shandong Discriptive Statistics Disscsuion

This brief overview highlights some of the differences between the four sites. Looking at other variables such as differences in terms of rim orifice opening size and plotting them in a comparative graph further help to reveal these discrepancies (Figure 11-5). This image presents the mean rim sizes as well as the variation between sites for each vessel type. The bars represent counts of orifice opening size displayed along the y axis. The black points represent the mean value for each vessel category at each of the 4 sites connected by the green line for ease of view. This allows to view not only the differences between the sites, highlighting significant differences such as *li* and *pen* size, but also the spread and range of the samples comprising each site.

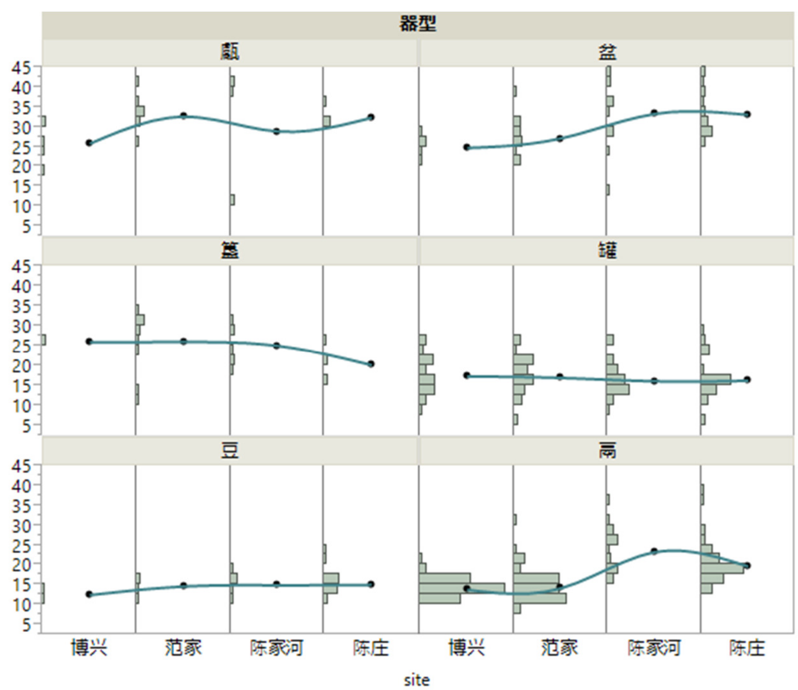


Figure 11-5 - Vessel Rim diameter size between sites and vessel types in four Shandong sites (left to right Bxing, Fanjia, Cehnjiahe and Chenzhuang)

The relationship between rim diameter size vessel volume and function has been discussed in chapter 9 and will be further addressed below. It is clear that both *li* and *pen* vessels become larger during the Western Zhou period while *guan,* remains relatively the same. Other categories can be compared to reveal visual patterns between sites. Comparing *shengwen* corrugation width, for example, between sites, reveals interesting patterns as well (Figure 11-6): even while different means, and certainly variation of samples, existed between each category of vessel type, the overall averages (highlighted by the green line) for each vessel type shows an almost exact pattern where all vessels reflect a site specific standardization of *shengwen* corrugation width.

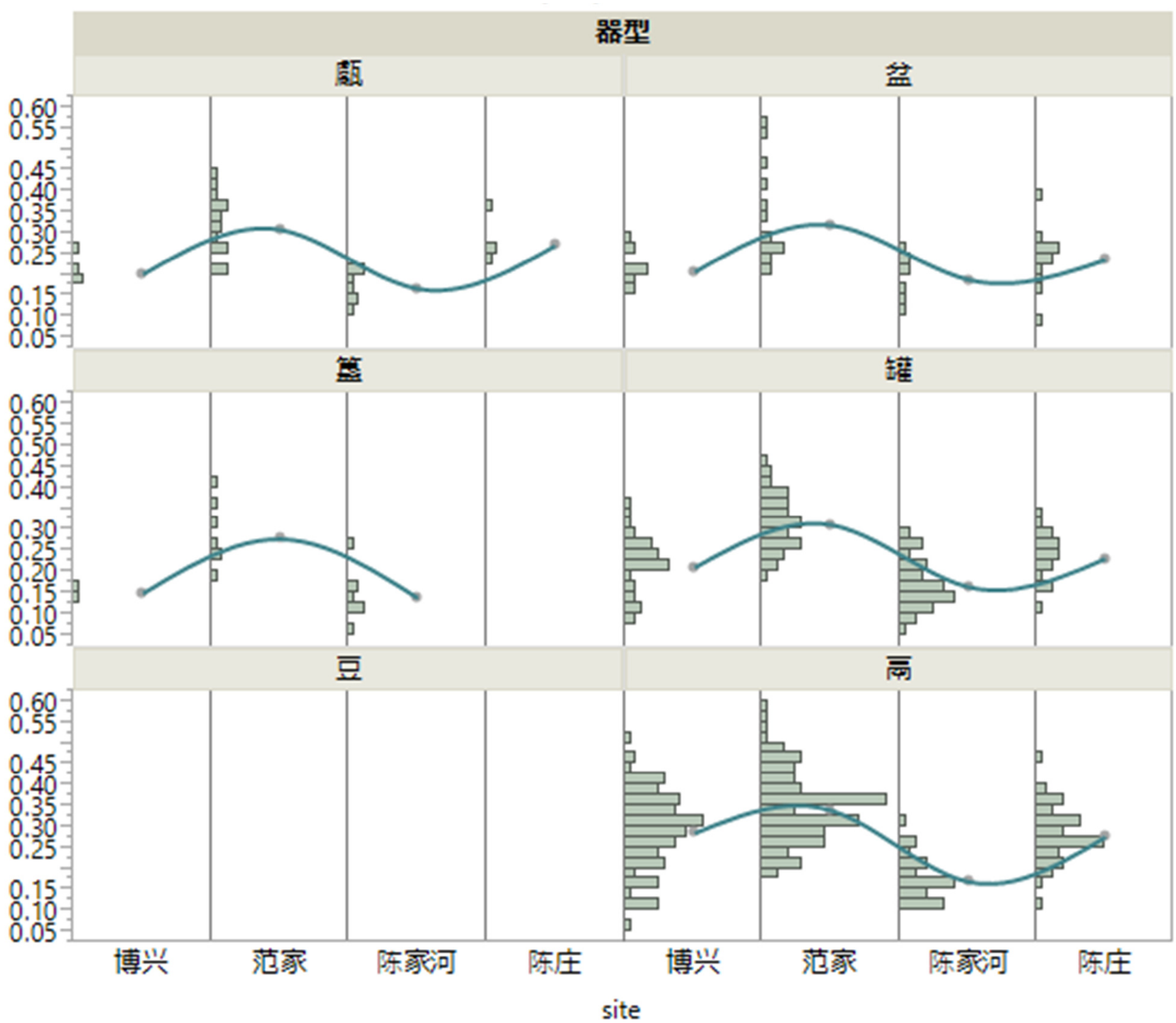


Figure 11-6 - Shangwen corrugation width between sites and vessel types in four Shandong sites (left to right Boxing, Fanjia, Chenjiahe and Chenzhuang)

In order to test these patterns for statistical significance these results were submitted to more robust tests that check whether or these patterns are the cause of simple sampling error. In other words we ask: "are the differences we observe between these two batches "real" or are they just the result of the simple fact that samples do not always very accurately represent the population from which they were selected (Drennan 2009: 148). Comparing the variation and means between the sites was conducted through ANOVA, which, much like other known statistical tools, pools the information from all samples to find the probability that the samples were selected from different populations with the same mean (Dreanan 2008: 153)[83].

Level	**groups**			**Mean**
Fanjia	A			0.32510000
Chenzhuang		B		0.26440476
Boxing		B		0.26020000
Chenjiahe			C	0.16628571

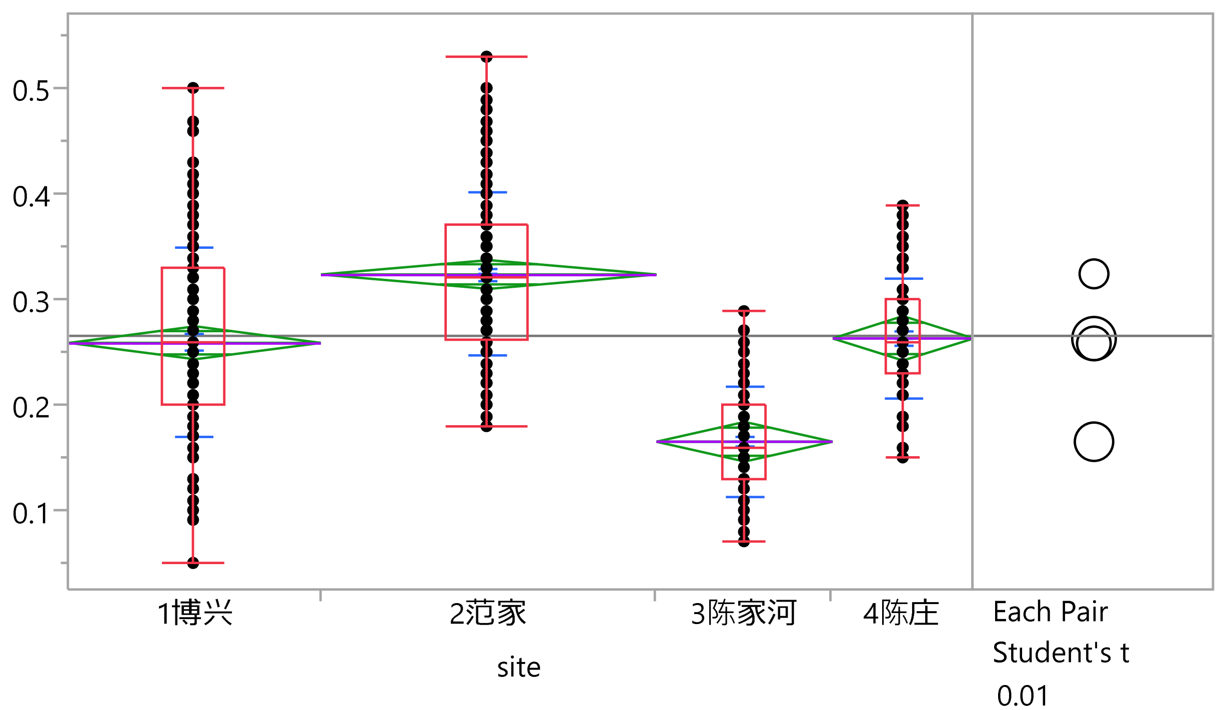


Figure 11-7 - ANOVA results for shengwen corrugation marks of four Shandong sites (left to right Boxing, Fanjia, Chenjiahe and Chenzhuang)

[83] Here it is important to make sure that no single site's variance is 3 times that of another and that they are distributed normally.

The difference observed in mean *Shengwen* corrugation width size of the 4 Shandong sites has extremely high significance (F=104.892, p=0.0001). Following this result it is possible to suggest that each one of the sites maintained a standardized *shengwen* corrugation width size where either almost all vessels (save for perhaps extreme outliers i.e. much wider or thinner than the mean cord width) were made in a single production facility or that a localized tradition governed the production of all vessel in each site. That said, even though Chenzhuang and Boxing displayed remarkable similar *shengwen* corrugation width size means and spread, this does not necessarily imply the the vessels were made in the same place, but that a similar cord width norm was used at both site; these sites are separated by over 200 years!

Another important difference that can be seen between the four sites was between *li* vessels in terms of booth inner and outer rim circumference. Below is a table displaying information on the rim sizes for each site to find the trimmed mean. The results are summarized in Table 11-5 below:

site	Mean	Trimmed mean	Lower C80%	Upper C80%	Lower C95%	Upper C95%	Lower C99%	Upper C99%
Boxing	13.87	13.8	13.57	14.02	13.45	14.14	13.33	14.26
Fanjia	14.22	13.94	13.49	14.38	13.25	14.62	13.03	14.85
Chenjiahe	23.45	23.25	21.61	24.88	20.66	25.83	19.72	26.77
Chenzhuang	19.71	18.4	17.83	18.97	17.51	19.28	17.22	19.58

Table 11-5 - li cookin vessel data for four Shandong sites

The trimmed mean (the mean without the outliers) is more or less the same in respect to the sample mean for all sites and brings the size of both Shang period sites, Fanjia and Boxing, even closer. The later Zhou aites maintain the large mean sizes in comparisons to the earlier Shang period sites but are by no means equal. In order to conduct an ANOVA analysis similar to the one performed on intra site *shengwen* corrugation width means, a normal distribution spread is required. This is tested below by simply observing the spread of each batch.

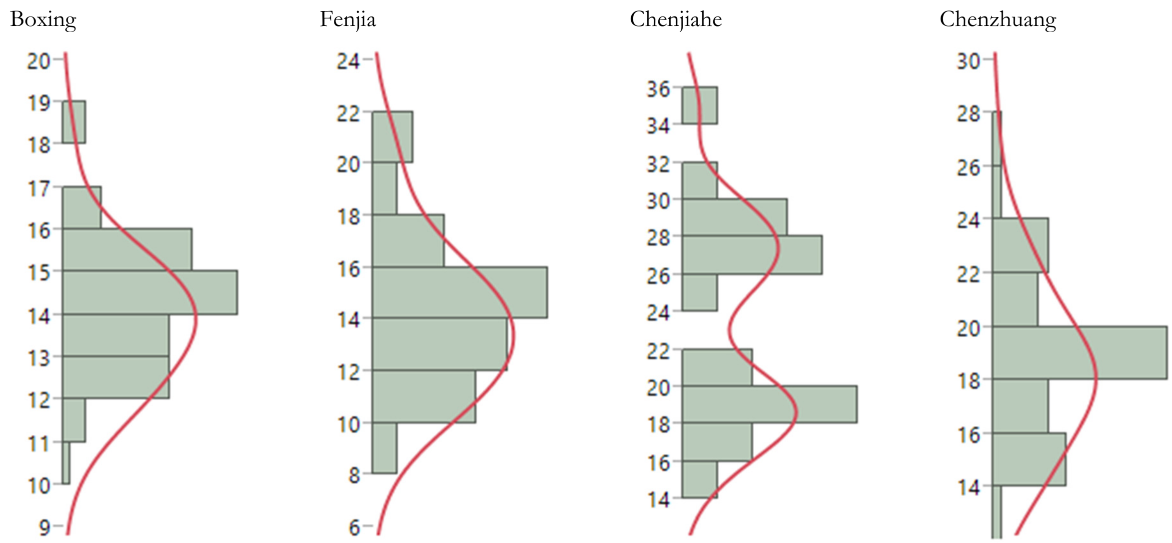


Figure 11-8 - Disstribution and counts of li vessel rim orifice opening size between four Shandong sites

The comparison in Figure 11-8 shows that while most sites maintained the normal distribution needed for the ANOVA tests (this could have been smoothed out if more outlayers would have been taken out) the Chenjiahe site showed a very pronounced double peaked curve. Instead, these samples were calculated to present their standard errors around the mean to produce a bullet graph. The bullet graph below (Figure 11-9) presents confidence intervals of the width mean for each of the four sites analyzed, for confidence level of 80, 90 and 95% respectively. Another ways to describe this is to say that *li* vessels rim mean can be said to differ in a 95% confidence level between all of the sites except between Boxing and Fanjia.

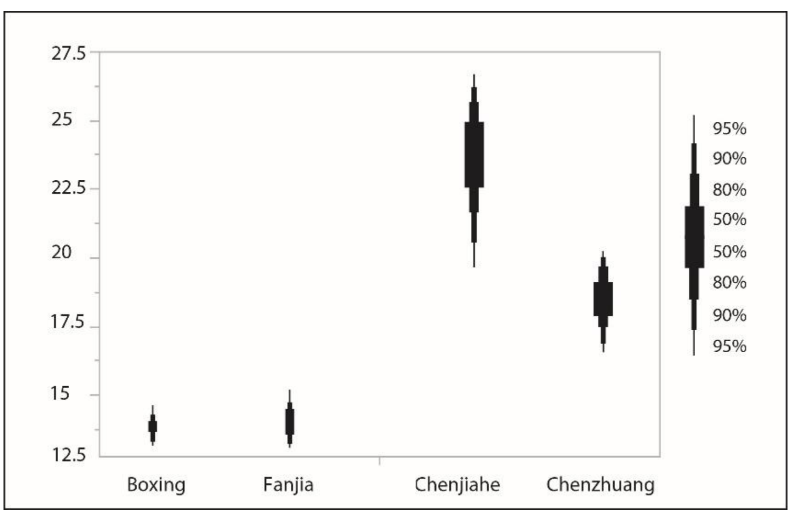


Figure 11-9 - Bullet graph comparing li vessel rim mean for four Sahndong sites

When the Chenjiahe *li* vessels were separated into new groups by internal rim diameter distribution observed above, between 24-36cm and 14-22cm (big and small), the samples were in fact normally distributed and thus amenable to ANOVA analysis (Figure 11-10).

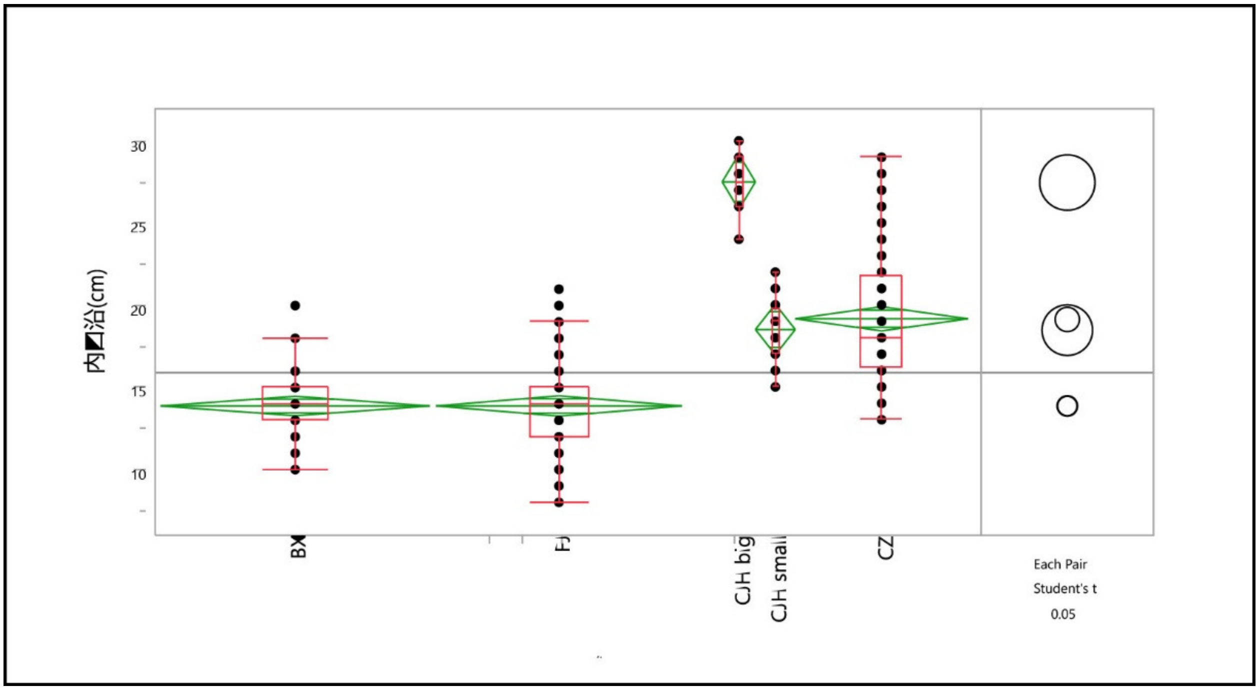


Figure 11-10 - ANOVA results on in mean inner rim size of li vessels for four Shandong sites

The difference observed in mean inner rim size of the li vessels for 4 Shandong sites has extremely high significance (F=124.776, p=0.0001). Both Boxing and Fanjia are still very similar in mean size though the spread of their observation is not the same. Chenjiahe small category vessels are actually very similar in mean to Chenzhuang *li* sizes, while the larger *li* vessel group are in fact considerably larger than the other site's *li*. This might indicate that unlike the two Shang sites and the other Zhou site where one *li* group sizes existed, at Chenjiahe two size groups were in use. Using the same calculation method to convert li rim diameter sizes to expected vessel volume a very similar pattern merges with following mean results.

Level	N	Mean cc	Std Dev	Std Err Mean	Lower 95%	Upper 95%	Total Cooked yield in L and PDV
Fanjia	67	**2468.2**	1323.16	161.65	2145	2791	*1.6-2.4L* **1.09-1.6PDV**
Boxing	80	**2572.2**	930.80	104.07	2365	2779	*1.7-2.5L* **1.1-1.7PDV**
CJH big	14	**1,6301.6**	2587.12	818.12	14451	18152	*7.7-11.6L* **5.2-7.7PDV**
CJH small	16	**6185.0**	1705.32	514.17	5039	7331	*4.1-6.1L* **2.7-4.1PDV**
Chenzhuang	47	**6043.7**	2653.88	387.11	5264	6823	*4-6L* **2.6-4PDV**

Table 11-6 - Li vessels volume means for four Shandong sites and min/max millet porridge they can produce in PDV (1.5L cooked)

Notice that unlike the case at TMQC, where a marked drop can be seen from the Early to Middle Western Zhou period in terms of vessels volume and consequently the maximum amount of food that can be made in them, In Shandong vessel volume decreases but not nearly as much or in the same manner. I return to this discussion in the conclusion section and turn now to the usewear analyses of the *li* vessels from the four Shandong sites.

Usewear Analysis

Fanjia

Three years of field work have produced only 3 reconstructed vessels at Fanjia: T101H22:I, T101H8:g &T101G13:f. Nonetheless, they are all small in size (between 1-1.5L in volume) and all have the same usewear patterns: external soot can be seen from the legs up to the shoulder as well as right under the lip. Small patches of carbonized food remains are found on the upper part of the shoulder. An oxidized patch runs form the bottom part of the *li* vessel legs up to about midway, where soot is found along the base. Internal carbonization remains are found on the base and small patches can be found on the shoulder. Carbonized food remains can be seen in the bottom of the *li* foot the internal part of the lip as well as on the external upper shoulder.

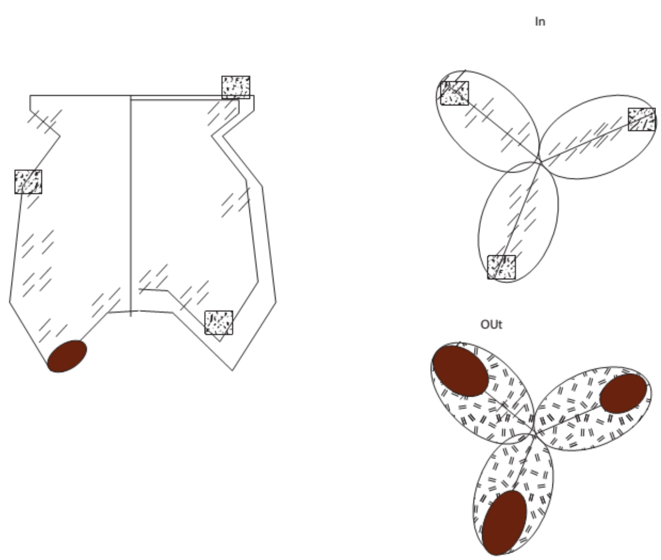
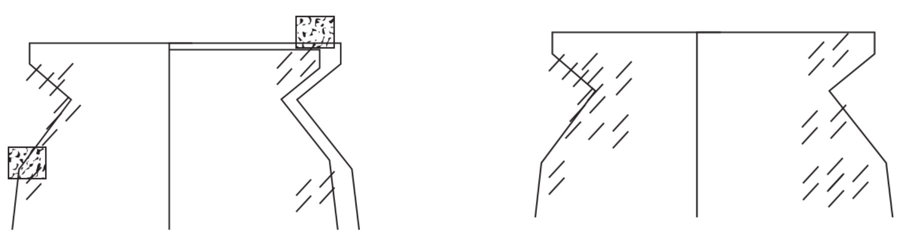


Figure 11-11- Usewear patterns found on three reconstructed vessels at Fanjia

These patterns reflect a wet cooking mode as evidenced by the internal small patches in the shoulder and possibly the carbonized food remains on the exterior and lip, which could have been the result of food bubbling over during the heating process. Food carbonized at the center of the *li* legs indicates a reduction of liquid towards the end of the cooking process that result in charred food remains, perhaps when making pilaf and is noted by Skibo and Schiffer (2008: 49) for Kalinga rice pots and discussed in chapter 8. The formation of oxidization at the external part of the legs is to be expected if liquid eventually was evaporated even if this was not only part of the vessel which was subjected to the most intense heat. Since these are somewhat small vessels the charred food remains might very well be the result of food boiling over during the cooking process, or a result of the vessels where tipped to their sides to pour out their contents and stuck to the lip.

An examination of the *li* vessel sherds reveals the following two main patterns: A patchy soot deposition on the lip and neck down to shoulder with some charred pieces of food on the shoulder as well. Internal carbonization can be seen on the shoulder as a small patch and either with or without charred food and carbonization marks on the lip (Fanjia usewear type 1). Type 2 had a similar external patch as well as carbonized food remains. Internal carbonization marks run down from the lip to the lower parts of the shoulder even to the base.



Type 1 - Wet mode	Type 2 - Dry Modee
52	19

Figure 11-12 - Fanjia sherd usewear patterns

Unlike at TMQC, Shandong sites yielded a large number of *li zu* leg remains. Mode 1) vessel legs show two main patterns as well: the first with oxidization marks only on the lower part of legs and soot on upper parts of leg to crotch. Many of these sherds had carbonized food particles inside the bottom part of the leg. Mode 2) remains displayed soot but no oxidization patches. Internal carbonization marks were found in the leg and base, but without the remains of carbonized food particle remains (see Figure 11-13).

Li zu (leg) mode 1	**Li zu (leg) mode 2**
49	15

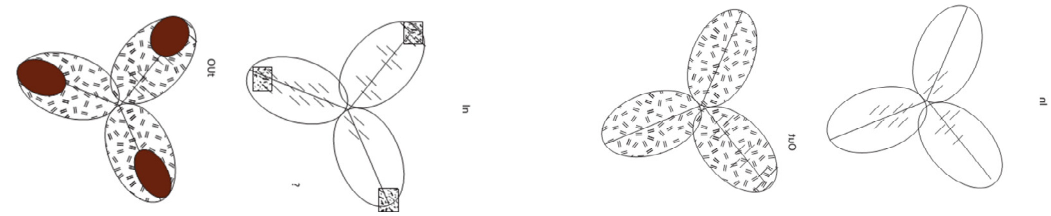


Figure 11-13 - Fanjia li vessel leg usewear patterns

These patterns can again be taken as evidence of the wet and dry mode, as carbonization forming in the leg with oxidization patches and black carbonization marks found throughout the vessel interior. If we combine the *li* type 1 sherds with *li* leg type 1 and type 2 a final table and composite drawing of the two prevalent cooking types found at Shang period Fanjia site can be reconstructed (see Figure 11-14):

Type 1 –Wet mode	Type 2 – Dry Mode
101 (75%)	34 (25%)

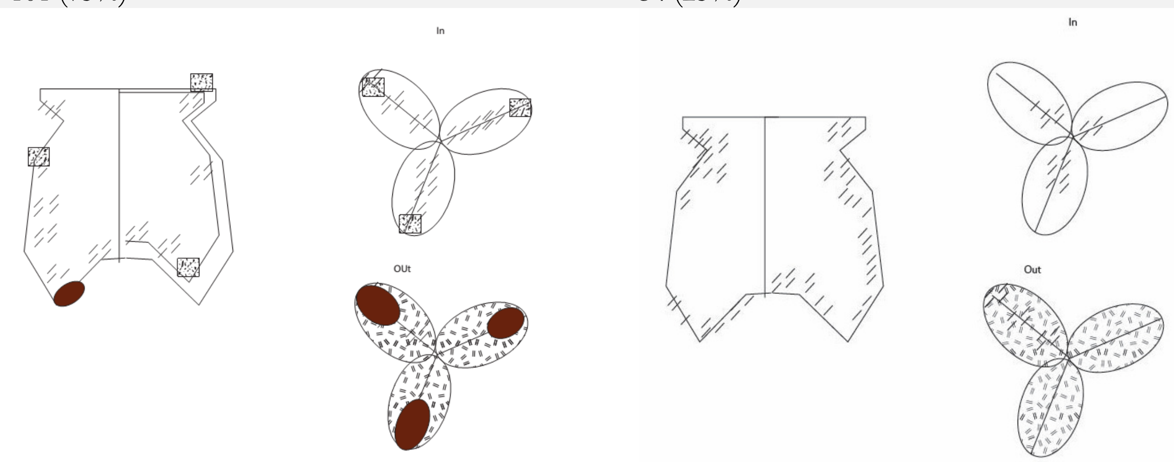


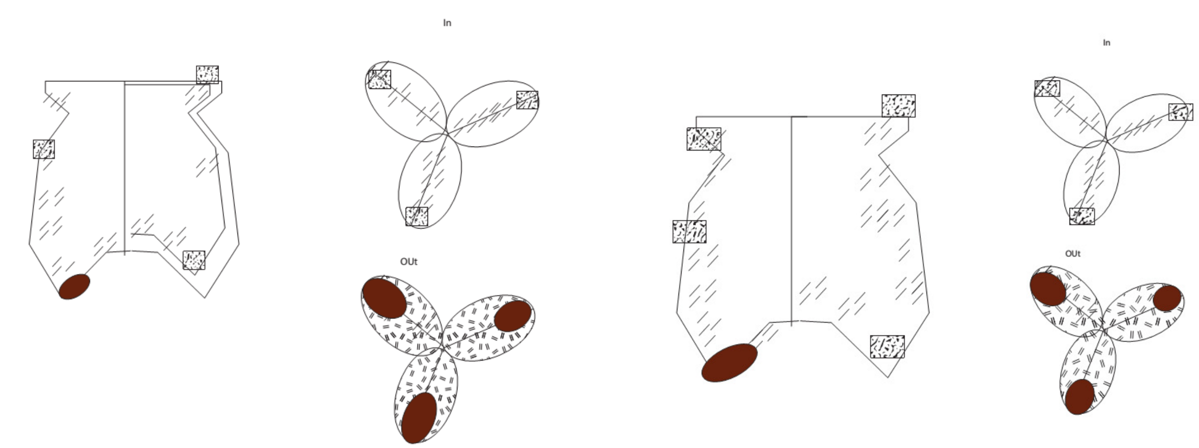
Figure 11-14 - Fanjia compostie usewear anlysis figures for type 1 and 2

Boxing

At the time of the analysis, the Boxing site had not yet yielded complete *li* vessels nor were any reconstructed. Usewear analysis on the excavated sherds revealed the following two main patterns: The first was that seen at Fanjia and was categorized as Type 1 or the wet mode, typified by a patchy soot deposition on the lip and neck down to shoulder, with some charred pieces of food on the shoulder as well. Internal carbonization can be seen on the shoulder as a small patch, with and without charred food and carbonization marks on the lip. The second pattern had external carbonization remains of food on the shoulder as a small patch and either with or without charred food and carbonization marks on the lip. A patch of soot runs from down to the lower part of shoulder with charred food remains under the lip and on the shoulder is seen as well. The internal pattern is similar to the external one with carbonization and charred food remains on lip, shoulder and lower body.

Figure 11-15 - Boxing sherd usewear types 1 and 2

Vessel leg fragments have one distinct pattern of oxidization, externally, on the bottom of legs and food charred remains inside – The pattern seen as Fanjia leg Type 1. Combining these findings together the *li* vessel legs could have produced those patterns for both the wet cooking mode, as was observed at Boxing and be taken to be a dry cooking mode where intense heats (evidenced by the red oxidized marks not seen at Boxing) charred food to the vessel bottom. Another possibility is that vessels used for dry cooking were used for wet cooking as well, ether on separate occasions or as part of the desired end result. Below I create a composite of what whole vessel usewear patterns would have looked like:



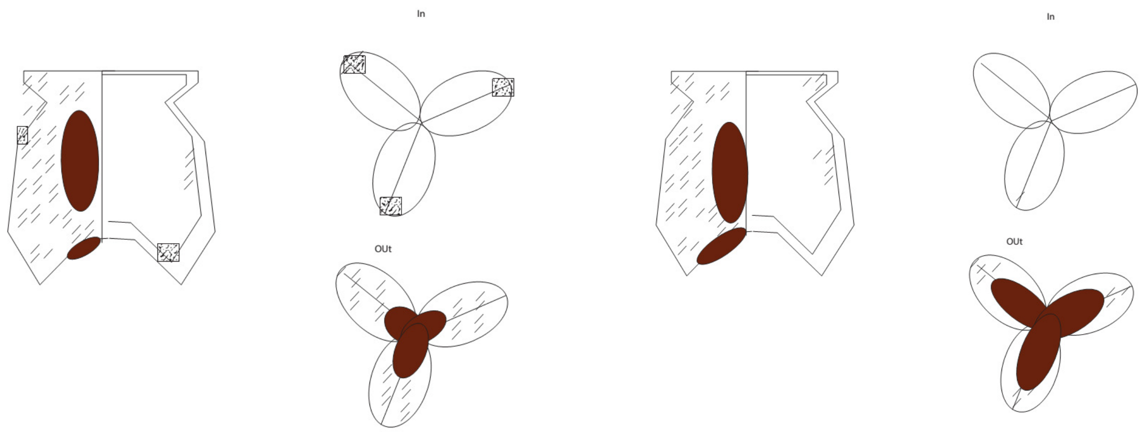
Pattern) 1 Wet Mode (Count: 52) Pattern 2) Dry mode (Count:14)

Figure 11-16 - Boxing compostie usewear anlysis figures for type 1 and 2

Chenjiahe

The four reconstructed whole vessels at Chenjiahe shared many common usewear pattern elements: Very heavy soot covered H10:18 and H17:1 from top to bottom of the vessel and a bright red oxidization patch runs from the shoulder down to the base of the vessel. Carbonized food remains were found on the shoulder as well. Internal carbonization was found on the lower part of the shoulder in patches and carbonized food remains were observed inside the leg. H65:1 was almost identical, except that it lacked the charred food remains and had a small patch of carbonization on the lip.

Li vessel H22:1 is unique to the dataset as it is classified as local or non-Zhou style *li*. This is mainly due to the dark orange hue of of its paste and the lack of *shengwen* corrugation marks on its exterior. Soot is found on the lower parts of the vessel from the shoulder down to the base, and under the lip. Internal carbonization patches were found on the shoulder and on one side of the lip. Note that the oxidization patches that run from the mid interior down to the base are similar to those seen on Kalinga rice pots described by Skibo, and found at TMQC, and are formed when the cooking vessels are place in the fire to evaporate liquid from them. Thus in contrast to the earlier Shang period sites, no evidence was seen to indicate the dry mode of cooking, as the patches of internal carbonization were confined to a specific part in the shoulder.



H10:18(4.9)L and H17:1(6.2L) H65:1 (6.8L)H22:1(8.1 L)

Figure 11-17 - Usewear patterns of 3 reconstructed vessels at Chenjiahe

Usewear analysis of *li* sherd remains found two main patterns. Pattern 1 was characterized by a patchy external layer of soot and internal carbonization found on lip and shoulder. Pattern 2 was similar to pattern 1 externally, with external soot from patchy to heavy remains but very little to no carbonization inside. Only three sherds fit this pattern.

Figure 11-18 - Chenjiahe sherd usewear types 1 and 2

Leg sherds also displayed two main patterns: Pattern 1) was characterized by heavy soot on the external side down from the middle portion of the leg, an oxidization patches on upper part of legs and up onto crotch. Charred food remains and carbonization remains were observed internally. Pattern 2) far less common, was externally the same, but did not contain any internal carbonization remains. This is similar to that seen in whole vessel patterns observed above.

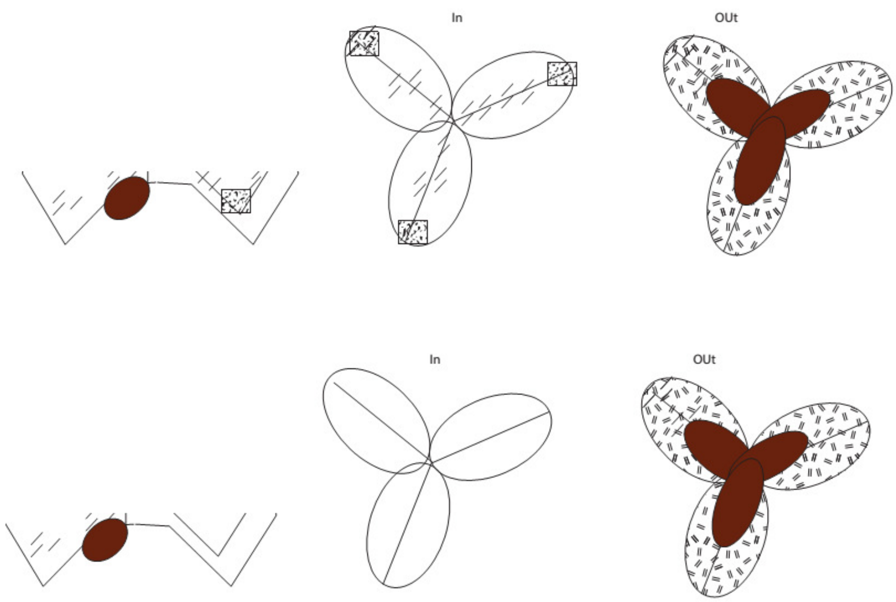


Figure 11-19 - Chenjiahe li leg pattern 1(above) & 2(below)

Rim sherds	Pattern 1	Pattern 2
18	15	3
Leg sherds	Pattern 1	Pattern 2
25	21	4

Table 11-7 - Chenjiahe rim and leg sherds usewear pattern types

When taken as a whole these two pattern differ only in respect to the existence of minimal internal carbonization marks. As with the usewear patterns seen on whole vessels, they both do not reflect a scenario were food was prepared in the dry mode. Those vessels that did contain internal carbonization marks were confined to a specific point and did not extended from the lip down the lower part of the shoulder. The addition of the charred food remains in the legs suggests a pattern that is similar to that seen in the wet mode observed by Skibo, where vessels used to boil grains are exposed to direct heat on their sides for the final cooking stage (and discussed in chapter 9). The lack of internal carbonization on other vessels could be the result of water being filled all the way to the top with vessel exterior walls or not using fire intensities that would allow temperatures to build up to the point where food would leave carbonization marks. Similarly, a lack of food carbonization remains in the leg interior might indicate liquid not having evaporated to a point where food particles would stick to the pot and create carbonized remains. Finally it is important to note that while TMQC Middle period vessels displayed the oxidization pattern on the side of the vessel evident here (and not seen during the Early period), the oxidized patches in the bottom part of the base and midway down to the base on the leg is in fact similar to the patterns seen for both periods at TMQC.

Chenzhuang

Chenzhuang had the largest sample of complete *li* vessels of all the sites analyzed here. These eight vessels fall into two broad patterns. The first comprised of G6:2; H398:3 and H466:1, which all have the following pattern: oxidization on upper parts of legs towards the base and soot on the bottom. External patches of soot were found just under the lip and a patch on the shoulder. Internal carbonization can be found along the vessels' legs and up to the base as well as a striking 1.5cm thick line of black carbonization that is very similar to the water line discussed by Skibo (2013: 97). These vessels also presented remains of charred food carbonization on the internal part of the lip but only on one side, perhaps where vessels was placed next to fire or used to pour food out of the vessel.

Vessel	Volume	Usewear Type
G6:2	4.8 L	1
H398:2	4 L	1
H466:1	6.2 L	1
T1279:1	8.7 L	2
H201:1	3.1 L	2
H300(2):a	11 L	2
H538:a	5.7 L	2
T7219:26	5.2 L	2

Table 11-8 - Chenzhuang eight complete vessels volume and usewear type

The second group H1279:1; H201:1; H300(2):a; H538:a; T7219:026 is almost identical to the first group, with soot under the lip and on the shoulder and oxidization running from the base down to about midway down the leg. Internally, however, the vessels did not reveal carbonization remains apart from a number of small areas inside the legs and up towards the base. While these are marked differences, it does seem to hint that both patterns reflect, in general, a wet mode of cooking.

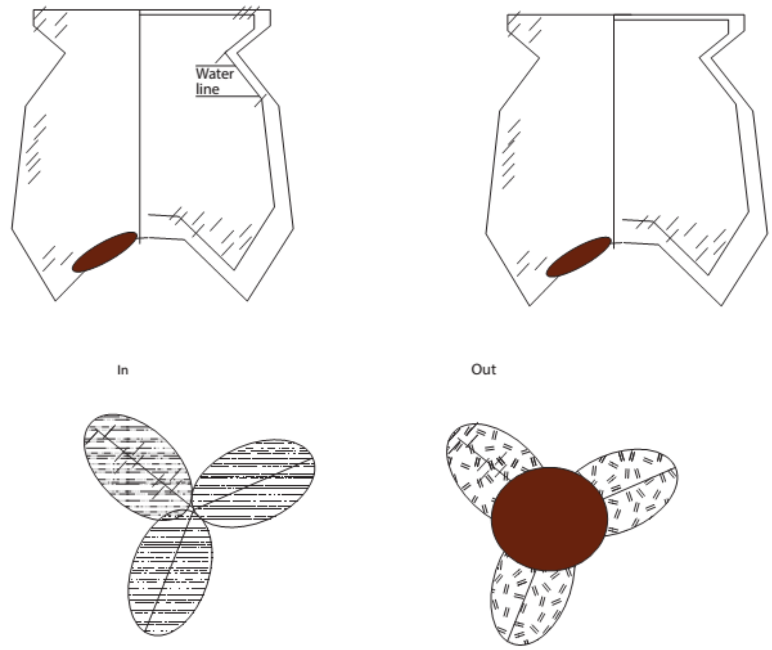


Figure 11-20 - Usewear patterns of eight reconstructed vessels at Chenzhuang

The examination of the ceramic sherd assemblage revealed usewear patterns similar to the first two types, along with an additional one:

Pattern 1 – External patches of soot are seen on the shoulder and on the neck with carbonized food on shoulder as well. A bright grey patch of oxidization can be seen on most sides of the vessel, but concentrated on the pinched side, from the shoulder down to the breaking point. Internally a small patch of carbonization can be found only on the lip.

Pattern 2 – Externally, heavy soot patches are found from the lip down to lower shoulder and body, with an oxidized patch similar to that found in pattern 1. Internally, carbonization is found in patches on shoulder and neck.

Pattern 3 – Similar to pattern 2, but with soot found from lip down to lower shoulder and internally found in lip and shoulder with a water mark right above and around neck.

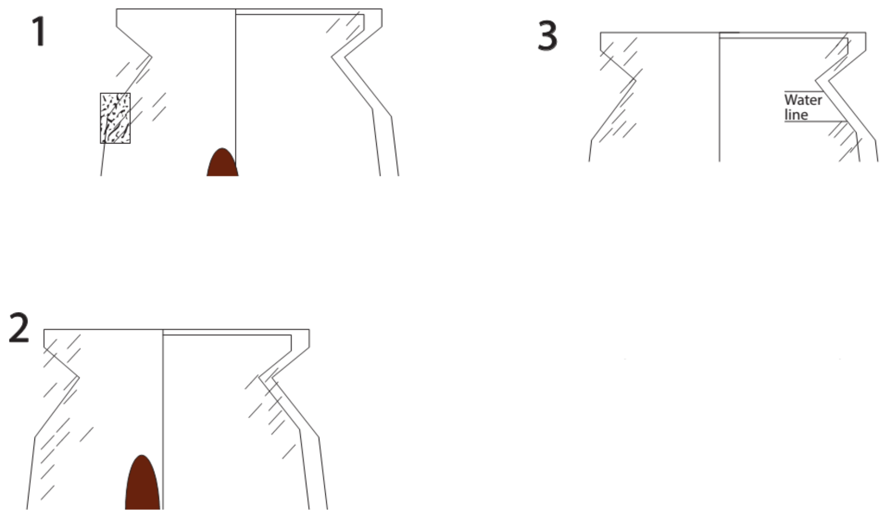


Figure 11- 21 -Chenzhuang sherd usewear patterns 1, 2&

The pattern found on *li* legs was very consistent. While only nine sherds were preserved, all had soot marks running from the bottom of the leg to its middle part as well as a strong patch of oxidization further up and to crotch part of the vessel. All had carbonization marks internally and four sherds had small amounts of carbonized food remains inside them as well. Apart from the charred food remains that are missing, this usewear pattern is in fact very similar the lower part of the vessel seen on whole vessels at Chanchiang. It is a common trait among vessels used for wet cooking where liquid was evaporated to a degree where food would char to the base.

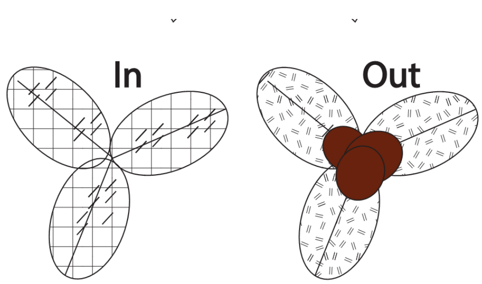


Figure 11-22 - Li zu (leg) fragments usewear marks at Chenzhuang

Based on the above observations, a composite image of the reconstructed *li* vessels would look this:

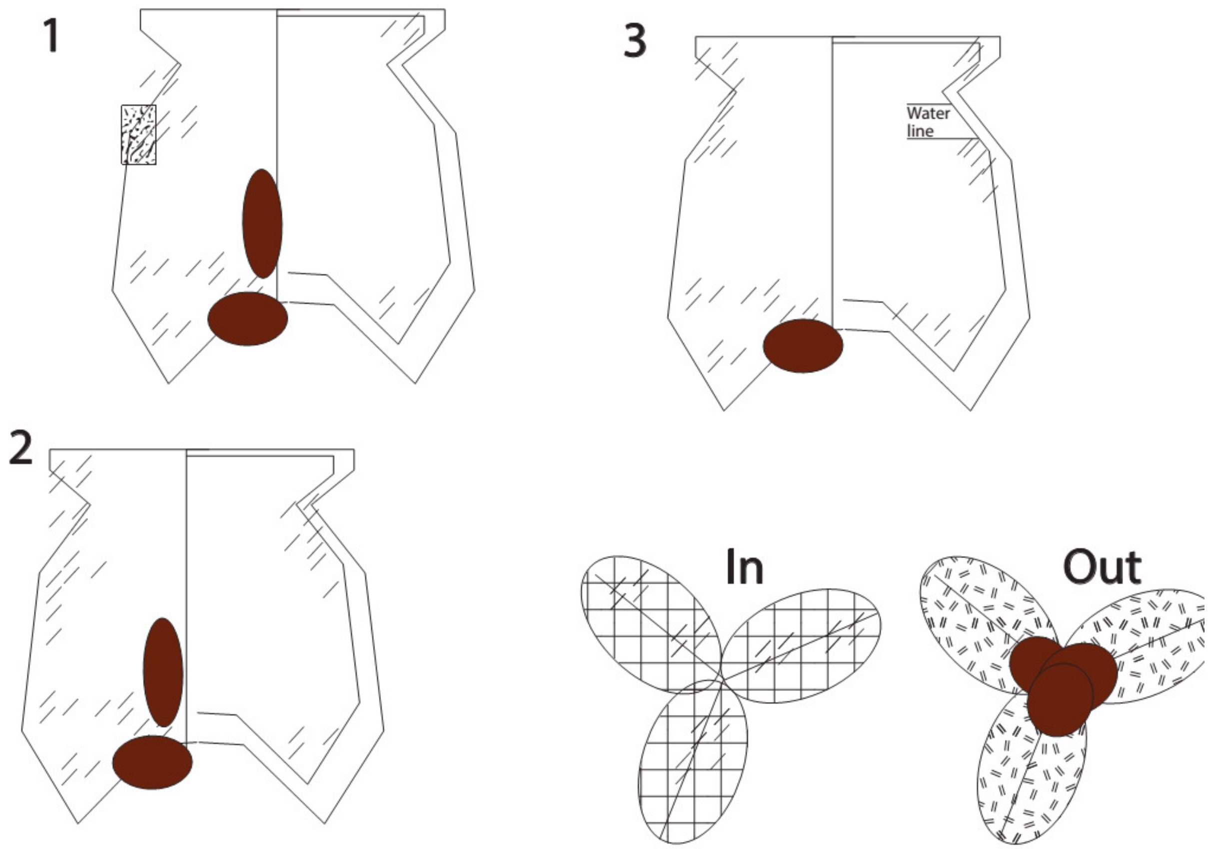


Figure 11-23 - Composite image of Chenzhung three usewear types

It is important to note that those vessels with oxidization patches on their sides also had more soot marks on the vessel and/or carbonized food on their exterior. In fact, pattern 1 sherds had a larger mean size than the two other patterns (of 7.5L), hinting at a scenario where these vessels were subjected to more intense heats that caused their contents to boil over. This is different than the case observed in the earlier Shang period sites where the small vessel volume is taken by me to create a scenario of charred food boiling over and sticking to the exterior. As was found at Chenjiahe, at Chenzhung both whole vessels and sherd remains do not reflect dry cooking modes. Instead the wet mode appears with patterns differing along the lines of the amount of water that was used to cook the food as well as the intensity of heat that was used to do so.

	Pattern 1	Pattern 2	Pattern 3
Sum	11	29	10
Vol mean	7.5	5	5

Table 11-9 - Chenzhuang usewear pattern counts

Technical Analysis

Using the same parameters discussed in chapter 9 for TMQC, technical observations were made for each of the four Shandong sites discussed above. The same parameters were used to observe production techniques and preferences, with a special focus on *li* cooking vessels (see below). The results are discussed in relation to those found at TMQC.

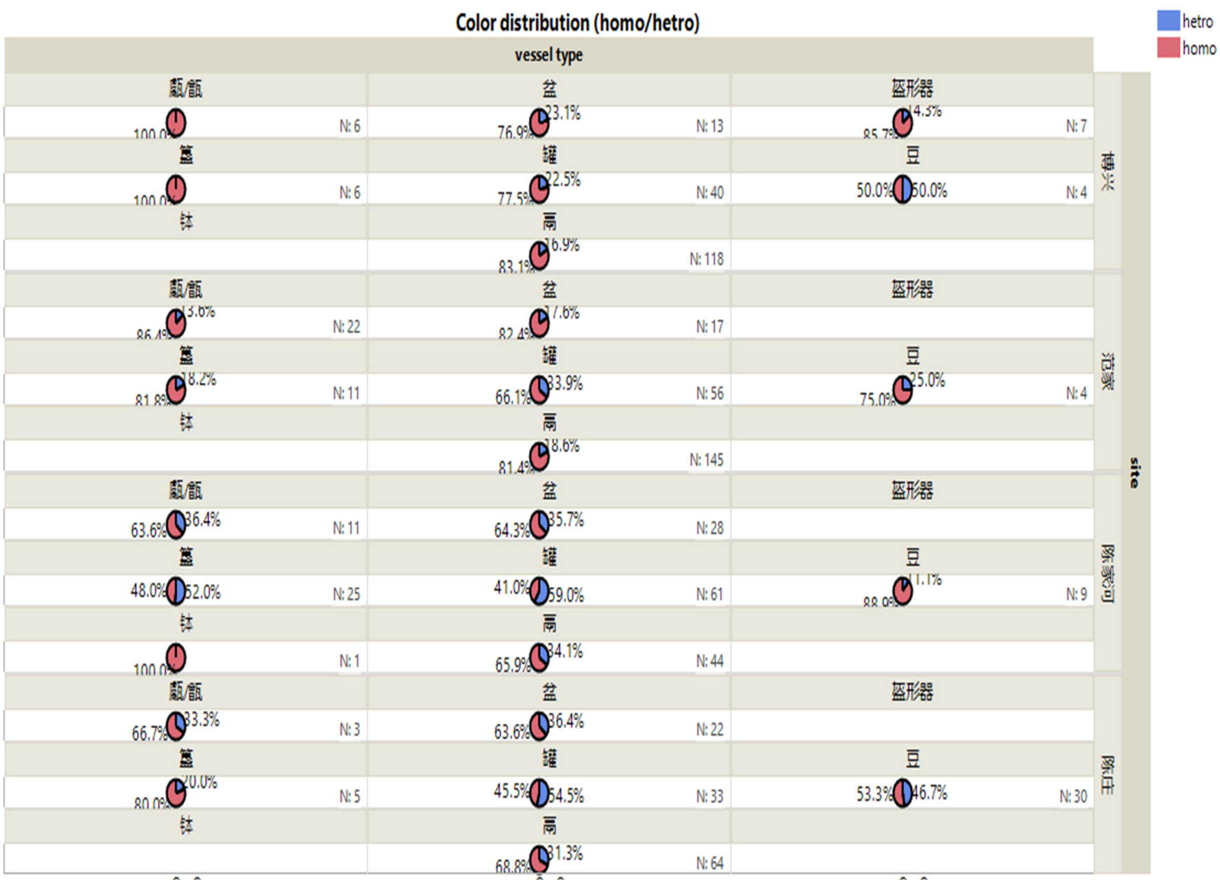


Figure 11-24 - Homogenous and heterogeneous past color for four Shandong sites by vessel type

Shandong vessel colors included the grey, blacks and browns seen in TMQC with an addition of a high proportion of red and orange wares as well. Interestingly, upon magnification these sites also had much higher percentage of vessels with heterogeneous clay paste colors, which might indicate different production techniques or perhaps lack of control over processes that influence color homogeneity and distribution – such as firing in an oxidized environment (however other factors could influence this as well, most notably high iron content in the clay).

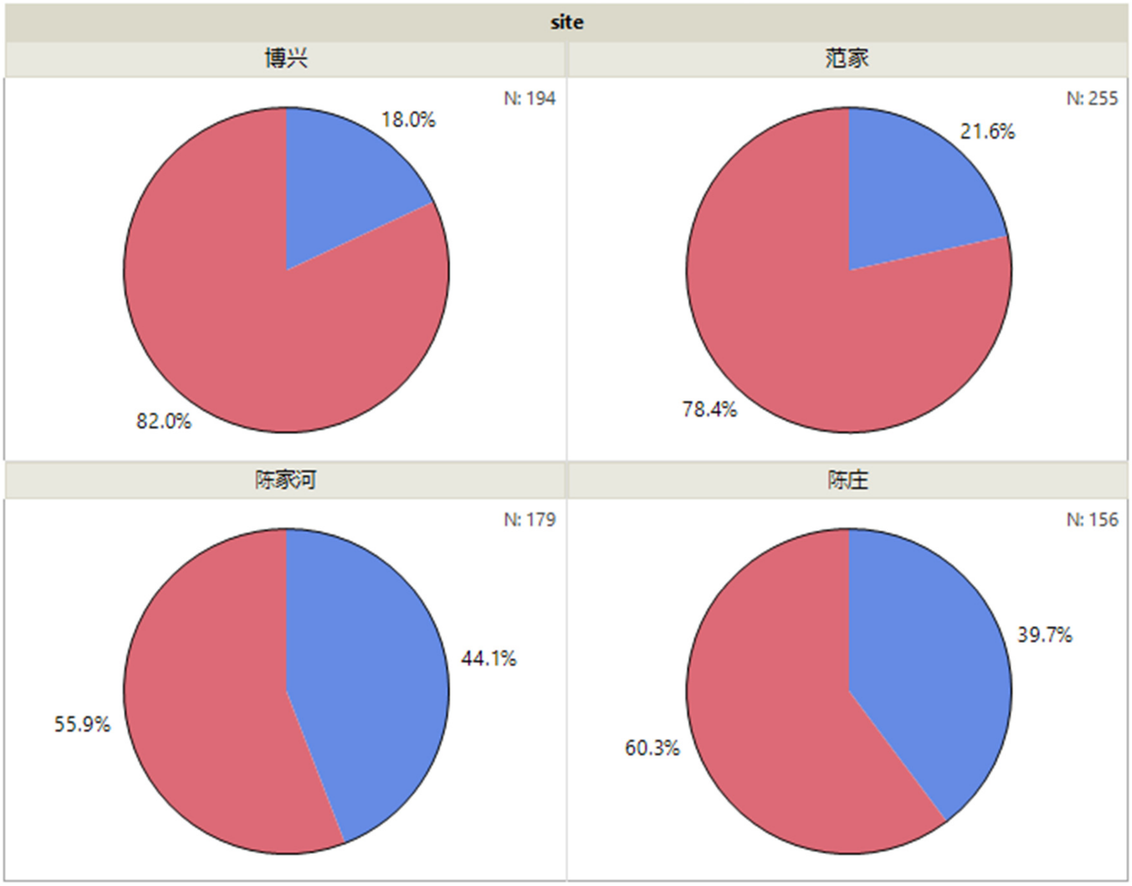


Figure 11-25 - Color distribution for four Shandong sites (from left to right clockwise- Boxing, Fanjia, Chenzhung and Chenjiahe)

The two Zhou sites had a much higher percent of heterogeneous colored paste vessels than the Shang period sites, but they too were higher in proportion in respect to the amounts seen at TMQC. The vast majority of these vessels are either *guan* jars or *dou* serving dishes. More work is needed to investigate these difference but they reveal the importance of these color distribution.

The ceramic assemblages from the four Shandong area sites were compared with a ternary plot to inspect differences in the relationship between ratios of inclusions, clay material and voids.

		Coarse %					Fine %				Void %			
Site	**Vessel type**	**N**	**Std Err**	**Mean**	**Median**	**Range**	**Std Err**	**Mean**	**Median**	**Range**	**Std Err**	**Mean**	**Median**	**Range**
BX	甗*Yan*	6	0.08	0.21	0.23	0.40	0.08	0.72	0.70	0.45	0.01	0.08	0.08	0.05
	盆*Pen*	13	0.02	0.05	0.00	0.20	0.02	0.87	0.90	0.25	0.01	0.08	0.10	0.05
	盔兴器 *KXQ*	7	0.02	0.03	0.00	0.10	0.02	0.86	0.85	0.15	0.02	0.11	0.10	0.15
	簋*Gui*	6	0.03	0.07	0.05	0.20	0.04	0.85	0.88	0.25	0.01	0.08	0.10	0.05
	罐*Guan*	40	0.01	0.03	0.00	0.25	0.01	0.88	0.90	0.30	0.01	0.09	0.10	0.10
	豆*Dou*	4	0.03	0.03	0.00	0.10	0.02	0.91	0.93	0.10	0.01	0.06	0.05	0.05
	鬲*Li*	**118**	**0.01**	**0.26**	**0.25**	**0.45**	**0.01**	**0.68**	**0.65**	**0.45**	**0.00**	**0.07**	**0.05**	**0.15**
FJ	甗*Yan*	22	0.02	0.19	0.23	0.35	0.02	0.71	0.70	0.35	0.01	0.09	0.10	0.15
	盆*Pen*	17	0.02	0.08	0.05	0.25	0.02	0.83	0.85	0.20	0.01	0.09	0.10	0.10
	簋*Gui*	11	0.03	0.05	0.00	0.25	0.02	0.85	0.85	0.25	0.01	0.10	0.10	0.10
	罐*Guan*	56	0.01	0.05	0.00	0.25	0.01	0.84	0.85	0.35	0.00	0.12	0.10	0.15
	豆*Dou*	4	0.05	0.05	0.00	0.20	0.05	0.84	0.88	0.20	0.01	0.11	0.10	0.05
	鬲*Li*	**145**	**0.01**	**0.23**	**0.25**	**0.45**	**0.01**	**0.68**	**0.70**	**0.45**	**0.00**	**0.08**	**0.10**	**0.20**
CJH	*Yan*	11	0.03	0.20	0.20	0.35	0.04	0.72	0.70	0.40	0.01	0.07	0.05	0.05
	Pan	28	0.03	0.14	0.15	0.50	0.02	0.81	0.80	0.35	0.01	0.06	0.05	0.10
	Gui	25	0.01	0.02	0.00	0.10	0.01	0.92	0.95	0.15	0.01	0.06	0.05	0.10
	簋*Gui*	61	0.02	0.09	0.00	0.50	0.01	0.88	0.90	0.30	0.00	0.07	0.05	0.10
	罐*Guan*	9	0.03	0.06	0.00	0.25	0.03	0.88	0.95	0.30	0.01	0.06	0.05	0.10
	豆*Dou*	1	.	0.00	0.00	0.00	.	0.90	0.90	0.00	.	0.10	0.10	0.00
	鬲*Li*	**44**	**0.02**	**0.24**	**0.25**	**0.50**	**0.01**	**0.73**	**0.73**	**0.40**	**0.00**	**0.06**	**0.05**	**0.05**
CZ	甗*Yan*	3	0.12	0.12	0.00	0.35	0.13	0.82	0.95	0.40	0.02	0.07	0.05	0.05
	盆*Pen*	22	0.01	0.01	0.00	0.10	0.01	0.90	0.90	0.15	0.01	0.10	0.10	0.15
	簋*Gui*	5	0.01	0.01	0.00	0.05	0.01	0.88	0.90	0.05	0.01	0.11	0.10	0.05
	罐*Guan*	33	0.01	0.02	0.00	0.20	0.01	0.88	0.90	0.30	0.01	0.10	0.10	0.15
	豆*Dou*	30	0.00	0.01	0.00	0.05	0.01	0.90	0.90	0.10	0.01	0.10	0.10	0.15
	鬲*Li*	**63**	**0.01**	**0.22**	**0.25**	**0.40**	**0.01**	**0.69**	**0.70**	**0.45**	**0.01**	**0.10**	**0.10**	**0.20**

Table 11-10 - Vessel technical aspects table (ratios of inclusion clay and voids) for four Shandong sites by vessels type

Figure Figure 11-26 below displays the data presented in Table 11-10 as a ternary plot, to show the difference in terms of the percentage of coarse, fine and void between serving vessels and cooking vessels at the Shandong sites.

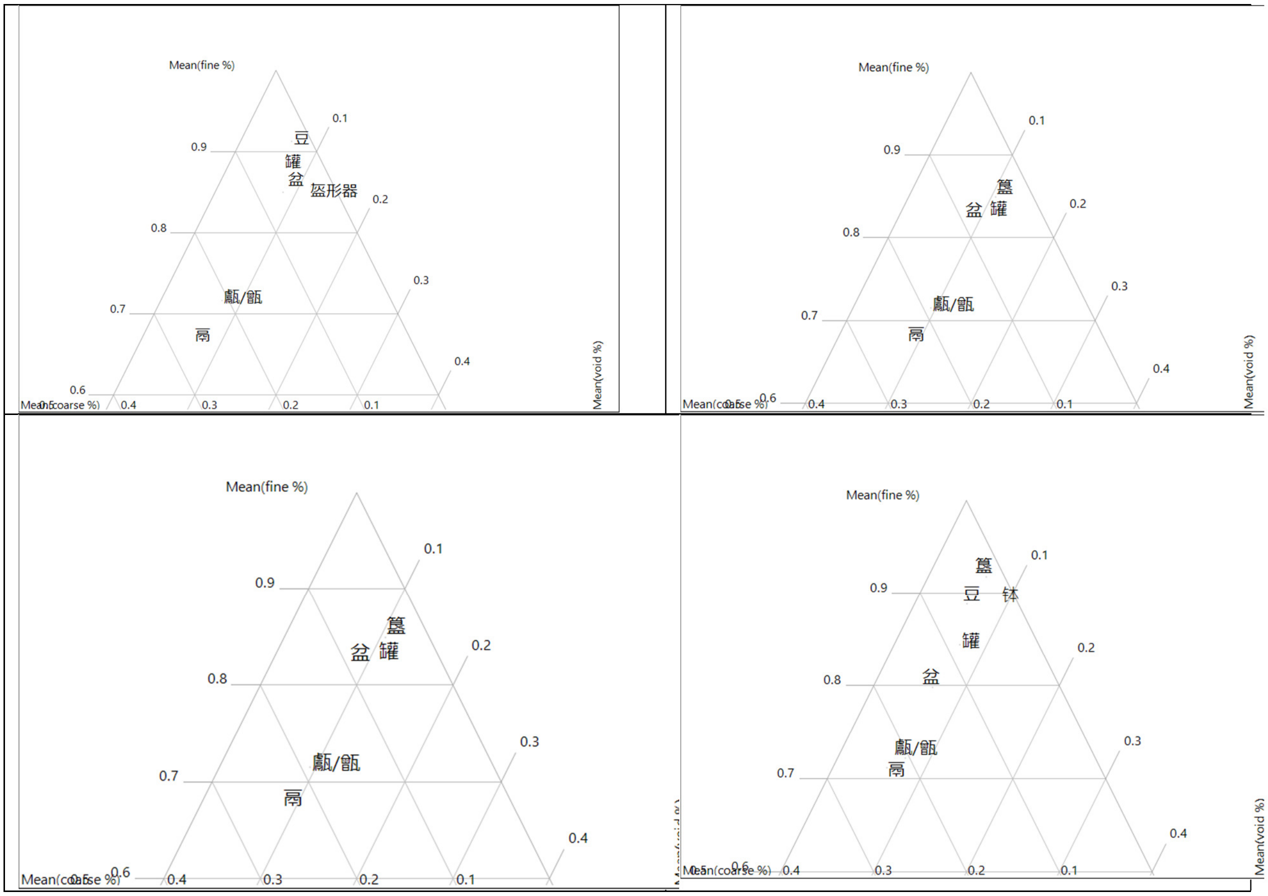


Figure 11-26 - Ternary plot for all vessel types at each Shandon site along coarse, fine & void (note the high scoring pen vessel in bottom right). From left to right top to bottom: Boxing,Fanjia,Chenzhuang and Chenzjiahe

First, while sorting number of inclusion size are all larger and more plentiful in cooking than in serving vessels, sorting levels, or the level to which the size of inclusions is consistent (i.e. the same size) is higher for non-serving vessels (average of 4.3 out of 5 and more) than it is for cooking vessels. Shang period sites, Fanjia and Boxing, have sorting levels closer to 3 (and more similar to those seen at TMQC), they are also far lower for *li* vessels in comparison to other vessels at those sites. Secondly *pen* vessels, which were constructed as serving vessels in terms of temper quantities, in respect to their inclusion size and paste sorting, are almost identical to cooking vessels. At Chenjiahe *pen* vessels were also observed as having near cooking vessel properties and score even higher. This was, again, not the case at TMQC. At Chenzhuang the other Zhou site, *pen* vessel attributes are similar to those of other serving vessels and did not in fact have usewear marks related to cooking on them, as was observed for the other 3 sites.

					Spacing										
		Coarse %	**Sorting**		****	**close**	**double**	**open**	**single**	**Size range in mm**			**Modes in mm**		
site	**vessel type**	**Mean**	**Std Err**	**Mean**	**Row %**	**Row %**	**Row %**	**Row %**	**Row %**	**Std Err**	**Mean**	**Median**	**Std Err**	**Mean**	**Median**
BX	甗*Yan*	0.21	0.56	3.50	0.33	0.17	0.00	0.17	0.33	0.35	0.90	0.84	0.09	0.25	0.30
	盆*Pen*	0.05	0.18	4.62	0.69	0.00	0.08	0.23	0.00	0.10	0.21	0.00	0.04	0.09	0.00
	盔兴器 *KXQ*	0.03	0.18	4.71	0.57	0.00	0.14	0.29	0.00	0.09	0.13	0.00	0.03	0.05	0.00
	簋*Gui*	0.07	0.33	4.33	0.50	0.00	0.17	0.33	0.00	0.31	0.63	0.39	0.10	0.22	0.16
	罐*Guan*	0.03	0.10	4.72	0.75	0.00	0.08	0.15	0.03	0.07	0.19	0.00	0.03	0.08	0.00
	豆*Dou*	0.03	0.25	4.75	0.50	0.00	0.00	0.50	0.00	0.26	0.26	0.00	0.08	0.08	0.00
	鬲*Li*	0.26	0.07	2.89	0.02	0.34	0.08	0.14	0.43	0.05	1.06	0.94	0.02	0.42	0.39
FJ	甗*Yan*	0.19	0.22	3.18	0.14	0.09	0.14	0.18	0.45	0.21	1.23	1.04	0.05	0.43	0.43
	盆*Pen*	0.08	0.19	4.29	0.47	0.00	0.12	0.35	0.06	0.12	0.49	0.44	0.06	0.23	0.31
	簋*Gui*	0.05	0.25	4.55	0.73	0.00	0.00	0.27	0.00	0.15	0.28	0.00	0.06	0.11	0.00
	罐*Guan*	0.05	0.10	4.55	0.68	0.00	0.04	0.25	0.04	0.08	0.31	0.00	0.03	0.12	0.00
	豆*Dou*	0.05	0.50	4.50	0.75	0.00	0.00	0.00	0.25	0.20	0.20	0.00	0.16	0.16	0.00
	鬲*Li*	0.23	0.07	2.90	0.05	0.23	0.25	0.20	0.28	0.05	1.22	1.11	0.02	0.47	0.46
CJH	*Yan*	0.20	0.45	2.27	0.18	0.55	0.00	0.00	0.27	0.36	1.80	1.79	0.12	0.68	0.78
	Pan	0.14	0.29	3.11	0.36	0.29	0.04	0.14	0.18	0.23	1.20	1.08	0.07	0.47	0.60
	Gui	0.02	0.12	4.72	0.76	0.00	0.00	0.04	0.20	0.07	0.16	0.00	0.04	0.09	0.00
	簋*Gui*	0.09	0.13	4.38	0.67	0.08	0.02	0.18	0.05	0.10	0.47	0.00	0.06	0.27	0.00
	罐*Guan*	0.06	0.34	4.44	0.67	0.11	0.00	0.11	0.11	0.23	0.44	0.00	0.11	0.20	0.00
	豆*Dou*	0.00	.	5.00	1.00	0.00	0.00	0.00	0.00	.	0.00	0.00	.	0.00	0.00
	鬲*Li*	0.24	0.14	2.23	0.02	0.43	0.02	0.09	0.43	0.11	1.82	1.74	0.04	0.80	0.74
CZ	甗*Yan*	0.12	1.00	4.00	0.67	0.33	0.00	0.00	0.00	0.93	0.93	0.00	0.15	0.15	0.00
	盆*Pen*	0.01	0.11	4.82	0.86	0.00	0.00	0.09	0.05	0.05	0.09	0.00	0.01	0.03	0.00
	簋*Gui*	0.01	0.20	4.80	0.80	0.00	0.00	0.20	0.00	0.03	0.03	0.00	0.03	0.03	0.00
	罐*Guan*	0.02	0.15	4.63	0.79	0.03	0.00	0.15	0.03	0.08	0.20	0.00	0.04	0.09	0.00
	豆*Dou*	0.01	0.06	4.87	0.83	0.00	0.00	0.17	0.00	0.08	0.17	0.00	0.08	0.17	0.00
	鬲*Li*	0.22	0.13	2.59	0.03	0.27	0.02	0.13	0.56	0.08	1.16	1.08	0.02	0.44	0.43

Table 11-11 - Clay sorting and inclusion spacing and sizes for four Shandong sites periods by vessel type

Void structure is quite difficult to interpret in terms of functionality and production intention (as discussed in chapter 9) and are thus not strongly relied upon here. That being said, there are number of differences between sites and vessel type, with an interesting find that void sizes and amounts seem to be consistent between sites, but their size could very well be a product of overall production trends at these sites rather than their intended function (as mixing of the clays influences this aspect).

Site	Vessel type		Void type				Void Size (small ,medium, large		
		void	plain	channel	vugh	vesicles)	large	medium	small
		%	Sum	Sum	Sum	Sum	Row %	Row %	Row %
BX	甗*Yan*	0.08	4.00	1.00	3.00	1.00	0.00%	16.67%	83.33%
	盆*Pen*	0.08	12.00	4.00	1.00	1.00	0.00%	15.38%	84.62%
	盔兴器*KXQ*	0.11	6.00	4.00	1.00	1.00	0.00%	42.86%	57.14%
	簋*Gui*	0.08	5.00	3.00	0.00	0.00	0.00%	16.67%	83.33%
	罐*Guan*	0.09	35.00	17.00	2.00	0.00	5.00%	20.00%	75.00%
	豆*Dou*	0.06	4.00	1.00	0.00	0.00	0.00%	0.00%	100.00%
	鬲*Li*	0.07	76.00	34.00	35.00	12.00	1.69%	18.64%	79.66%
FJ	甗*Yan*	0.09	19.00	6.00	5.00	0.00	0.00%	22.73%	77.27%
	盆*Pen*	0.09	14.00	4.00	2.00	1.00	0.00%	23.53%	76.47%
	簋*Gui*	0.10	10.00	3.00	1.00	0.00	0.00%	9.09%	90.91%
	罐*Guan*	0.12	41.00	23.00	5.00	0.00	0.00%	16.07%	83.93%
	豆*Dou*	0.11	3.00	2.00	0.00	1.00	0.00%	25.00%	75.00%
	鬲*Li*	0.08	109.00	37.00	29.00	2.00	1.38%	22.76%	75.86%
CJ H	*Yan*	0.07	7.00	5.00	3.00	0.00	9.09%	54.55%	36.36%
	Pan	0.06	22.00	14.00	2.00	0.00	3.57%	35.71%	60.71%
	Gui	0.06	21.00	15.00	1.00	0.00	0.00%	24.00%	76.00%
	簋*Gui*	0.07	43.00	37.00	7.00	0.00	3.28%	40.98%	55.74%
	罐*Guan*	0.06	7.00	3.00	1.00	0.00	0.00%	22.22%	77.78%
	豆*Dou*	0.10	1.00	1.00	0.00	0.00	0.00%	100.00%	0.00%
	鬲*Li*	0.06	35.00	19.00	7.00	0.00	2.27%	38.64%	59.09%
CZ	甗*Yan*	0.07	3.00	1.00	1.00	0.00	0.00%	33.33%	66.67%
	盆*Pen*	0.10	20.00	13.00	6.00	3.00	4.55%	31.82%	63.64%
	簋*Gui*	0.11	5.00	3.00	4.00	0.00	0.00%	40.00%	60.00%
	罐*Guan*	0.10	18.00	24.00	5.00	1.00	9.09%	57.58%	33.33%
	豆*Dou*	0.10	28.00	9.00	10.00	1.00	3.33%	20.00%	76.67%
	鬲*Li*	0.10	40.00	42.00	20.00	1.00	3.13%	39.06%	57.81%

Table 11-12 - Four Shandong site void properties by vessel type

The next step was to conduct a PCA analysis on all variables for the sites in the same way that was conducted on the TMQC assemblage (Figure 11-27). The score and connections between the variables are similar to those observed at TMQC, which is perhaps a product of overall similar production strategies related to the manufacture of certain vessel types.

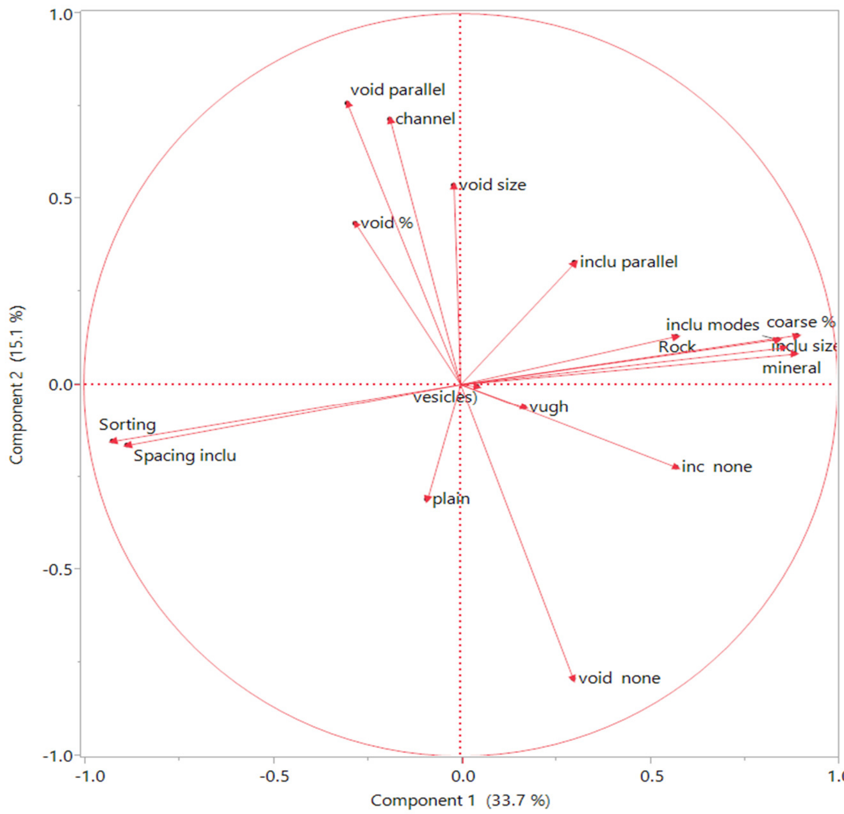


Figure 11-27 - PCA score plot for component's calculated values in relation to each other

Plotting the individual observations (in this case the ceramic sherds) from each site, on an overlay plot by each PC score was created (Figure 11-28).

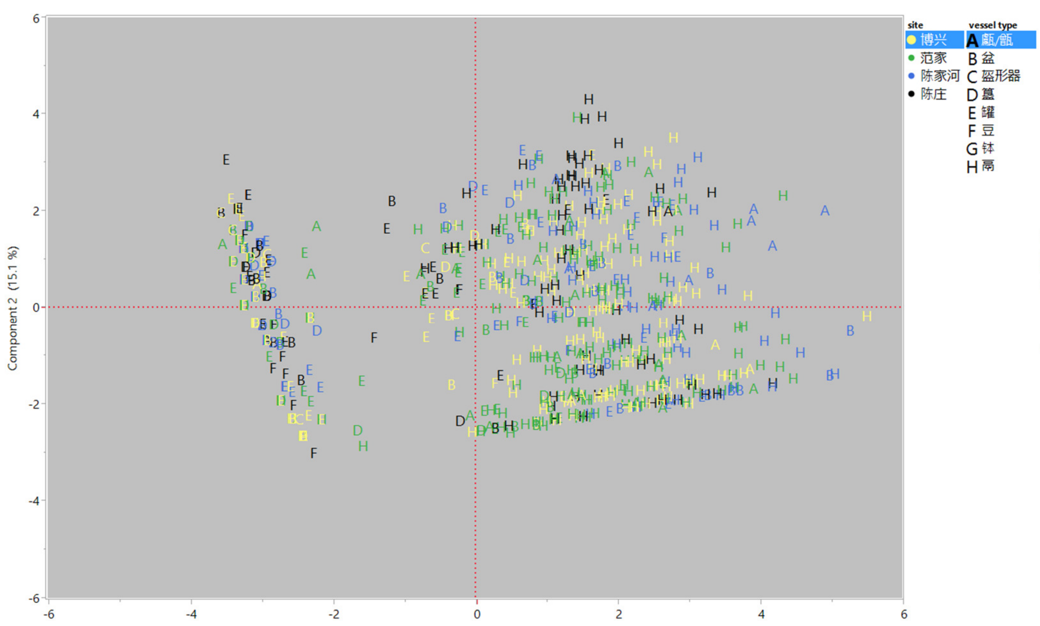
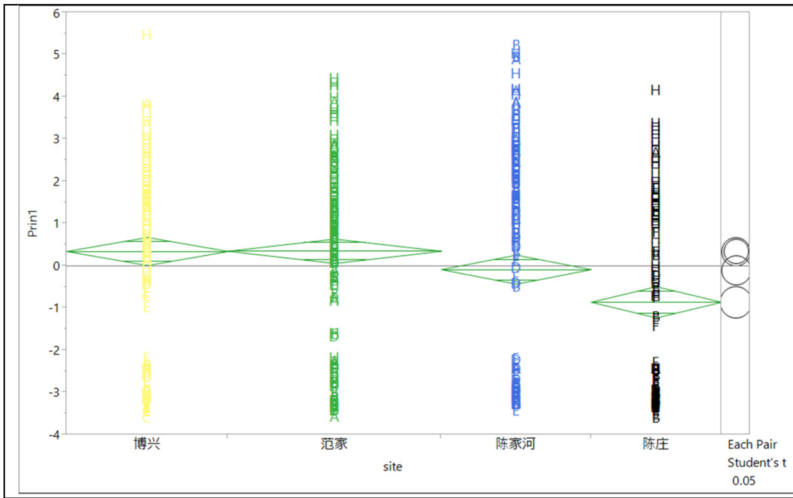


Figure 11-28 - PCA Loading plots for ceramic vessels of the four Shandong sites and the first two components

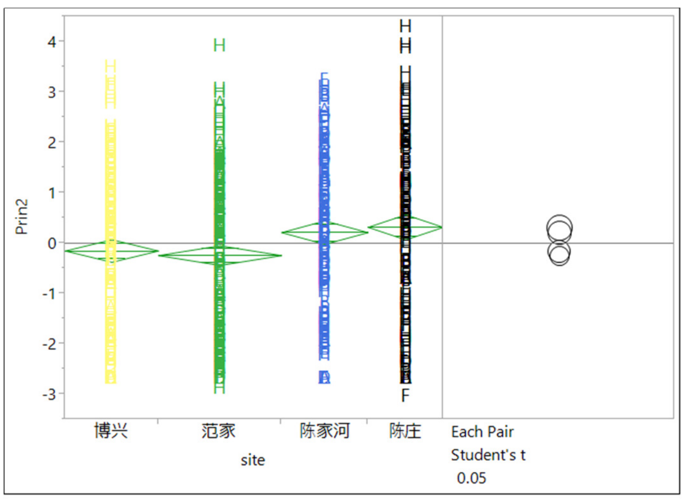
At first glance it might appear that all sites are similar, overall, in the way the ceramic vessel clay matrix was created, but with differentiations between vessel types influencing technical properties. For example, all *li* vessels (H) are clustered to the right i.e. scoring higher on the first Principal component. In order to better understand these difference the mean value of each Principal component from each site was compared using ANOVA analysis.



Lvl	#	Mean	Std Err	Lower 95%	Upper 95%
BX	193	0.34	0.16	0.012	0.6761
FJ	255	0.34	0.14	0.059	0.6374
CJH	179	-0.08	0.17	-0.43	0.2590
CZ	156	-0.8	0.185	-1.22	-0.49

Level	Group		Mean
BX	A		0.3484174
FJ	A		0.3438556
CJH	A		-0.0859281
CZ		B	-0.8596946

Figure 11-29 - ANOVA results on PCA 1 means for four Shandong sites (left to right –Boxing, Fanjia, Chenjiahe and Chenzhuang)



Lvl	#	Mean	Std Err	Lower 95%	Upper 95%
BX	193	-0.15	0.11	-0.37	0.07
FJ	255	-.024	0.09	-0.43	-0.04
CJH	179	0.21	0.11	-0.01	0.44
CZ	156	0.31	0.12	0.06	0.56

Level	Group		Mean
BX	A		0.318
FJ	A		0.212
CJH		B	-0.156
CZ		B	-0.2243

Figure 11-30 - ANOVA results on PCA 2 means for four Shandong sites (left to right –Boxing, Fanjia, Chenjiahe and Chenzhuang)

Differences can clearly be seen between sites, with the two Shang period sites scoring similarly for both principal components. Zhou sites only score highly on PC 2 and Chenjiahe scoring more similarly actually to what is seen at Shang period sites. This differences could indicate different production traditions at the four sites but vessel type, which was observed as a leading component in their technical aspects, could perhaps be contributing to these difference as well, as low numbers of serving or cooking dishes can influence the overall distribution presented above. As was performed on the TMQC vessel assemblage, the *li* vessels from the four Shandong sites were submitted to PCA (Figure 11-31)

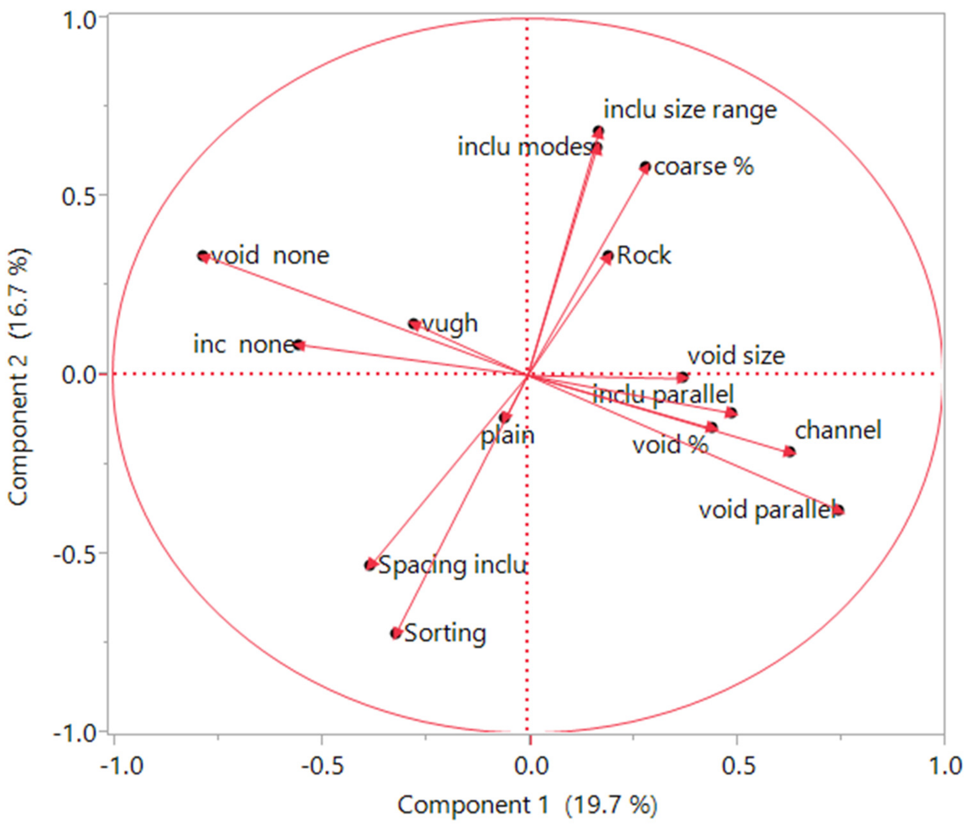


Figure 11-31 - Li vessel-PCA score plot for component's calculated values in relation to each other for four Shandong sites

The connection here between the parameters are very similar to the observations at TMQC for *li* vessels. Small exceptions, which can be noted, are the connections here between higher levels of tempering and rock inclusions and the fact that vugh void shape types replace plain void shapes as those opposite (uncorrelated with) parallel voids. Plotting the vessels by the first two principal components did not reveal strong technical preferences among the different usewear types as was evident at TMQC between dry and wet modes of the early period *li* vessels. Perhaps the Shang period sites of Fenjia and Boxing, where both dry and wet modes of cooking were employed, were less concerned about creating usewear specific *li* cooking vessels. That said, however, when the different sites were compared revealing difference do emerge (figure 11-32).

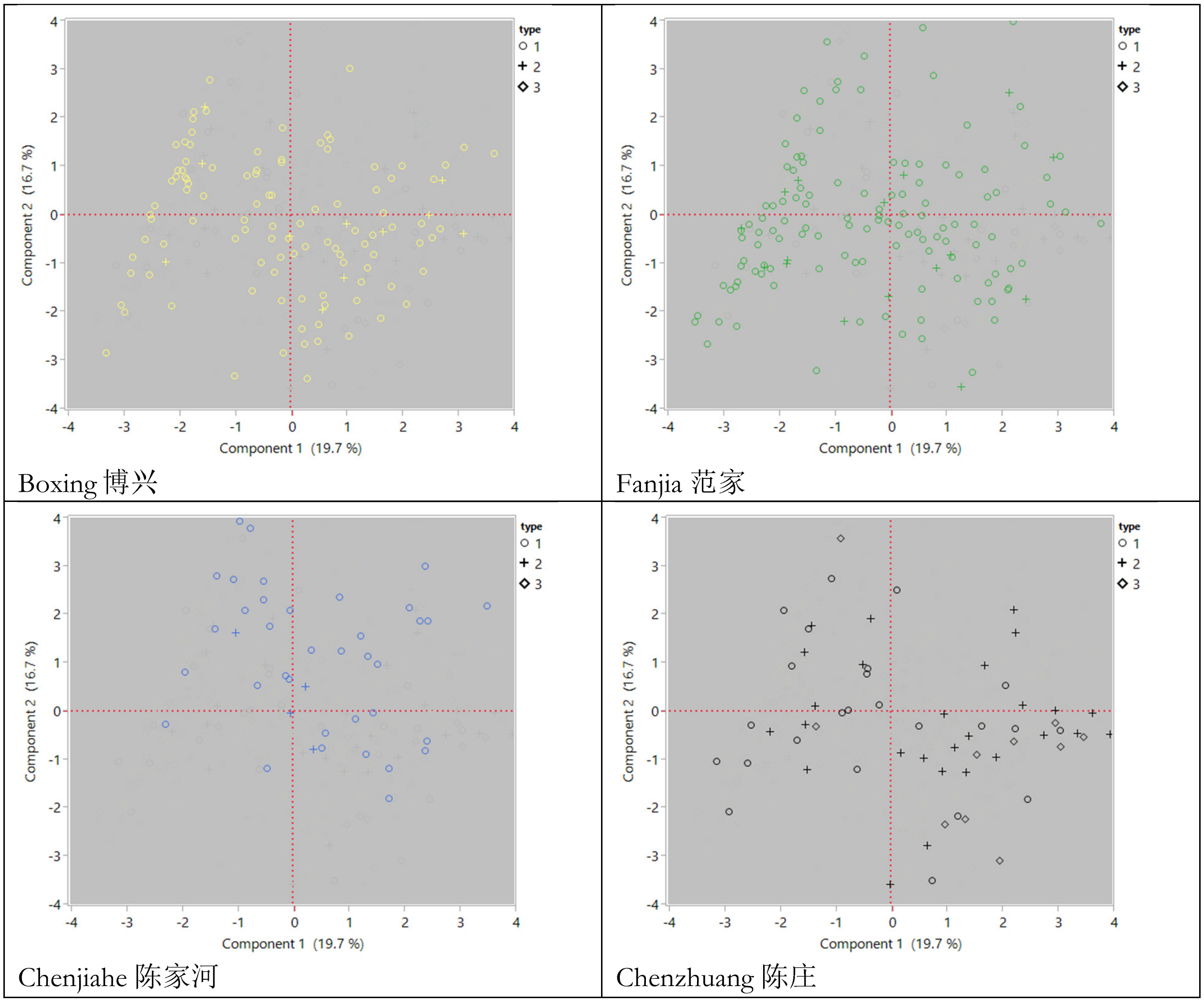


Figure 11-32 - Loading plots for each of the 4 Shandong sites on the two highest scoring Principal Components

Both Fanjia and Boxing *li* vessels share a very similar pattern that can be seen to also be similar to that at Chenzhuang. At Chenjiahe, however, a very different pattern can be discerned: where very few vessels can be found in the lower left corner i.e. low score of PCs 1 and 2. ANOVA performed on the four sites' *li* vessels found that while for PC 1 the Shang and Zhou sites did in fact diverge with, for PC2 Chenjiahe was more similar to Shang period sites whereas Chenzhuang was not.

PCA 1 P<0.008			PCA 2 P<0.001		
Level		**Mean**	**Level**		**Mean**
CJH	A	0.426	CJH	A	1.267189
CZ	A	0.511	BX	B	-0.132081
BX	B	-0.064	FJ	B	-0.170265
FJ	B	-0.305	CJH	B	-0.259071

Table 11-13 - ANOVA results for PC1&2 between four Sahndong sites li vessels

Unlike the TMQC vessels where type 2 (dry mode) was clearly differentiated in terms of its technical parameters, it is harder to find connections between usewear type and technical properties. That being said there are nonetheless a number of differences among the *li* vessel production sequences as evidenced by the results of the above analysis.

Compering mean *li* vessel volume between sites reveals interesting patterns as well:

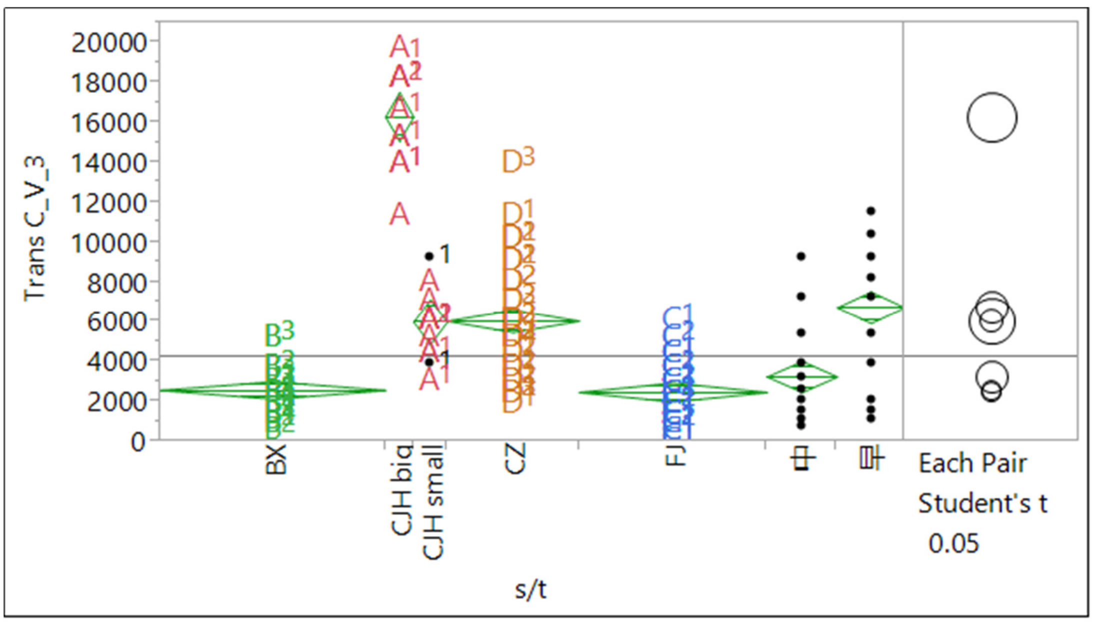


Figure 11-33 - ANOVA conducted on li mean volume sizes between all sites (TMQC Early 早 and Middle 中 periods on the far right)

Vessel volume sizes for early period TMQC is similar to that seen at Chenzhuang and the small *li* vessel size category at Chenjiahe (though somewhat larger 6.7L in comparison to 6L and 5.7L mean vessel volume size). The Middle period *li* vessel mean volume much smaller, (3.2 L), but was still larger in volume when compared to the Shang period sites (2.5L).

As a next stage PCA was conducted on *li* vessels for the different sites (TMQC and the four Shandong sites) in order to see how similar or different they are from each other. These Principal component scores were then saved (9 totaling 90% of the variance) and their centroids compared in Multiple ANOVA (Figure 11-34). This graph reveals that while the sites differed in respect to the principal components (most strongly 1, 2 &3)they are more closely aligned on others (such as PC 7&8). Note that principle components 1& 2 explain around 45% of the variance and far less is explained by each of the other components (i.e 3-9)

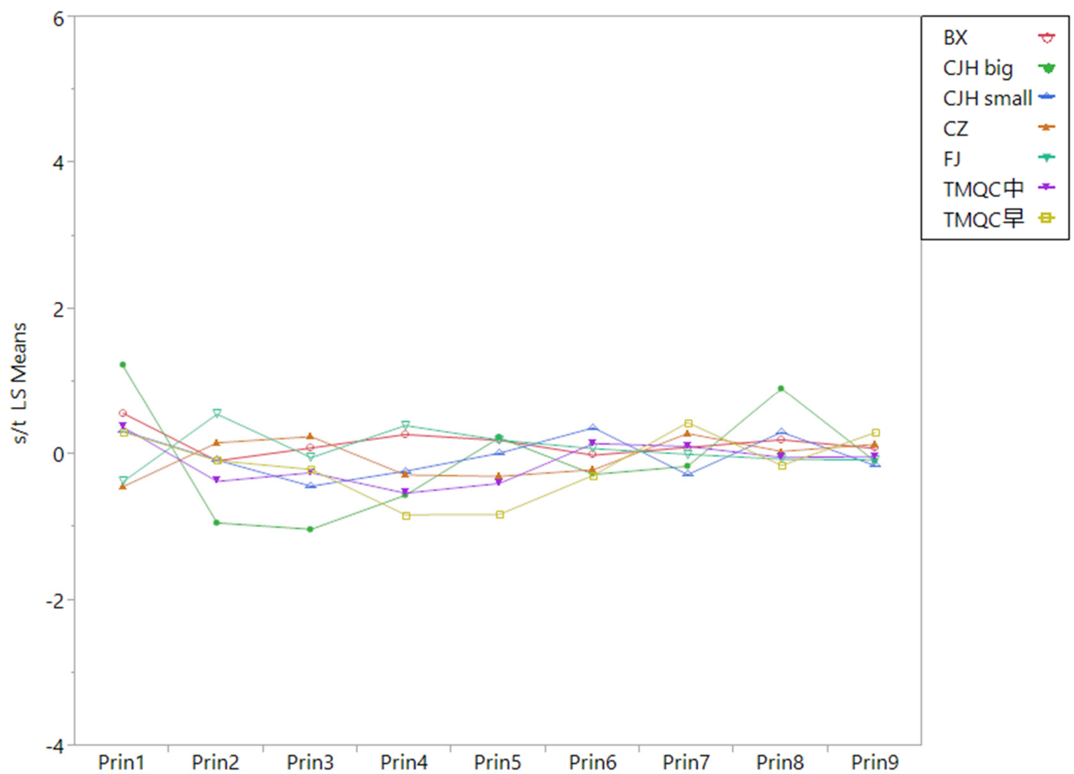


Figure 11-34 - MNOVA performed on nine principal components between all sites' li vessel values

In MANOVA, similarly to PCA, the total variation among observations is used to project combinations. Centroids (the multivariate least squares means from the MANOVA) can then be submitted to a two dimensional overlay plot where a 95% confidence interval surrounding them can be displayed (Figure 11-35).

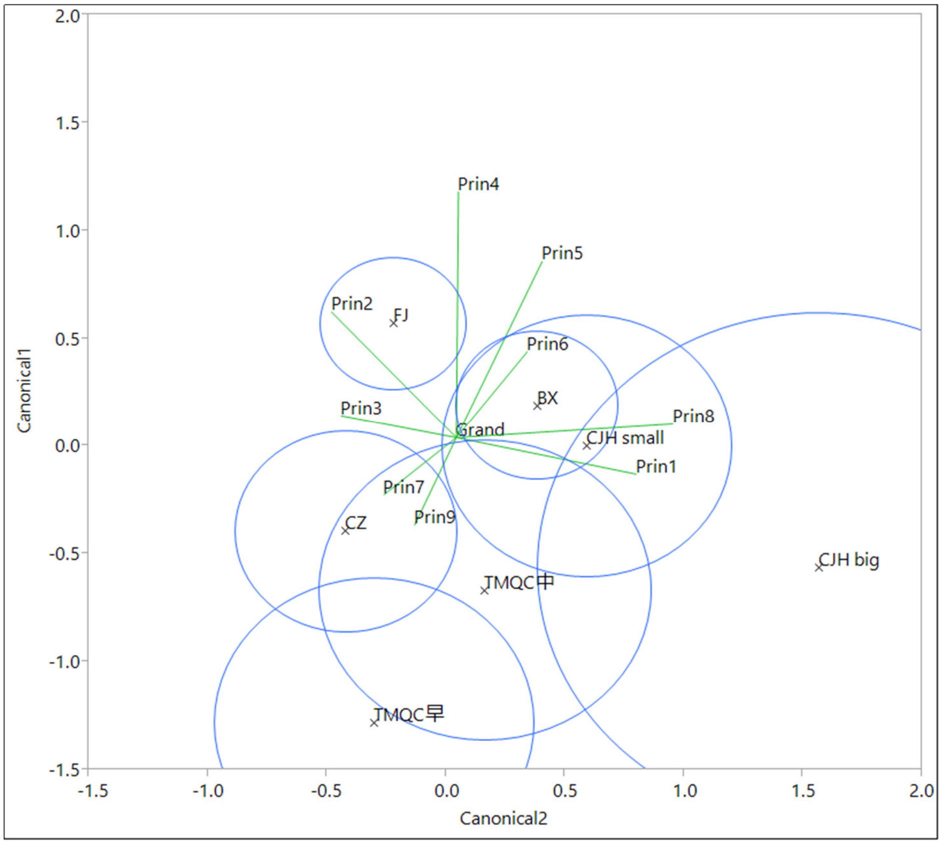


Figure 11-35 - Canonical loading plot for MANOVA centroids conducted on li vessels from all sites

Differences can be seen between both sites and periods: Shang period sites, Boxing and Fanjia, score higher on Canonical 1 and TMQC period ceramics score the lowest. Chenjiahe big *li* vessel group score highest on Canonical 2 and together with CJH small *li* vessel types are separated from the other Shandong Zhou period site, Chenzhunag (though more similarly scoring with the Boxing Shang period site). TMQC Middle period combinations seem to be more similar to that seen in Chenzhuang and Chenjiahe, however, but not that seen during the Early period at TMQC. That being said, note that not only is there a lot of overlap between the different sites, but also that the way in which these canonical centroid plots can be understood (i.e. what are the combinations of the different technical aspects for each one of these sites that set them apart for the other ones) is less than straight forward. Thus, while these results are telling in the sense that they reveal differences in production elements between the sites, in order to be able and discuss technical differences between these sites in a more nuanced way a more in depth statistical investigation then this study will be required.

Summary of Findings

Basic statistics -Low sherd numbers for vessels other than *li* make it difficult to discuss differences in serving and dining practices between sites and periods of time. Overall, serving dishes numbers seem to increase from the Shang to Zhou periods, with larger amounts of *gui* and *dou*, which could indicate different eating habits or larger eating parties. While this could reveal a more communal eating habit, perhaps centered on the vessels used for cooking at the Shang sites as well, the small size and volume of the *li* vessels makes this less plausible. Sizes of *gui* and *dou* serving dishes, seem consistent between the Shang and Zhou period sites (14-5cm and 24-26cm respectively for inner rim diameter opening size), but the *pen* vessels seem to grow from 24cm to 30cm (for inner rim diameter opening size). That being said *pen* vessels might have been used for cooking at Boxing Fanjia and Chenjiahe, as found by the usewear analysis and thus might also have been used for purposes other than serving food.

The increase in *li* cooking vessel volume is a clearer indication of the amount of people that could have been fed at one time (increase from 1-1.5 PDV to a minimum of 3 t for the Zhou period sites) or that families and eating parties cooked food in one sitting to be used for a number of subsequent meals. At Chenjiahe a very large vessel category existed as well, not seen at the other Shang sites or the TMQC areas which could indicate very large eating parties or specializes food production vessels (dare I say feasting?). Finally, the two Shang sites, Boxing and Fanjia, displayed similar mean *li* vessel size and a small amount of variation among them, whereas the other Zhou sites, Chenzhuang and Chenjiahe (as well as the two TMQC periods *li* vessels) had larger variations among them.

Comparisons of standardized *shengwen* corrugation width sizes strongly suggests that all vessels were made according to a site specific technique or even at a single production facility at each site.

Usewear analysis - All four Shandong sites analyzed here reflected the wet mode method of cooking and Shang period sites exemplified dry cooking modes as well. Externally, the biggest difference is the fact the Shang period *li* vessels displayed oxidization patches at the bottom tips of the legs, while at the Zhou sites the opposite was observed. As oxidization patches reveal where heat sources were concentrated during the cooking process their connection to the ways in which food was made, further conclusions can be drawn: while at both Shang sites the dry mode was used, at Boxnig it is possible that on account of the lack of oxidization marks on a large number of *li* leg fragments that these vessels were subjected to lesser heat intensities than at Fanjia where all *li* legs had oxidized patches and heavy soot remains (perhaps they were placed on a bed of coals and not on an open fire). At Chenjiahe and Chenzhuang oxidization marks are found on all vessels and *li* leg fragments, as well as one of on the vessel's sides, indicating a wet mode of cooking and perhaps that evaporated more of the liquid at the final stages of the cooking process. This observation, which could very well be related to the amount of food being made as well, leads me to believe that these vessels were perhaps not used to make food that would last for longer periods of time, but were made instead for a single meal at a time. This, in turn, would indicate that large communal eating practices existed at the sites as well. Finally while at TMQC the remains of both dry and wet mode patterns existed, the Shandong findings seem to indicate a change to a wet mode while using the larger Zhou period *li* cooking vessels. Charred food remains on the bottom and external parts of the two Zhou period *li* vessels also points to a scenario where the simmering of the food to the point that food would stick to its base. This pattern was not found at TMQC and is perhaps not a new Zhou tradition, but a continuing practice from the Shang period, along with the use of *pen* vessels to make food (though not at Chenzhuang). Another difference that can be observed is that even as the food was primarily boiled and simmered in the wet mode during the Middle Western Zhou period at TMQC, the cooks there took great care to not reduce the liquid in it level that would char remains to the bottom. Finally, while at Chenjiahe a number of sherds displayed no internal usewear marks (pattern 2), which at TMQC was observed as boiling in water method of cooking, at Chenzhuang all sherds and whole vessels contained internal carbonization remains eliminating this possibly.

Technical analysis - A pronounced difference can be seen between the Shang and Zhou period sites in terms of paste color. The former contain only ¼ of all vessels with a heterogonous color makeup and the latter Zhou vessels neared 50%. While it is hard to speak of what might be behind this difference (oxidizing environments, higher iron contents or other elements influencing final paste color), or whether or not this was even intentional, this does provide clues into the fact that certain production differences, site-specific, existed and joins the observation made for standardized *shengwen* corrugation width sizes between them as well. When comparing the four Shandong sites similar ratios between inclusions, clay and void structure existed for the various ceramic vessel types, most patent differences were the higher tempered *pen* vessels at Chenjiahe with ratios closer to that seen for cooking rather serving vessels (*pen* at Chenjiahe were also observed to have been using for cooking activities as evidenced by usewear remains). Principal component analysis conducted on the material and technical aspects between sites revealed similar patterns between sites (i.e. that cooking vessels had more temper overall, larger inclusion sizes and in contrast serving vessels had higher and better sorted clay matrices), Shang period sites seemed to be closer to each other in terms of these technical aspects than either of the two Zhou sites were. These components do not easily submit themselves to interpretation and can be mostly used here to highlight the overall differences between sites. PCA analysis on *li* vessels revealed that unlike at TMQC where vessels intended for dry cooking mode were in fact made with different components in mind (i.e. they did not have parallel inclusions or voids, nor did they have large and interconnected voids, but mean inclusion size was larger). Thus the intended cooking mode may not have influenced the techniques vessels were made with by Shang period potters. When compared to the TQMC *li* cooking vessel,s differences between sites could be discerned, to varying degrees, but require more in depth and specialized statistical analysis to better investigate them.

The findings here join the discussion on the mortuary practices in the previous sections to further question the way in which Western Zhou material culture has traditionally been approached at the time of expansion. The variation presented here clearly shows that the Zhou did not have a single material package that was accepted wholesale by local inhabitants. Instead, material culture were incorporated and used to differing levels including continuations of local traditions as well as the inventions of new ones entirely. In the next and final chapter I return to the question this work stared with: what can and can't we say about the Western Zhou expansion and how does this impact our understanding of this period of Chinese civilization?

Chapter 12 - Conclusion

Conclusion by Way of Summary

This work started out by asking if a renewed investigation of the Western Zhou expansion was possible. To date, most scholars have viewed the expansion of the Western Zhou polity in the early parts of the 1st millennium BCE as a campaign of colonization and conquest, which resulted in the assimilation of the local peoples into Zhou society. The first part of this work presented the customary archaeological and textual approaches to the study of this period, as well as how the traditional historical narratives had influenced these reconstructions. After establishing both the immense contributions previous work had accomplished alongside their limitations – namely the uncritical elevation of later historical narratives, the interpretation of a predominately ritual medium as historically accurate and the conflation of material assemblages and production styles with the power of the Zhou state – this study called for a reexamination of the powerful and all engulfing Zhou expansion.

The methods I suggested – multivariate statistical exploration of burial data and ceramic analysis of residential assemblages – were employed to allow comparisons between different regions and sites of the Zhou world and to provide local-specific outcomes of the impact of the Western Zhou expansion. To do so a model was proposed where the finding of Western Zhou materials, while reflecting the movements of goods and styles should not directly reflect Zhou domination or the arrival of a homogenous well-defined Zhou ethinc group. Instead, artifacts and the manner in which they were utilized are contextually studied to reveal the regional- specific process of the Western Zhou expansion and the communities of practice they shaped.

Mortuary practices examined at the Jin polity's graveyard at Tianma-Qucun in Shanxi found a community burial custom, which reflected local-specific variations of wider practices observed in the Zhou world. Previous studies had focused on the Jin marquises burials, their many artifacts and the fact that their location had been separated from the rest of the community during the beginning of the Middle Western Zhou period. Yet by looking at the burial practices of the Tianma-Qucun society as whole a more robust account of the society was achieved. Indeed, not only did several material groups become more restricted over time, notably bronze and jade, while others decrease in importance, such as grave size and imported shells, the community as a whole became increasingly segmented with only a select few obtaining access to the prestigious items found at the graveyard.

When comparing these practices to both large elite burials of the Zhou expansionary world, such as the Yan state in Liulihe and the eastern capital of Chengzhou in Beiyao, as well as to smaller populations and their impact on local communities in the West, distinct preferences and manipulations of Zhou practices became readily apparent. At Liulihe the Zhou invaders played down their military identity and allowed local groups to participate in their mortuary practices, whereas at Beiyao military identity was a primary concern for most all the interred. In addition, while bronze artifacts associated with riding were heavily restricted, at Tianma-Qucun they were open to all as almost all graves at Beiyao contained at least a few bronze objects from this category.

In the west, while the burial practices observed at the Zhou type cemetery of Yujiawan were found to resemble more closely those at Tianma-Qucun (in contrast to their more immediate neighbors at Jiuzhan and Xujianian), they did not mirror them perfectly either. Tianma-Qucun elites maintained different ways of assuming and displaying distinction through burial practices, some emphasizing bronze ritual vessels or jades, while others accrued and displayed wealth through total number of artifacts and the construction of large graves. At Yujiawan, in contrast, elites were still very much a part of the community. Their graves were marked by larger quantities of the same goods, bronzes, jades, imported shells, which other members enjoyed. Additionally no aversion to particular burial elements was found, a more common marker of division between commoner and elite at the Tianma-Qucun community.

At the Siwa culture sites of Xujianian and Jiuzhan, site specific preferences were observed. At both communities a shared a desire for bone bead necklaces was found, yet the Jiuzhan community exhibited remarkable continuity in respect to burial practices and a pronounced aversion to external (Shang as well as later Zhou) style artifacts. In contrast Xujianina burial practices showed a degree of incorporation of external materials in several graves. These graves, however, did not show any other signs of change and did not differ in any other respect to other members of the same community. The members of the Yujiawan community, predating the Zhu expansion, did not seem too eager to incorporate local Siwa styles into their burial practices, as some Zhou communities further to the East did. That said the nature of their connection to the Zhou court remains open to debate as the hammered ritual bronze vessels, unique in the large Zhou world at the time, indicate that the elites of this site were cut off from the Central Plains where other aristocrats were bequeathed with ritual vessels by the Zhou kings, or that they were bold enough to make their own unique ritual vessels.

Culinary practices too differed between periods and regions and showed that the Zhou themselves were not as homogenous as we might have been led to think. At Tianma-Qucun a marked difference was seen between periods in respect to both party size and cooking habits. While ceramic styles were similar for both periods, their size and the way in which they were used differed quite considerably. Firstly, the reduction in vessel size, taken to reflect a reduction in eating party size, from the Early to Middle Western Zhou period at Tianma-Qucun, was not seen in Shandong where large party sizes continued to be the norm in the Middle Western Zhou period as well. Additionally, while both dry and wet cooking modes were seen at Tianma-Qucun during the Early Western Zhou period, only the wet mode of cooking was found at both Western Zhou communities in Shandong. The wet cooking mode itself, the only one found during the Middle Western Zhou period at Tianma-Qucun, was not identical to the one practiced in the Shandong Zhou communities either. While at Chenjiahe a number of sherds displayed no internal usewear marks (which at Tianma-Qucun I proposed might reflect a cooking technique of boiling dough in water), at Chenzhuang all sherds and whole vessels contained internal carbonization remains eliminatie this possibly. In addition whereas the Shandong Zhou period communities seemed to be less concerned with charring food or even allowing foodstuff to burn and stick to the vessel bottoms, the cooks at Tianma-Qucun took great care to not reduce the liquid in it to a level that would char and burn the food at the bottom.

In fact this is seen as a continuation of the style of cooking found at the two Shang period communities in Shandong, where charred food remains were found in most *li* vessels. Similarly the *pen* vessel types, traditionally seen as serving utensil or liquid holder, was used for cooking during the earlier Shang period – a tradition only carried on by only one of the later Zhou period communities. Indeed theses findings reflect a situation where the new Zhou arrivals either accepted local traditions to varying degrees or local population decided to accept Zhou practices to a limited degree. Larger vessels became the norm during the Zhou period as did a preference for wet cooking modes and an absence of dry cooking styles, their combination the norm for Shang communities. Similarly the manner in which vessels were heated differed, as is indicated by the location of oxidization and soot remains on cooking vessels. Zhou period vessels were heated by placing a strong open fire under the base of the vessel and then subjecting them to intense heats at the final stages of the cooking process, as evidenced by the oxidization patches on the sides of the vessels (Seen at Tianma-Qucun during the Middle, but not the Early Western Zhou period). In contrast, Shang period vessels displayed oxidization patches on the internal bottom half of the legs indicating, perhaps, a placement of the cooking *li* tripod on a bed of coals and occasionally open flames (though here too differences were seen between sites as was evidenced by the amounts of soot accumulated on them).

Finally, technical analysis of ceramic materials and their use found that at Tianma-Qucun vessels intended for the dry mode of cooking were actually constructed with different recipes, but not those used in the wet cooking mode. In contrast in Shandong no such distinction was made in their construction for the Shang period communities, which exhibited both cooking styles. That being said, while the *shangwen* corrugation width sizes points to a site specific production style or a single locus of vessel manufacture, the two Shang period communities were more closely aligned in terms of overall technical components than where the later Zhou period vessels. Here again continuity and change is seen in the Shandong regions. The ratios between inclusions and voids, as well as their sizes, was site-specific and varied to some extent between communities on the basis of overall vessels function between periods. Color heterogeneity, in contrast, for all four Shandong sites was far greater that that seen at Tianma-Qucun indicating different production techniques or perhaps lack of control over processes that influence color homogeneity and distribution, such as firing in an oxidized environment.

Reevaluating the Western Zhou Expansion – Glocal Communities of Practice

The study presented in this work has aimed to show the great variation in the Western Zhou expansion, as well as the problems with many previous traditional reconstructions, mainly the simple ascription of material styles and artifacts as reflecting Zhou ethnic people or their political control. The two are linked to be sure i.e. that the homogeneity of the expansion process is actually reflected through the homogeneity of ceramic (and elsewhere bronze) types and styles, which in turn reflects the homogenous outcome of the Zhou expansion. In contrast, this work has argued that it is crucial to appreciate that Zhou styles and artifacts were appropriated in a great deal of local specific ways by both indigenous groups who came in contact with Zhou influences and people, as well as the Zhou themselves who were influenced by local groups to change the manners in which they engaged with their own artifacts and those of native cultures. This point has been previously made by scholars such as Falkenhausen, Rawson and others, but most all previous studies have focused on the comparison of elite cemeteries and artistic styles and rarely with any residential, non-mortuary related materials nor the social practices that were employed by the communities who engaged with them. That being said, I remain skeptical in respect to the archeologists' ability to identify, on the basis of the material assemblages alone, the social identity of the people who used these artifacts. That being said perhaps realizing that both Zhou and indigenous groups exercised their individual choices and preferences in creating these new social practices, is a primary contribution of this work (Figure 12-1).

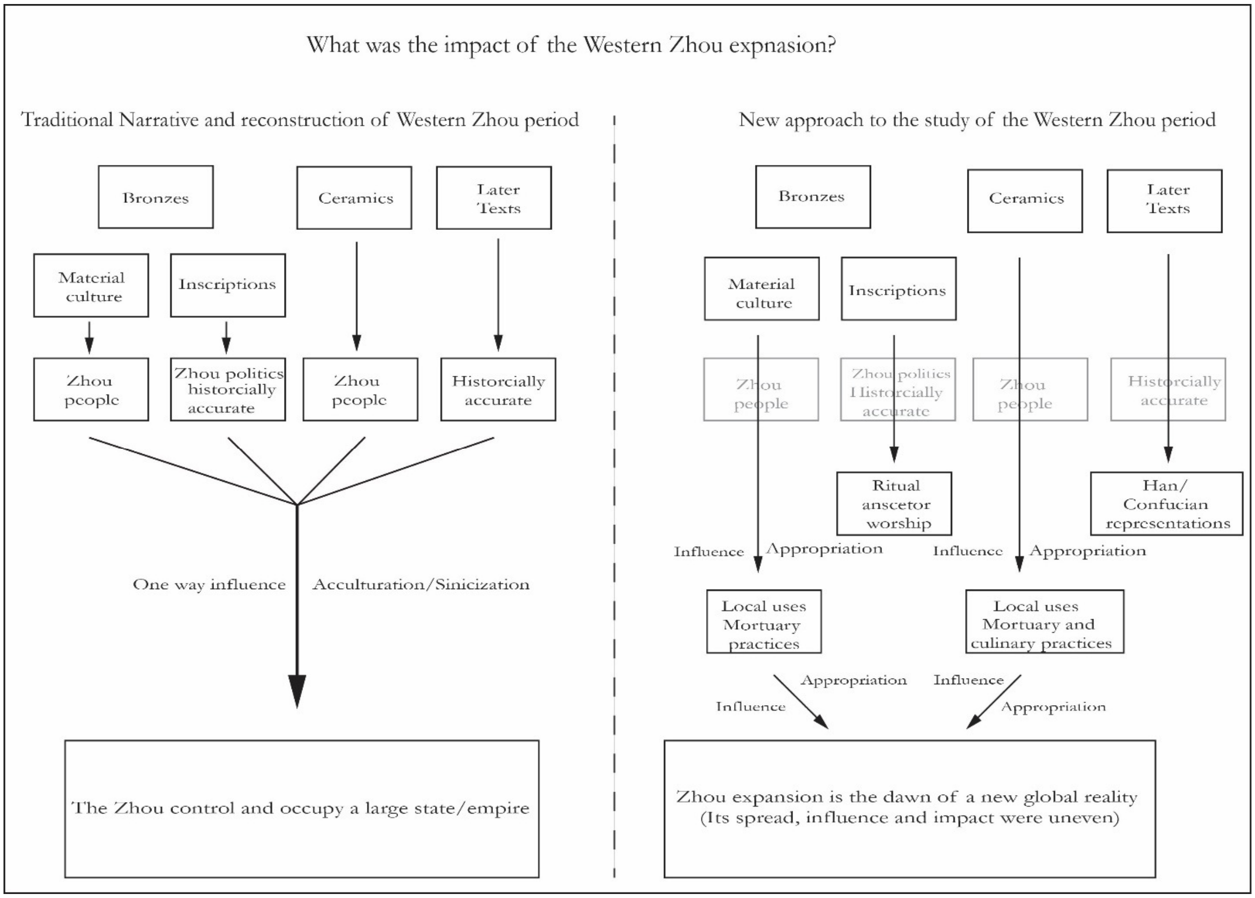


Figure 12-1- Traditional accounts (left) and a new approach (right) to the study of the impact of the Western Zhou expansion

With these ideas in mind the reader must now be asking: what was then the Western Zhou expansion? In chapter 2 I presented a number of previous reconstructions offered by scholars of this period, ranging from empire to feudal state and delegatory kin based bureaucratic polity, which have all shaped the way in which expansion was viewed. In the remaining few pages I propose to view the Western Zhou expansion, not as a single campaign of military conquest with varying degrees of success, but instead as a new period of contact and connectivity akin to that discussed in globalization studies.

There is of course more than one way to understand and employ globalization models in archaeological discourse. Elsewhere, Rowan Flad and I (Jaffe and Flad Forthcoming) have provided an in-depth discussion of the ways in which globalization theories are understood by contemporary scholars and how archaeologists and others scholars have employed the term in their studies of the past. We argued that a large number of studies have oversimplified globalization as a theoretical construct. For example several scholars use globalization as a unit of scale that denotes an unprecedented level of contact, trade and the movement of goods or ideas, but in essence do little more than employ globalization as little more a buzz word for long-distance interactions (e.g., Frank 1998; Harris 2007; Jones et al. 2011). Equally problematic are studies that uncritically attempt to find the beginnings, or initial stages of globalization in the pre-1492 era. i.e. when the eastern and Western hemispheres finally realized the other exited (e.g., Bayly 2004; Gunn 2003; Moore and Lewis 2009). These studies are potentially important for the identification of precursors and early foundation for the global development from the 16th century onwards. World systems theorists are primary consumers of globalization models, eager to its earliest hallmarks in the distant past (Chase-Dunn 1999; Chase-Dunn and Babones 2006; Gills and Thompson 2006; Waters 2001). Yet these studies uncritically designate almost any and all developments in the deeper past to being thresholds of globalization, such as the inception of agriculture or the peopling of the world (e.g., Clark 1997; Nederveen Pieterse 2004). In a sense these models view the entirety of the human past as being in varying degrees of proto-globalization, destined to achieve its apex in the form of full global connectivity. Consequently little is said on periods of de-globalization or the demise of global systems, an important theme in current research (Bello 2002; Bisley 2007; Ferguson 2005).

In contrast, a number of scholars have embraced the full potential of what contemporary scholars have seen in globalization as a theoretical framework to study societies, present past, as well as what they argue the hallmarks of the globalized era we live in is: that the world is connected in ever increasing ways, entangling politics, economies and societies in new ways to offer new possibilities for consumption for individuals, societies and nations. Yet the narrowing of the known world results in anything but the creation of uniformity and homogeneity. Instead, local identities spring up as they reinvent themselves in a world no longer dominated by the state and the traditions of their immediate communities (for review of these ideas see Jaffe and Flad Forthcoming).

A growing number of studies have in fact embraced the many hallmarks of globalization in their work on the past (Hopkins 2006; Hodes 2016; Bovin and Frachetti Forthcoming). Globalization is used here as a framework with which to analyze the movement of goods and ideas without the movement of peoples, (such as migration or colonization), or through predetermined power structures (e.g., LaBianca and Scham 2006). Globalization can be understood to be the creation of entangled networks of trade, economy and ritual to the point that a society is greatly invested and dependent upon these new connections. Jennings (2011), for example, views the entangled networks of Cahokia, Wari and early Mesopotamia as each reflecting unique instances of globalization in the ancient world. Cline (2014) has recently argued that the level of interdependence among the great polities of the Late Bronze Age Levant (Egypt, Mesopotamia, Mycenae and others), brought about a situation where when one collapsed the rest quickly followed.

The suitability of globalization as a nuanced approach with which to study the power dynamics among ancient cultures and cases of culture contact has not been missed either. Archaeologists have credited many ancient cases of colonial culture contact with unprecedented change in the development of regional trajectories. Yet while this might be the case in many, indeed most, new world cases of colonial contact, in others they are yet another event of culture contact in a long line of events and might not even the be most important ones (Liebmann 2008; Dommelen 2012). Instead, globalization can be utilized as a framework that allows the situation of episodes of culture contact, colonial or not, in long term trajectories of regional developments (Jaffe 2016). Similar to postcolonial critiques that emphasize the multi-directionality and the profound changes that are inherent in cases of culture contact, globalization can highlight the fact that colonizers are not a monolithic or single entity local cultures come in contact with. Hingley (2005) has noted, for example, that what we consider Roman identity was actually a reified elite culture preserved in writing, and that in effect to be Roman, elite or commoner, meant a lot of different things, which depending greatly on the part of the empire in discussion. Thus, the Roman colonizers who actively expanded the Empire's realm were somewhat different and grew to be even more different each time they arrived in a new location. Indeed, as noted by many contemporary scholars, globalization is not simply a process that results in homogenization, but somewhat paradoxically helps further create or elucidate local identities and differences. The 'glocal', as Robertson (1992) has called it, is the process by which local peoples engage with novel cultural elements in a new global reality to idiosyncratically emulate, incorporate or react against foreign and local power networks. Both Pitts (2008) and Gardner (2013) have argued for unique appropriations of Roman cultural elements in the provinces that were in a sense the outcomes of the tension of imperial Roman imposition and local traditions. Hodos (2009a; b) has used the glocal to overcome the limitation of some of the issues with hybridity as an element of cultural contact discussed in chapter 3. Instead of looking at the physical manipulation of the artifact itself, she observes the way in which it was used. Her study finds that the manner in which ancient Sicilians integrated Greek drinking cups into exiting traditions and practices was very different in various locals in the island (Hodos 2010). In a similar study I (Jaffe 2016) argued that Western Zhou bronzes where used in different ways in the region attributed to the Western Zhou state of Yan and should not be taken to reflect Zhou domination in this region (and see chapter 4).

Building on the finding of this work it becomes clear that goods, people, ideas and artifacts all moved and were engaged with in the new reality of the Zhou world. This new Zhou horizon, as some have called it (e.g., Rawson 2015), brought people and ideas to engage with artifacts, new and old, in a process which in turn continued to shape the local communities of practice that inhabited this ancient landscape. Globalization, as noted above, is viewed here as a process that is less about control and influence of an all-powerful center dominating a periphery, itself bent on unifying all under its dominion. Instead, it is the natural process by which the creation of new forms of connectivity, entanglements and cultural practices emerge from supra local interaction. In fact globalizing forces and the new forms of interaction between regions it brings, along with the movement of artifacts, ideas and people, all challenge the existing social practices of local communities and their social practices. Yet this interaction does not have a prescribed set of outcomes through which they consistently change the communities of practice they come in contact with.

As discussed in chapter 3, the comparison of local communities of practice, as opposed to changes in artifact styles and assemblages, provides for an approach to the study of culture contact which allows for the placement of material culture in new networks of localized social practices. This approach not only gets away from problematic models that identify material culture with specific ethnic groups but also renounces power dynamics that conflate control and power with material assemblages. Thus what I am proposing here is an approach that looks at the Western Zhou expansion not only as a physical expansion orchestrated by a centralized authority with va;rying degrees of success in terms of domination and control, but instead as a period of globalization; an expansion of people, ideas and artifacts, the results of which we must test to find its region-specific outcome and manifestation. Certainly, in many cases, the Western Zhou arrival was something totally new. In others, while inter-regional contacts existed before the Zhou, the scope of change and the scale movement of goods, people and ideas was unprecedented (Jaffe 2016). In this new globalizing Western Zhou reality, artifacts and the manner in which they were utilized must be contextually understood to reveal the regional specific – the glocal – ways, in which they were incorporated into existing life-ways.

While this might seem as an anti-climactic ending to this work, it should not. In fact it is a call for action: to reexamine how we approach the Zhou expansion and in doing so also its place in the historical narrative on the making of Chinese civilization. A call for action which begins with a stern statement: the finding of Western Zhou materials can no longer be seen as evidence of Zhou domination or even the arrival of a homogenous well-defined and pristine ethnic group of people. The global impact the Zhou initiated must be investigated in a contextual manner i.e. the regional-specific cases of cultural exchange and the process through which the Western Zhou expansion created new forms of localized social identities. With it, the story of China's past we can begin to finally tell will be deserving of its rich and multicultural past.

Appendix A – A Study of the Zhanqi Ma'an Jars

This document will briefly present the use-wear analysis I performed on the Zhanqi 战旗 site ceramic assemblage. I focus on one vessel in particular, the double handled *Ma'an* 马鞍 or stirrup shaped mouth jar (Fig A-1), the artifact most closely associated with the Siwa 寺洼 culture (1400-700 BCE). It should be noted that the Siwa culture is found outside the traditional Chinese center and as it is contemporaneous with the Shang and Zhou dynasties of the Yellow river plains it is viewed as a non-Chinese culture by most scholars.

The *Ma'an* jar is found, quite abundantly in Siwa sites and to date several thousand vessel have been recovered. Like many other Neolithic and Bronze Age cultures in China, Siwa culture material comes quite exclusively from burial contexts. Only a handful of non-mortuary *Ma'an* jars have been excavated. Thus the *Ma'an* jar, like most all other Siwa artifacts, is clearly an important funerary object and most likely played a central role in the burial ritual of Siwa people (and see chapter 6).

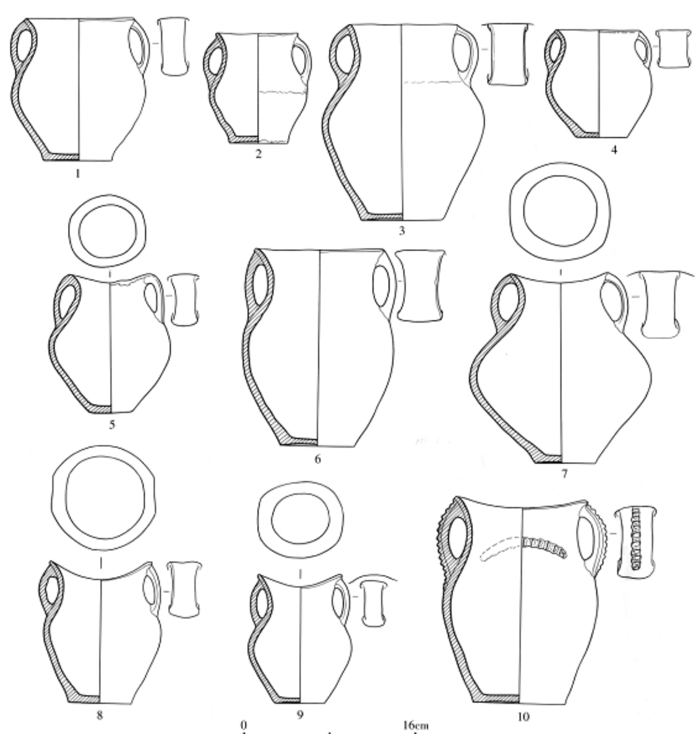


Figure A-1 - Saddle shaped rim Ma'an jars from Zhanqi (after Gansu 2014)

That said, as with most jars and jugs, the function of the M*a'an* jar is understood to be for storage, to hold grain or liquids. A number of excavators have noted soot and other burnt remains on and in the *Ma'an* jar, yet, to my knowledge, no one has proposed that these vessels were used for cooking. The most common cooking vessel in Chinese archaeology the *li* 鬲, or cooking tripod vessel is also found in Siwa culture sites (thought again mostly in graves) and is assumed to be the main cooking vessel of this period.

I was very graciously given access to the storage facility were the recently excavated vessels of the Siwa culture site from the Zhanqi are being held. A short report had only recently come out in 2012 and the archaeologists here are currently working on a more robust site report that should come out in the next few years. Alas use-wear analysis will not be part of it. The site yielded (or the excavators focused on) mostly burials, with over 60 graves fully excavated and cataloged. 10 small trash pits were found as well, containing some ceramic sherds, stone tools, bones and other artifacts. A number of the ceramic vessels have been restored.

I decided it might be best to begin with an examination of the non-mortuary context vessels and, (following the methodology laid out chapter 8), I began to examine the restored vessels from the trash pits In any case, after examining a number of these vessels I noticed a recurring pattern of soot and carbonization on most of them: a heavy patch of soot could be seen on most sides where the handles were attached and a distinct patch of soot on both of the opposite sides – were the rim is shaped like a saddle – can be see as well. This band of soot extends from about the height of the shoulder to the rim. The internal pattern however seemed to be reversed: the lips were covered with carbonization on the saddle shaped side but not on the side where the handles were, and in contrast a thick layer of carbonized food covered the entire portion of the saddle shaped side but again not on the side of the handles. The base was clean (and see images below):


Figure A-2 - Internal carbonization on upper portion of lip

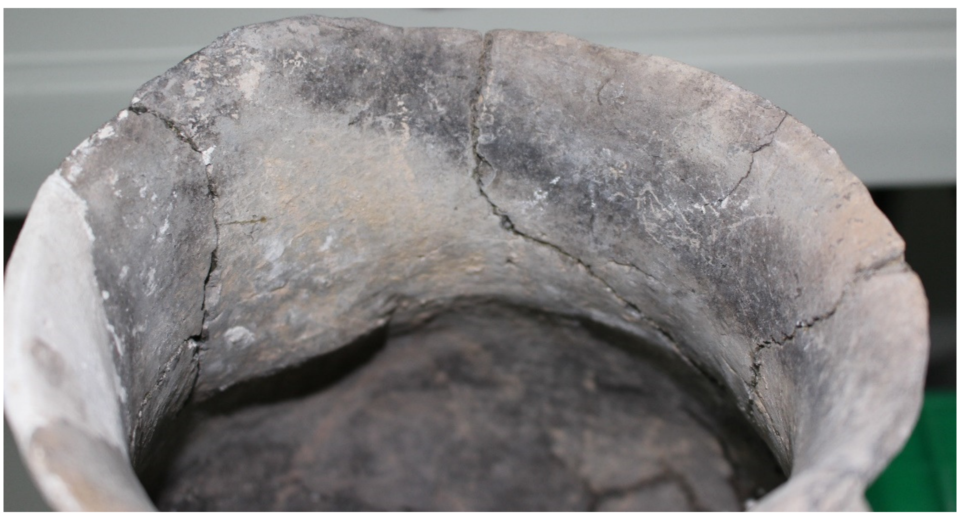


Figure A-3 - Internal carbonization on upper portion of lip


Figure A-4 - Internal carbonization of charred food – note very little on base and on upper part/handle side of pot


Figure A-5 - Close up of charred food remains

Figure A-6- Frontal image of Ma'an jar -note soot pattern (base is about 4.5 cm across)

Figure A-7 - Handle-sided view of Ma'an jar external soot pattern

Following these observations a composite drawing of this usewear was created:

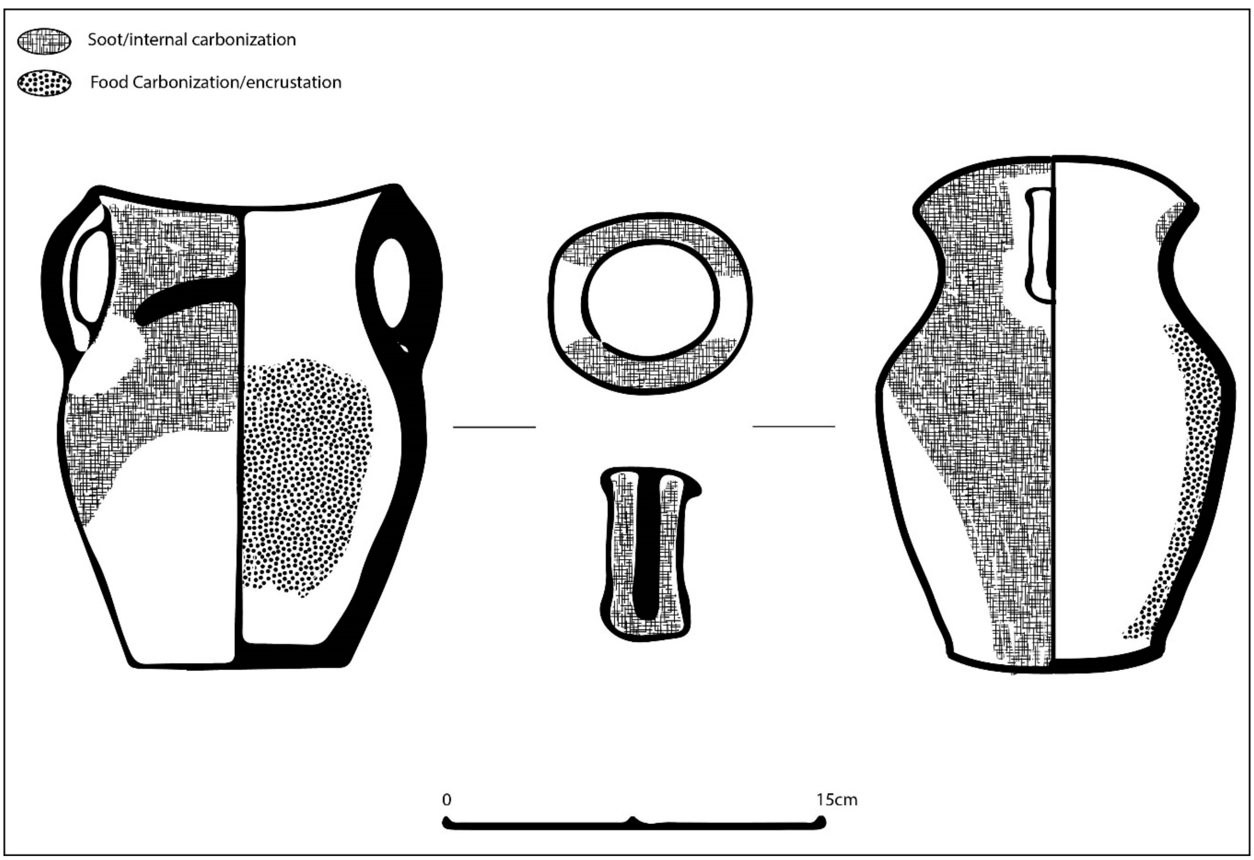


Figure A-8 -Schematic image of use-wear pattern

These patterns have not gone entirely unnoticed and scholars have in fact noted that these vessels are characterized by an uneven color on their surface. Colors range from orange to red, grey, brown and black. The pattern presented above, however, should not be confused with what I think most of these archaeologists are reporting on: the remains of the initial firing process such as the formation of fire clouds (as seen below).

Figure A-9 - Fire clouding or other production processes resulting in changes in paste color

Upon closer examination however it seems pretty clear that the lack of soot covering the external bottom half of the vessel, is actually, I think, an oxidized patch. Thus I believe that this is where the vessel was exposed to the most extreme heat levels, perhaps placed directly in or on a fire, and the other blackened patches as soot, which would have been burned off and no new soot could have be accumulated later on. This area is in fact different in color than the other patches on the vessels and is light grey or red. A schematic of these observation can be seen below:

Figure A-10 - Note difference in color on bottom part on right to that between the handle or the original color of the vessel.

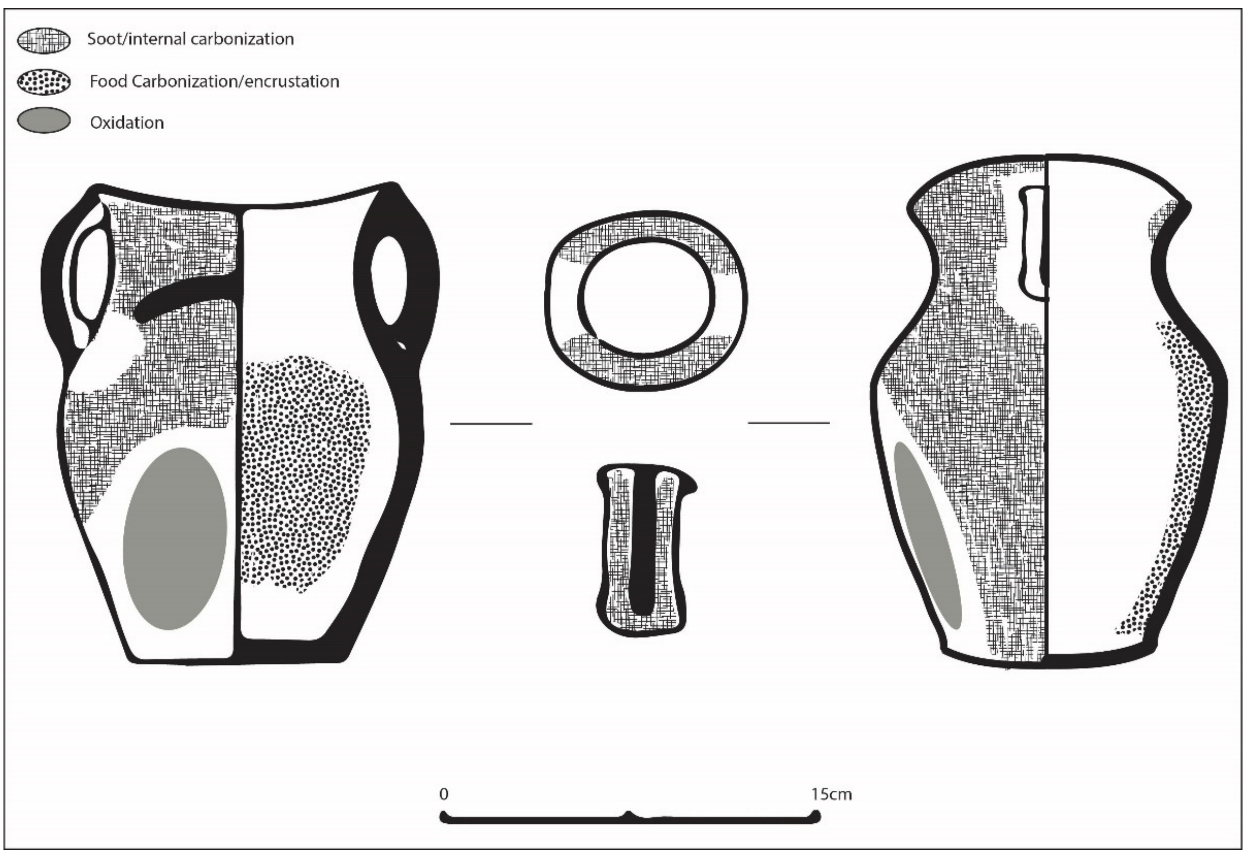


Figure A-11 - Updated schematic image of use-wear pattern

Now things finally started to make sense. The way I think these vessels were being used was that they were in fact placed in a fire to roast food (or something like that somewhere on the dry side of the cooking spectrum from wet to dry), but not by placing them in the fire base-first or up sided. Instead, they might have been laid on their side to roast food.

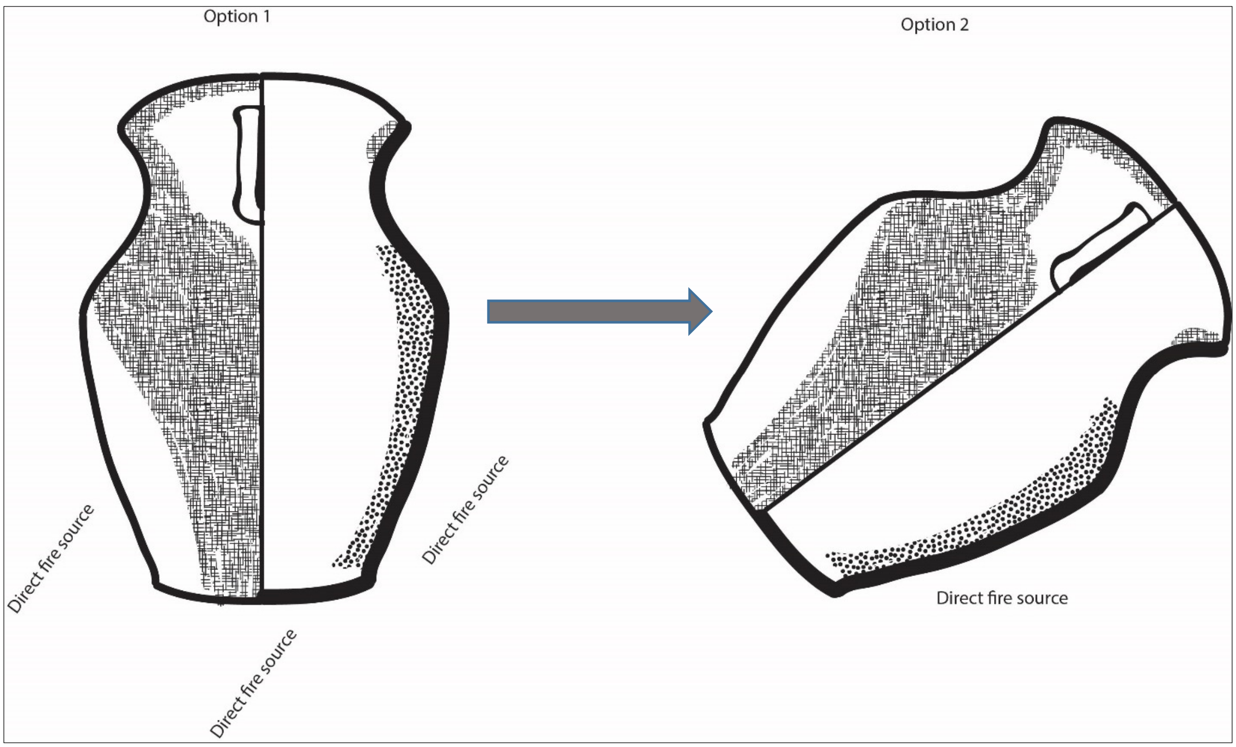


Figure A-12 - Schematic image of proposed Ma'an vessel use options

When roasting, the food would only fall on the side placed on the fire/coals and thus produce the carbonized patch on the same internal side of the vessel, but not on the side were food could not be roasted (because gravity etc..). It is possible that the side with the handles, i.e. where food was not placed, would still be covered with soot on its external side, as the fire the vessel was placed in was considerably hot creating a situation where char, ash and resin droplets would stick to it during the firing process. It would not come off however because this side would not be placed in the hottest part of the fire. For the same reason the internal bottom part of the vessel would not accumulate charred food remains because food would mostly be concentrated on its sides and not on the bottom. If placed this way, and used for dry mode cooking, the non-circular flat base of these vessel would have been adequate for this cooking mode (in contrast to the circular shaped openings found in many other cooking vessels). Finally as this pattern formed on both sides of the vessel it seems that no one side was preferred and over its lifetime both sides were used and would come to exhibit this usewear pattern.

Lastly, the unique shape of the mouth, the saddle shape, creates an ellipsoid opening ideal for this cooking method (see below). This not only increases the amount of food particles that can be cooked by maximizing the vessel internal space being used to roast food in the dry mode, but also allows for easy utensil access to turn the roasted food. If these jars would have had a standard circular shaped opening, less food could be placed on each side and the contents would have been harder to reach with a cooking utensal to be turned.

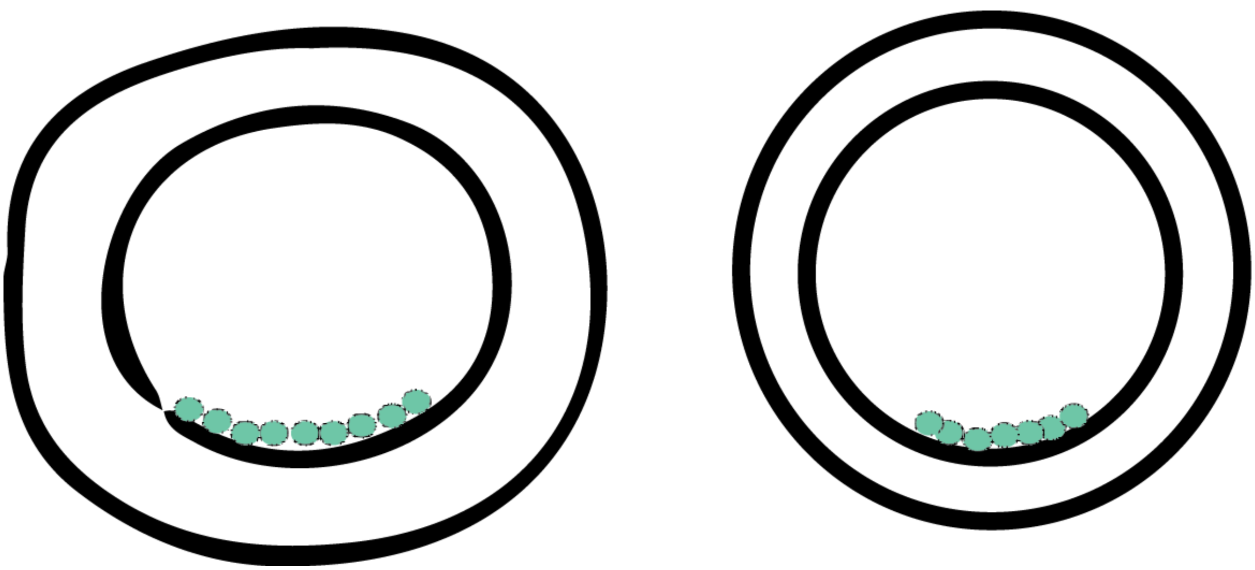


Figure A-13 - Ovular vs. circular shaped opening

The heavy soot and carbonized food remains should leave little doubt that these vessel were used for cooking. Still a closer look at the texture and material composition of the paste reveals what would be expected of a cooking vessel: they are highly tempered and rough textured and are quite brittle.

Figure A-14 - Enlarged sections from two typical Ma'an jars (X50)

I then decided to look at the mortuary material as well to find out whether or not this pattern would emerge there as well. The following pattern emerged and is summarized in the table below:

Graveyard

Has pattern	Different cooking use-wear pattern	No cooking usewear	N/D
43	13	95	17

Residential

Has pattern	Different cooking use-wear pattern	No cooking usewear	N/D
6	1	3	1

Ritual context

Has pattern	Different cooking use-wear pattern	No cooking usewear	N/D
0	2	4	1

Unknown context

Has pattern	Different cooking use-wear pattern	No cooking usewear	N/D
7	1	9	4

Table A-1 - Useawear remains on Zhanqi ceramics

While the vast majority of vessels that exhibited cooking use-wear signs did display the above pattern, the majority (2/3) of the cemetery *Ma'an* jars did not have any cooking related use-wear marks at all. It is quite possible that this is due to the fact that the vessels were designed to be used as grave goods and were custom made when a burial was performed. But even a cursory look reviled that the vast majority of all burial good and vessels were pretty beaten up revealing heavy chipped rims and 'well used' bases.

Figure A-15 - Example of chipped rim on an otherwise whole vessel

Those vessels that were used for cooking, while tempting to think that they contained a final funerary meal, perhaps consumed by the mourners, were so beaten up that they must have cooked more than single meal before they were interred with the dead.

Figure A-16 - Three examples of Ma'an jars from burial contexts exhibiting cooking usewear

Instead, it seems like certain shapes and sizes were used for cooking while others were not. Medium jars with flat bases and thick walls were used for cooking and small juglets and large jugs for other purposes (perhaps indeed holding liquids or grains). The picture below of 5 *Ma'an* jars found in a single grave represents the range and variation in size and shape of these vessels.

Figure A-17 - Five jars found in single grave. Note the difference in size and usewear pattern

Appendix B - Calculating *li* Vessel volume

In order to calculate the volume of the *li* vessels inspected in this work measurements were taken from all complete *li* vessels from TMQC, Boxing, Fanjia, Chengjiahe, Chenzhuang and Beishenma - a site that was note included in this work and was briefly introduced in chapter 10. Measurements were taken as follows[84]:

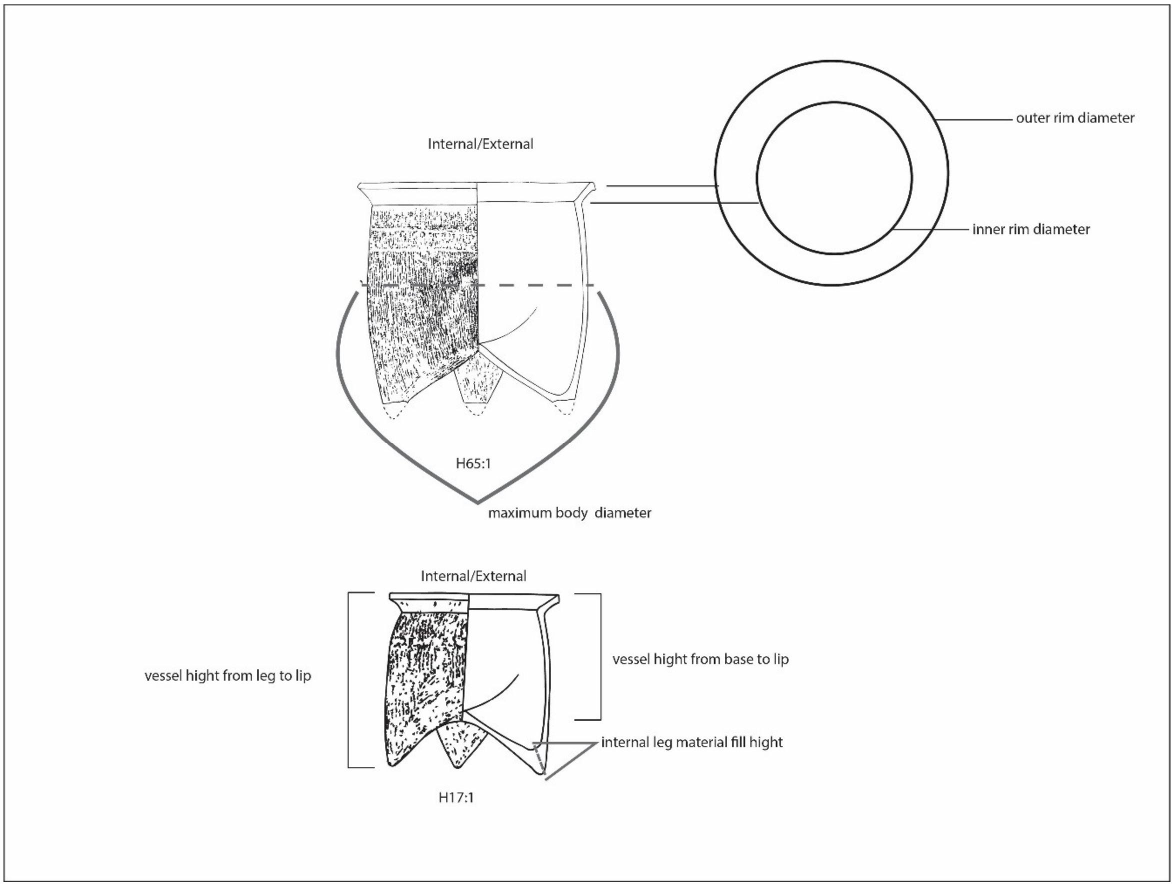


Figure B-1- Li vessel dimensions and parameters

Vessel volume was calculated by using a formula for a barrel [$(1/12)\ \pi\ h\ (2\ d_1 + d_2)$] and adjusted for the slope of the maximum body diameter to inner body dimeter. In this way, volume is calculated for each of the *li* vessels, which then can be observed to further understand the relationship between inner rim diameter and the found volume. The scatter plot can be seen below:

[84] I am very grateful to David Jaffe who aided with the calculation I this section

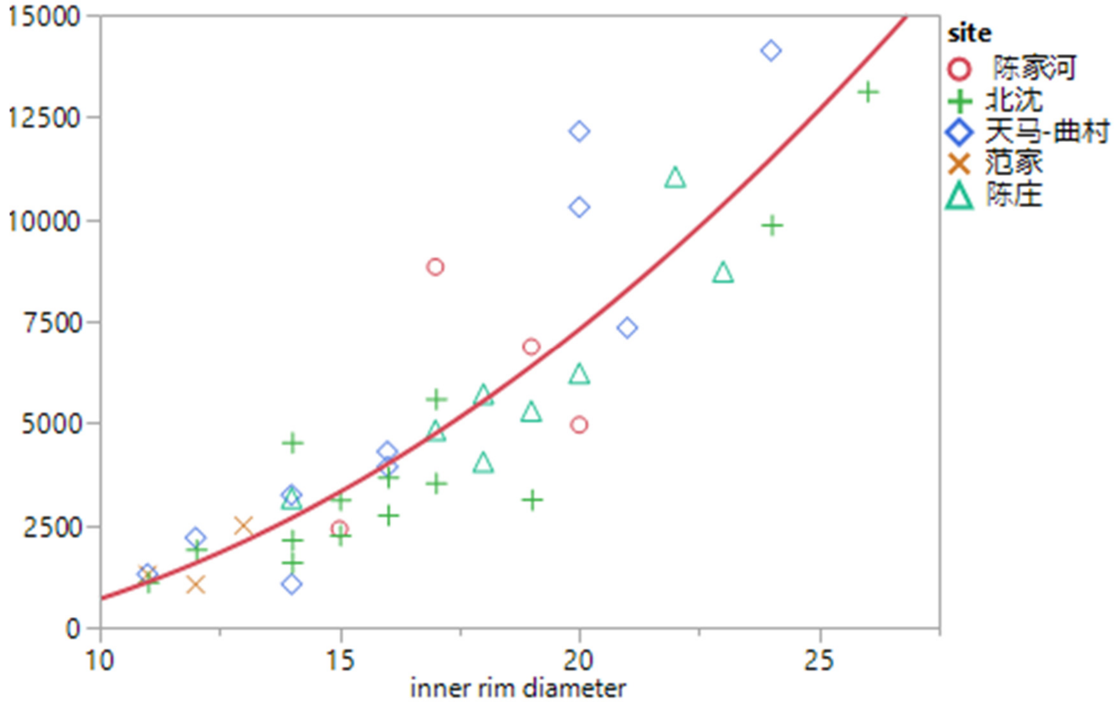


Figure B-2- Li vessel volume (in ml) as a function of Inner rim diameter (in cm)

The spread of the points seems to indicate a non linar connection and indeed a quadratic polynomial fit explains 83% of the variance ($R^2 = 0.8343$, $p<0.001$) with the following formula:

F(x) = -8033.296 + 745.65721 inner rim diameter + 31.242744*(inner rim diameter-16.5676)^2.*

While it is unfortunate that so few complete vessels could be restored from the assemblages in this study using this formula it is possible to predict vessel volume from the measurements of internal rim diameter sizes. Note that as the formula does a poor job predicting volume from larger rimmed vessels and indeed when the four vessels (as black dots below) are omitted ,a quadratic polynomial fit produces a result of R^2=0.8933, thus explaining almost 90% of the available variance.

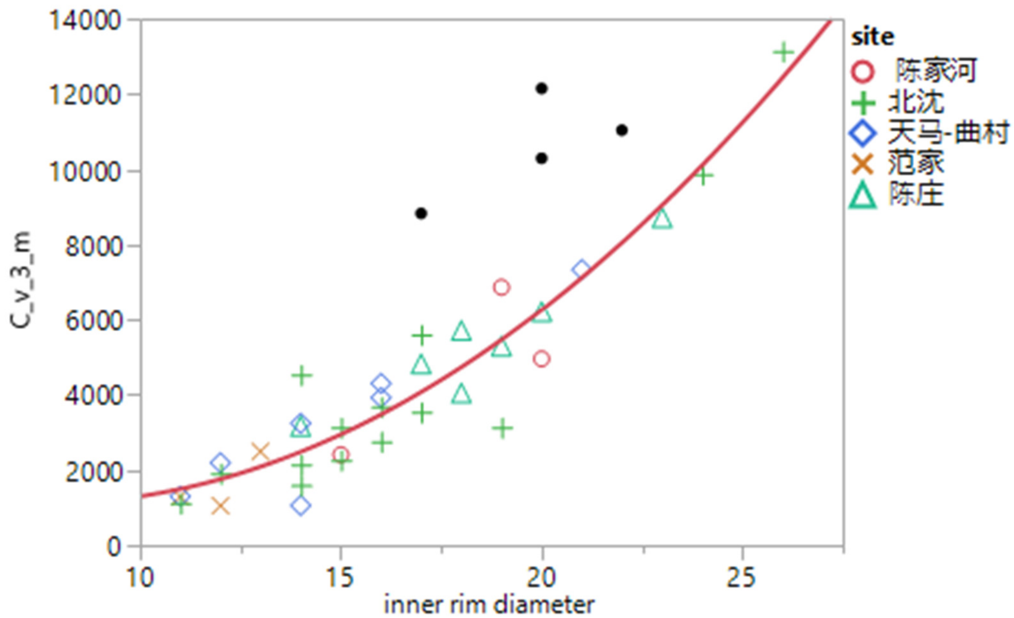


Figure B-3- Li vessel volume (in ml) as a function of Inner rim diameter (in cm) without outliers

These results remind us, nonetheless, that while a positive relationship is the norm between *li* vessel rim diameter and a vessel's volume it is far from a perfectly linear one. In fact, rim openings can remain somewhat consistent over 25cm even as the height of the vessels will (which, if it was available for each sherd, would have been an even better predictor of actual volume). This variation is not only a product of the physical restrictions on the production of smaller *li* vessels, but also of the variation that existed with this vessels types at the different sites of the this study. That being said as the 'error', so to speak, in terms of how well inner rim diameter predicts volume is on the lower margins. That is to say a lower number than what have been the actual volume of some vessels is given with this formula. Since the object of the study here is to identify the differences between sites in terms of *li* volumes, erroring on this side could be seen as a cautious approach where if difference are seen than perhaps they are masking an even larger one!

Bibliography

Abramovitch, Henry. 1991. "The Jerusalem Funeral as a Microcosm of the 'Mismeeting' between Religious and Secular Israelis." In *Tradition, Innovation, Conflict: Jewishness and Judaism in Contemporary Israel*, edited by Zvi Sobel and Benjamin Beit-Hallahmi, 71–99. Albany: State University of New York Press.

Adams, A. E., W. S. MacKenzie, and C. Guilford. 1984. *Atlas of Sedimentary Rocks under the Microscope*. New York: Wiley.

Algaze, Guillermo. 1993. *The Uruk World System: The Dynamics of Expansion of Early Mesopotamian Civilization*. Chicago: University of Chicago Press.

Allan, Sarah. 1984. "The Myth of the Xia Dynasty." *Journal of the Royal Asiatic Society of Great Britain and Ireland* 2: 242–56.

———. 1991. *The Shape of the Turtle: Myth, Art, and Cosmos in Early China*. New York: SUNY Press.

———. 2007. "Erlitou and the Formation of Chinese Civilization: Toward a New Paradigm." *Journal of Asiam Studies* 66 (2): 461.

Ambrose, Stanley H., Jane Buikstra, and Harold W. Krueger. 2003. "Status and Gender Differences in Diet at Mound 72, Cahokia, Revealed by Isotopic Analysis of Bone." *Journal of Anthropological Archaeology* 22 (3): 217–26.

An, Chengbang, Zhaodong Feng, and Lingyu Tang. 2004. "Environmental Change and Cultural Response between 8000 and 4000 Cal. Yr BP in the Western Loess Plateau, Northwest China." *Journal of Quaternary Science* 19 (6): 529–35.

An, Cheng-Bang, Lingyu Tang, Loukas Barton, and Fa-Hu Chen. 2005. "Climate Change and Cultural Response around 4000 Cal Yr B.P. in the Western Part of Chinese Loess Plateau." *Quaternary Research* 63 (3): 347–52.

Anderson, Eugene N. 1988. *The Food of China*. New Haven: Yale University Press.

———. 2005. *Everyone Eats: Understanding Food and Culture*. New York: New York University Press.

Anderson, Eugene N., and Chunhua Wang. 1987. "Changing Foodways of Chinese Immigrants in Southern California." *The Annals of the Chinese Historical Society of the Pacific Northwest* 1985-1986: 63–69.

Andersson, Johan Gunnar. 1925. *Preliminary Report on Archaeological Research in Kansu*. Peking.

———. 1943. "Researches into the Prehistory of the Chinese." *Bulletin of the Museum of Far Eastern Antiquities* 15: 7–304; plus 200 plates.

Antonaccio, Carla M. 2010. "(Re)defining Ethnicity: Culture, Material Culture, and Identity." In *Material Culture and Social Identities in the Ancient World*, edited by Shelley Hales and Tamar Hodos, 32–53. Cambridge: Cambridge University Press.

An, Zhimin. 1989. "Chinese Archaeology: Past and Present." *Archaeological Review from Cambridge* 8 (1): 12–18.

Appadurai, Arjun. 1981. "Gastro-Politics in Hindu South Asia." *American Ethnologist* 8 (3): 494–511.

———. 1986. "Introduction: Commodities and the Production of Value." In *The Social Life of Things: Commodities in Cultural Perspective*, edited by Arjun Appadurai, 3–63. Cambridge: Cambridge University Press.

———. 1988. "How to Make a National Cuisine: Cookbooks in Contemporary India." *Comparative Studies in Society and History* 30 (01): 3–24.

Aranda, Gonzalo, Sandra Montón-Subías, Margarita Sánchez-Romero, and Eva Alarcón. 2009. "Death and Everyday Life The Argaric Societies from Southeast Iberia." *Journal of Social Archaeology* 9 (2): 139–62.

Arnold, Bettina. 1998. "Review of Siân Jones The Archaeology of Ethnicity: Constructing Identities in the Past and Present. Routledge 1997." *Journal of Anthropological Research* 54: 271–73.

Arnold, Dean E. 1985. *Ceramic Theory and Cultural Process*. New Studies in Archaeology. Cambridge: Cambridge University Press.

Arthur, John W. 2009. "Understanding Household Population through Ceramic Assemblage Formation: Ceramic Ethnoarchaeology among the Gamo of Southwestern Ethiopia." *American Antiquity* 74 (1): 31–48.

Bagley, Robert. 1999. "Shang Archaeology." In *The Cambridge History of Ancient China*, edited by Michal Loewe and Edward L. Shaughnessy, 124–231. Cambridge: Cambridge University Press.

Balaam, David N., and Michael J. Carey, eds. 1981. *Food Politics: The Regional Conflict*. Montclair, N.J: Allanheld, Osmun.

Balazs, Etienne. 1964. *Chinese Civilization and Bureaucracy; Variations on a Theme*. New Haven: Yale University Press.

Barnard, Noel. 1959. "Some Remarks on the Authenticity of A Western Zhou Inscribed Bronze." *Monumenta Serica* 18: 213–44.

———. 1968. "The Incidence of Forgery Amongst Archaic Chinese Bronzes: Some Preliminary Notes." *Monumenta Serica* 27: 91–168.

———. 1974. "Mao Kung Ting : A Major Western Chou Period Bronze Vessel : A Rebuttal of a Rebuttal and Further Evidence of the Questionable Aspects of Its Authenticity." *Canberra*.

Barth, Fredrick. 1969. "Introduction." In *Ethnic Groups and Boundaries: The Social Organization of Culture Difference*, edited by Fredrick Barth, 9–38. Boston: Little, Brown.

Bawden, Garth. 2000. "Burial: The Deus Ex Machina of Social Transformation?" *Current Anthropology* 41 (1): 145–47.

Bayly, Chris A. 2004. *The Birth of the Modern World, 1780-1914: Global Connections and Comparisons*. Blackwell History of the World. Malden, MA: Blackwell Pub.

Beattie, John. 1971. *The Nyoro State*. Oxford; New York: Clarendon Press.

Beck, Lane Anderson. 1995. "Regional Cults and Ethnic Boundaries in 'Southern Hopewell.'" In *Regional Approaches to Mortuary Analysis*, edited by Lane Anderson Beck, 167–87. New York: Plenum Press.

Beckwith, Christopher I. 2009. *Empires of the Silk Road: A History of Central Eurasia from the Bronze Age to the Present*. Princeton: Princeton University Press.

Bell, David, and Gill Valentine. 1997. *Consuming Geographies: We Are Where We Eat*. New York: Routledge.

Bello, Walden F. 2002. *Deglobalization: New Ideas for Running the World's Economy*. Global Issues. New York: David Phillips Publishers.

Bennett, John W., Harvey L. Smith, and Herbert Passin. 1942. "Food and Culture in Southern Illinois--A Preliminary Report." *American Sociological Review* 7 (5): 645–60.

Ben-Shlomo, David, Itzhaq Shai, Alexander Zukerman, and Aren M. Maeir. 2008. "Cooking Identities: Aegean-Style Cooking Jugs and Cultural Interaction in Iron Age Philistia and Neighboring Regions." *American Journal of Archaeology* 112 (2): 225–46.

Bentley, G. Carter. 1987. "Ethnicity and Practice." *Comparative Studies in Society and History* 29 (01): 24.

Berg, Ina. 2008. "Looking through Pots: Recent Advances in Ceramics X-Radiography" 35 (5): 1177–88.

Bhabha, Homi K. 1994. *The Location of Culture*. New York: Routledge.

Binford, Lewis R. 1962. "Archaeology as Anthropology." *American Antiquity* 28 (2): 217–25.

———. 1971. "Mortuary Practices: Their Study and Potential." In *Approaches to the Social Dimensions of Mortuary Practices*, edited by James Allison Brown, 6–29. Memoirs of the Society for American Archaeology, no. 25. Washington: Society for American Archaeology.

Birch, Jennifer. 2012. "Coalescent Communities: Settlement Aggregation and Social Integration in Iroquoian Ontario." *American Antiquity* 77 (4): 646–70.

———. 2013. "Between Villages and Cities: Settlement Aggregation in Cross-Cultural Perspective." In *From Prehistoric Villages to Cities: Settlement Aggregation and Community Transformation*, edited by Jennifer Birch, 1–22. Routledge Studies in Archaeology 10. New York,: Routledge.

Bird, Douglas, and James O'Connell. 2006. "Behavioral Ecology and Archaeology." *Journal of Archaeological Research* 14: 143–88.

Bisley, Nick. 2007. *Rethinking Globalization*. New York: Palgrave Macmillan.

Blinman, Eric. 1989. "Potluck in the Protokiva: Ceramics and Ceremonialism." In *The Architecture of Social Integration in Prehistoric Pueblos*, edited by William D. Lipe and Michelle Hegmon, 113–24. Occasional Papers of the Crow Canyon Archaeological Center, no. 1. Cortez, Colo: Crow Canyon Archaeological Center.

Blitz, John H. 1993. "Big Pots for Big Shots: Feasting and Storage in a Mississippian Community." *American Antiquity* 58 (1): 80–96.

Bourdieu, Pierre. 1986. *Distinction: A Social Critique of the Judgement of Taste*. London: Routledge & Kegan Paul.

Boyd-Orr, John, and John Langton Gilks. 1931. *Studies of Nutrition: The Physique and Health of Two African Tribes*. London: H. M. Stationery off.

Boyd, Robert, and Peter J. Richerson. 1985. *Culture and the Evolutionary Process*. Chicago: University of Chicago Press.

———. 1987. "The Evolution of Ethnic Markers." *Cultural Anthropology* 2 (1): 65–79.

Brandt, J. Rasmus, Håkon Roland, and Marina Prusac, eds. 2015. *Death and Changing Rituals: Function and Meaning in Ancient Funerary Practices*. Studies in Funerary Archaeology, vol. 7. Philadelphia: Oxbow Books.

Brashier, Ken E. 1996. "Han Thanatology and the Division of Souls." *Early China* 21: 125–58.

Braun, David P. 1983. "Pots as Tools." In *Archaeological Hammers and Theories*, edited by Arthur S. Keene and James A. Moore, 107–34. Studies in Archaeology. New York: Academic Press.

Bray, Tamara L. 2003a. "Inka Pottery as Culinary Equipment: Food, Feasting, and Gender in Imperial State Design." *Latin American Antiquity* 14 (1): 3–28.

———. , ed. 2003b. *The Archaeology and Politics of Food and Feasting in Early States and Empires*. New York: Kluwer Academic/Plenum Press.

Bronitsky, Gordon, and Robert Hamer. 1986. "Experiments in Ceramic Technology: The Effects of Various Tempering Materials on Impact and Thermal-Shock Resistance." *American Antiquity* 51 (1): 89–101.

Brown, James Allison. 1981. "The Search for Rank in Prehistoric Burials." In *The Archaeology of Death*, edited by Robert Chapman, Ian Kinnes, and Klavs Randsborg, 25–37. New Directions in Archaeology. Cambridge: Cambridge University Press.

Brunson, Katherine. 2015. "Craft Specialization and Animal Products at the Longshan Period Sites of Taosi and Zhoujiazhuang, Shanxi Province, China." Los Angeles CA: UCLA.

Bullock, Peter N, A. Fedoroff, G. Stoops, and T. Tursina. 1985. *Handbook for Soil Thin Section Description*. England: Waine Research Publications.

Bunimovitz, Shlomo, and Zvi Lederman. 2009. "The Archaeology of Border Communities – Renewed Excavations at Tel Beth-Shemesh, Part 1: The Iron Age." *Near Eastern Archaeology* 72: 114–42.

Bunker, Emma C., Trudy S. Kawami, Katheryn M. Linduff, and En Wu. 1997. *Ancient Bronzes of the Eastern Eurasian Steppes: From the Arthur M. Sackler Collections*. New York: Arthur M. Sackler Foundation : Distributed by Harry N. Abrams.

Cai, Liang. 2014. *Witchcraft and the Rise of the First Confucian Empire*. Albany: SUNY Press.

Campbell, Roderick B. 2009. "Toward a Networks and Boundaries Approach to Early Complex Polities." *Current Anthropology* 50 (6): 821–48.

———. 2014a. *Archaeology of the Chinese Bronze Age: From Erlitou to Anyang*. Cotsen Institute of Archaeology Monographs, monograph 79. Los Angeles: Cotsen Institute of Archaeology Press.

———. 2014b. "Erligang: A Tale of Two Civilizations." In *Art and Archaeology of the Erligang Civilization*, edited by Kyle Steinke, 121–36. Princeton: P.Y. and Kinmay W. Tang Center for East Asian Art, Department of Art and Archaeology, Princeton University : in association with Princeton University Press.

Cannon, Aubrey. 1989. "The Historical Dimension in Mortuary Expressions of Status and Sentiment." *Current Anthropology* 30 (4): 437–58.

Caplan, Patricia. 1997. "Approaches to the Study of Food, Health and Identity." In *Food, Health, and Identity*, edited by Patricia Caplan, 1–31. New York: Routledge.

Carrasco, Michael. 2010. "From Field to Hearth : An Earthly Interpretation of Maya and Other Mesoamerican Creation Myths." In *Pre-Columbian Foodways: Interdisciplinary Approaches to Food, Culture, and Markets in Ancient Mesoamerica*, edited by John E. Staller and Michael Carrasco, 601–34. New York: Springer.

Carr, Christopher. 1995. "Mortuary Practices: Their Social, Philosophical-Religious, Circumstantial and Physical Determinants." *Journal of Archaeological Method and Theory* 2 (2): 105–200.

Chakrabarti, Dilip K. 2000. "Colonial Indology and Identity." *Antiquity* 74 (285): 667–661.

Chamberlain, Andrew. 2006. *Demography in Archaeology*. Cambridge Manuals in Archaeology. Cambridge: Cambridge University Press.

Champion. 1995. "Introduction." In *Centre and Periphery: Comparative Studies in Archaeology*, edited by Timothy C. Champion, 1–20. New York: Routledge.

Chang, Kwang-Chih. 1973. "Food and Food Vessels in Ancient China*." *Transactions of the New York Academy of Sciences* 35 (6 Series II): 495–520.

———. 1977a. "Ancient China." In *Food in Chinese Culture: Anthropological and Historical Perspectives*, edited by Kwang-Chih Chang, 23–52. New Haven: Yale University Press.

———. 1977b. "Chinese Archaeology since 1949." *The Journal of Asian Studies* 36 (4): 623–46.

———. , ed. 1977c. *Food in Chinese Culture: Anthropological and Historical Perspectives*. New Haven: Yale University Press.

———. 1977d. "Introduction." In *Food in Chinese Culture: Anthropological and Historical Perspectives*, edited by Kwang-chih Chang, 1–22. New Haven: Yale University Press.

———. 1980. *Shang Civilization*. New Haven: Yale University Press.

———. 1983a. *Art, Myth, and Ritual: The Path to Political Authority in Ancient China*. Cambridge, MA: Harvard University Press.

———. 1983b. "Sandai Archaeology and the Formation of States in Ancient China." In *The Origins of Chinese Civilization,* edited by David N Keightley, 459–522. Berkeley: University of California Press.

———. 1986a. *The Archaeology of Ancient China*. New Haven: Yale University Press.

———. 1986b. *The Archaeology of Ancient China*. 4th ed. New Haven: Yale University Press.

———. 1989. "Ancient China and Its Anthropological Significance." In *Archaeological Thought in America*, edited by C.C. Lamberg-Karlovsky, 155–66. New York: Cambridge University Press.

———. 2005. "The Rise of Kings and the Formation of City States." In *The Formation of Chinese Civilization: An Archaeological Perspective*, edited by Kwang-Chih Chang, 125–40. New Haven: Yale University Press.

Chapman, Robert W. 2003. "Death, Society and Archaeology: The Social Dimensions of Mortuary Practices." *Mortality* 8 (3): 305–12.

———. 2009. "Working with the Dead." In *Mortuary Practices and Social Identities in the Middle Ages: Essays in Burial Archaeology in Honour of Heinrich Härke*, edited by Duncan Sayer and Howard Williams, 23–37. Exeter: University of Exeter Press.

———. 2013. "Death, Burial and Social Representation." In *The Oxford Handbook of the Archaeology of Death and Burial*, edited by Sarah Tarlow and Liv N. Nilsson Stutz, 47–57. Oxford: Oxford University Press.

Chapman, Robert W., Ian Kinnes, and Klavs Randsborg, eds. 1981. *The Archaeology of Death*. New Directions in Archaeology. Cambridge: Cambridge University Press.

Chase-Dunn, Christopher. 1999. "Globalization: A World Systems Perspective." *Journal of World Systems Research* 5 (2): 187–215.

Chase-Dunn, Christopher K., and Salvatore J. Babones, eds. 2006. *Global Social Change: Historical and Comparative Perspectives*. Baltimore: The Johns Hopkins University Press.

Chen, Xingcan. 2009. "Archaeological Discoveries in the People's Republic of China and Their Contribution to the Understanding of Chinese History." *Bulletin of the History of Archaeology* 19 (2): 4-13.

Chifeng, International Collaborative Archaeological Research Project. 2011. *Settlement Patterns in the Chifeng Region*. Pittsburgh: University of Pittsburgh Center for Comparative Archaeology.

Childe, V. Gordon. 1929. *The Danube in Prehistory*. Oxford: Oxford University Press.

———. 1945. "4. Directional Changes in Funerary Practices During 50,000 Years." *Man* 45: 13–19.

Chrisomalis, Stephen, and Bruce G. Trigger. 2004. "Reconstructing Prehistoric Ethnicity: Problems and Possibilities." In *A Passion For the Past: Papers in Honour of James F. Pendergast*, edited by James Valliere Wright and Jean-Luc Pilon, 419–33. Gatineau: Musée canadien des civilisations.

Clark, Robert P. 1997. *The Global Imperative: An Interpretive History of the Spread of Humankind*. Boulder, Co: Westview Press.

Cline, Eric H. 2014. *1177 B.C.: The Year Civilization Collapsed*. Princeton: Princeton University Press.

Cohen, Anthony P. 1985. *The Symbolic Construction of Community*. New York: Tavistock Publications.

Cohen, David. 2001. *The Yueshi Culture, the Dongyi, and the Archaeology of Ethnicity in Early Bronze Age China*. Unpublished Phd. dissertation, Harvard University.

Cohen, Mark Nathan. 1977. *The Food Crisis in Prehistory: Overpopulation and the Origins of Agriculture*. New Haven: Yale University Press.

Cohen, Ronald. 1960. "The Structure of Kanuri Society."

———. 1967. "The Kanuri of Bornu." Madison Wisconsin: University of Wisconsin Madison Press.

Cook, Constance A. 1997. "Wealth and the Western Zhou." *Bulletin of the School of Oriental and African Studies* 60 (2): 253–94.

———. 2004. "Moonshine and Millet: Feasting and Purification Rituals in Ancient China." In *Of Tripod and Palate: Food, Politics and Religion in Traditional China*, edited by Roel Sterckx, 9–33. New York: Palgrave Macmillan.

Cooper, Eugene. 1982. "The Potlatch in Ancient China: Parallels in the Sociopolitical Structure of the Ancient Chinese and the American Indians of the Northwest Coast." *History of Religions* 22 (2): 103–28.

Costin, Cathy Lynne, and Timothy Earle. 1989. "Status Distinction and Legitimation of Power as Reflected in Changing Patterns of Consumption in Late Prehispanic Peru." *American Antiquity* 54 (4): 691–714.

Counihan, Carole, and Penny Van Esterik, eds. 2008. *Food and Culture: A Reader*. 2nd ed. New York: Routledge.

Crabtree, Pam J. 1990. “Zooarchaeology and Complex Societies: Some Uses of Faunal Analysis for the Study of Trade, Social Status, and Ethnicity.” *Archaeological Method and Theory* 2: 155–205.

Creel, Herrlee Glessner. 1936. “Bronze Inscriptions of the Western Chou Dynasty as Historical Documents.” *Journal of the American Oriental Society* 56 (3): 335–40.

———. 1949. *Confucius, the Man and the Myth*. New York: J. Day Co.

———. 1970. *The Origins of Statecraft in China*. Chicago: University of Chicago Press.

Crown, Patricia L., ed. 2000a. *Women & Men in the Prehispanic Southwest: Labor, Power & Prestige*. School of American Research Advanced Seminar Series. Santa Fe: SAR Press.

———. , ed. 2000b. “Women’s Role in Changing Cuisine in the Prehistoric American Southwest.” In *Women & Men in the Prehispanic Southwest: Labor, Power & Prestige*, 1st ed, 221–66. School of American Research Advanced Seminar Series. Santa Fe: SAR Press.

Cuéllar, Andrea M. 2013. “The Archaeology of Food and Social Inequality in the Andes.” *Journal of Archaeological Research* 21 (2): 123–74.

Curet, L. Antonio, and William J. Pestle. 2010. “Identifying High-Status Foods in the Archeological Record.” *Journal of Anthropological Archaeology* 29 (4): 413–31.

Cusick, James G. 1998. “Historiography of Acculturation: An Evaluation of Concepts and Their Application in Archaeology.” In *Studies in Culture Contact : Interaction, Culture Change, & Archaeology*, edited by James G. Cusick, 126–45. Carbondale: Southern Illinois University Press.

D’Altroy, Terence N. 1992. *Provincial Power in the Inka Empire*. Washington: Smithsonian Institution Press.

———. 2005. “Remaking the Social Landscape: Colonization in the Inka Empire.” In *The Archaeology of Colonial Encounters*, edited by Gill J. Stein, 263–96. Santa Fe: SAR Press.

D’Anna, Maria B. 2010. “The Ceramic Containers of Period VI A. Food Control at the Time of Centralisation.” In *Economic Centralisation in Formative States: The Archaeological Reconstruction of the Economic System in 4th Millennium Arslantepe*, edited by M. Frangipane, 167–91. Studi Di Preistoria Orientale (SPO), v. 3. Roma: Sapienza Università di Roma, Dipartimento di scienze storiche archeologiche e antropologiche dell’antichità.

D’Anna, Maria B., and Carolin Jauss. 2015. “Cooking at 4th Millennium BCE: Investigating the Social via the Material.” In *Commensality: From Everyday Food to Feast*, edited by Susanne Kerner, Cynthia Chou, Morten Warmind, Susanne Kerner, and Morten Warmind, 65–88. London: Bloomsbury Academic.

Daróczi-Szabó, László. 2004. “Animal Bones as Indicators of Kosher Food Refuse from 14th Century AD, Buda,Hungary.” In *Behaviour behind Bones: The Zooarchaeology of Ritual, Religion,* *Status and Identity*, edited by Sharyn Jones O'Day, Wim Neer, and Anton Ervynck, 252–61. Oxford: Oxbow Books.

Dawdy, Shannon Lee. 2010. "'A Wild Taste': Food and Colonialism in Eighteenth-Century Louisiana." *Ethnohistory* 57 (3): 389–414.

DeBoer, Warren R. 2001. "The Big Drink: Feast and Forum in the Upper Amazon." In *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics, and Power*, edited by Michael Dietler and Brian Hayden, 289–336. Washington: Smithsonian Institution Press.

DeBoer, Warren R, and Donald W. Lathrap. 1979. "The Making and Breaking of Shipibo-Conibo Ceramics." In *Ethnoarchaeology: Implications of Ethnography for Archaeology*, edited by Carol Kramer, 102–38. New York: Columbia University Press.

Denemark, Robert Allen, Jonathan Friedman, Barry K. Gills, and George Modelski, eds. 2000. *World System History: The Social Science of Long-Term Change*. New York: Routledge.

DeNiro, Michael J. 1987. "Stable Isotopy and Archaeology." *American Scientist* 75 (2): 182–91.

Di Cosmo, Nicola. 2002. *Ancient China and Its Enemies: The Rise of Nomadic Power in East Asian History*. Cambridge: Cambridge University Press.

Dietler, Michael, and Brian Hayden, eds. 2001. *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics, and Power*. Washington: Smithsonian Institution Press.

Dietler, Michael, and Ingrid Herbich. 1998. "Habitus, Techniques, Style: An Integrated Approach to the Social Understanding of Material Culture and Boundaries." In *The Archaeology of Social Boundaries*, edited by Miriam T. Stark, 232–63. Washington: Smithsonian Institution Press.

Dietler, Michael W. 2007. "Culinary Encounters: Food, Identity, and Colonialism." In *The Archaeology of Food and Identity*, edited by Katheryn C Twiss, 218–42. Occasional Paper, no. 34. Carbondale.: Center for Archaeological Investigations, Southern Illinois University Carbondale.

Dietler, Michael W. 2010. *Archaeologies of Colonialism: Consumption, Entanglement, and Violence in Ancient Mediterranean France.*. Berkeley: University of California Press.

Di Lernia, Savino, and Mary Anne Tafuri. 2013. "Persistent Deathplaces and Mobile Landmarks: The Holocene Mortuary and Isotopic Record from Wadi Takarkori (SW Libya)." *Journal of Anthropological Archaeology* 32 (1): 1–15.

Dobres, Marcia-Anne, and John E. Robb. 2000. "Agency in Archaeology: Paradigm or Platitude." In *Agency in Archaeology*, edited by Marcia-Anne Dobres and John E. Robb, 3–17. London: Routledge.

Dommelen, Peter. 2006. "Colonial Matters: Material Culture and Postcolonial Theory in Colonial Situations." In *Handbook of Material Culture*, edited by Christopher Y. Tilley, Webb Keane, Susanne Kuchler, Mike Rowlands, and Patrica Spyer, 104–24. London: SAGE.

Douglas, Mary. 1972. "Deciphering a Meal." *Daedalus* 101 (1): 61–81.

———. , ed. 1984. *Food in the Social Order: Studies of Food and Festivities in Three American Communities*. New York: Russell Sage Foundation.

Drake, F. S. 1940. "Ancient Pottery From Shantung." *Monumenta Serica* 4 (2): 383–405.

Drennan, Robert D. 2009. *Statistics for Archaeologists: A Common Sense Approach*. 2nd ed. New York: Springer.

Druc, Isabelle C. 2015. *Portable Digital Microscope: Atlas of Ceramic Pastes - Components, Texture and Technology*. Blue Mounds, WI: Deep University Press.

Dunnell, Robert C. 1989. "Aspects of the Application of Evolutionary Theory in Archaeology." In *Archaeological Thought in America*, edited by C.C. Lamberg-Karlovsky, 35–49. Cambridge: Cambridge University Press.

Durkheim, Émile. 1915. *The Elementary Forms of the Religious Life: A Study in Religious Sociology*. London: Macmillan.

Emberling, Geoff. 1997. "Ethnicity in Complex Societies: Archaeological Perspectives." *Journal of Archaeological Research* 5 (4): 295–344.

Evans-Pritchard, Edward E. 1940. *The Nuer: A Description of the Modes of Livelihood and Political Institutions of a Nilotic People*. Oxford: Clarendon Press.

Evershed, Richard P., Sebastian Payne, Andrew G. Sherratt, Mark S. Copley, Jennifer Coolidge, Duska Urem-Kotsu, Kostas Kotsakis, et al. 2008. "Earliest Date for Milk Use in the Near East and Southeastern Europe Linked to Cattle Herding." *Nature* 455 (7212): 528–31.

Falkenhausen, Lothar Von. 1993a. "Issues in Western Zhou Studies: A Review Article." *Early China* 18: 139–226.

———. 1993b. "On the Historiographical Orientation of Chinese Archaeology." *Antiquity* 67: 839–839.

———. 1993c. *Suspended Music: Chime-Bells in the Culture of Bronze Age China*. Berkeley: University of California Press.

———. 1995a. "Reflections on the Political Role of Spirit Mediums in Early China: The Wu Officials in the Zhou Li." *Early China* 20: 279–300.

———. 1995b. "The Regionalist Paradigm in Chinese Archaeology." In *Nationalism, Politics and the Practice of Archaeology*, edited by Philip L. Kohl and Clare Fawcett, 198–217. Cambridge: Cambridge University Press.

———. 1996. Review of *Review of Monumentality in Early Chinese Art and Architecture*, by Wu Hung. *Early China* 21: 183–99.

———. 1999a. "Late Western Zhou Taste." *E ́tudes Chinoises* 18: 134–78.

———. 1999b. “Su Bingqi.” Edited by Tim Murry. *The Great Archaeologists*. Encyclopedia of Archaeology. Santa Barbara: ABC-CLIO.

———. 1999c. “The Waning of the Bronze Age: Material Culture and Social Developments, 770-481 BC.” In *The Cambridge History of Ancient China*, edited by Michal Loewe and Edward L. Shaughnessy, 450–544. Cambridge: Cambridge University Press.

———. 2001a. “The Use and Significance of Ritual Bronzes in the Lingnan Region During the Eastern Zhou Period.” *Journal of East Asian Archaeology* 3 (1): 193–236.

———. 2001b. “Shangma: Demography and Social Differentiation in a Late Bronze Age Community in North China.” *Journal of East Asian Archaeology* 3 (3): 91–172.

———. 2003. “The External Connections of Sanxingdui.” *Journal of East Asian Archaeology* 5 (1): 191–245.

———. 2004. “Mortuary Behavior in Pre-Imperial Qin: A Religious Interpretation.” In *Religion and Chinese Society*, edited by John Lagerwey, 1:109–72. Hong Kong: Chinese University Press.

———. 2006. *Chinese Society in the Age of Confucius (1000-250 BC): The Archaeological Evidence*. Los Angeles: Cotsen Institute of Archaeology, University of California.

———. 2008a. “Archaeological Perspectives on the Philosophicization of Royal Zhou Ritual.” In *Perceptions of Antiquity in Chinese Civilization*, edited by Dieter Kuhn and Helga Stahl, 135–75. Würzburger Sinologische Schriften. Heidelberg: Edition Forum.

———. 2008b. “Stages in the Development of ‘Cities’ in Pre-Imperial China.”.” In *The Ancient City: New Perspectives on Urbanism in the Old and New World*, edited by Joyce Marcus and Jeremy A. Sabloff, 209–28. Santa Fe: SAR press.

———. 2011. “The Royal Audience and Its Reflections in Western Zhou Bronze Inscriptions.” In *Writing & Literacy in Early China: Studies from the Columbia Early China Seminar*, edited by Feng Li and David Prager Branner, 239–70. Seattle: University of Washington Press.

———. 2013. “Archaeology and the Chinese Lineage.” In *The Sinologists of the World on the Jubilee of Stanislaw Kuczera (In Russian)n*, 119–37. Moscow: Institut Vostokovendenila Rossisokoy Akademii Nauk.

Falkenhausen, Lothar Von, and Gideon Shelach. 2013. “Introduction: Archaeological Perspectives on the Qin.” In *Birth of an Empire The State of Qin Revisited*, edited by Yuri Pines, Gideon Shelach, Lothar Von Falkenhausen, and Robin D.S. Yates, 37–52. Berkeley: University of California Press.

Fang, Hui. 2013. “The Eastern Territories of the Shang and Western Zhou: Military Expansion and Cultural Assimilation.” In *A Companion to Chinese Archaeology*, edited by Anne P. Underhill, 473–94. Malden, MA: Wiley-Blackwell.

Fang, Hui, Gary M. Feinman, and Linda M. Nicholas. 2015. “Imperial Expansion, Public Investment, and the Long Path of History: China’s Initial Political Unification and Its Aftermath.” *Proceedings of the National Academy of Sciences* 112 (30): 9224–29.

Feathers, James K. 1989. “Effects of Temper on Strength of Ceramics: Response to Bronitsky and Hamer.” *American Antiquity* 54 (3): 579–88.

Feinman, Gary M., Linda M. Nicholas, and Fang Hui. 2010. “The Imprint of China’s First Emperor on the Distant Realm of Eastern Shandong.” *Proceedings of the National Academy of Sciences* 107 (11): 4851–56.

Ferguson, Niall. 2005. “Sinking Globalization.” *Foreign Affairs* 85 (7): 64–77.

Fischler, Claude. 1988. “Food, Self and Identity.” *Social Science Information* 27 (2): 275–92.

Fiskesjö, Magnus, and Xingcan Chen. 2004. *China Before China: Johan Gunnar Andersson, Ding Wenjiang, and the Discovery of China’s Prehistory. Bilingual in English and Chinese*. Bilingual ed. Museum of Far Eastern Antiquities monograph series ; Östasiatiska museets monografiserie, no. 15. Stockholm: Museum of Far Eastern Antiquities.

Fitzgerald - Huber, Louisa G. 1995. “Qijia and Erlitou: The Question of Contacts with Distant Cultures.” *Early China* 20: 17–68.

Flad, Rowan K. 2001. “Ritual or Structure? Analysis of Burial Elaboration at Dadianzi, Inner Mongolia.” *Journal of East Asian Archaeology* 3 (3): 23–51.

———. 2008. “Divination and Power: A Multi-Regional View of the Development of Oracle Bone Divination in Early China.” *Current Anthropology* 49 (3): 403–37.

———. 2011. *Salt Production and Social Hierarchy in Ancient China: An Archaeological Investigation of Specialization in China’s Three Gorges*. Cambridge: Cambridge University Press.

Flad, Rowan K., and Pochan Chen. 2013. *Ancient Central China: Centers and Peripheries along the Yangzi River*. Case Studies in Early Societies. Cambridge: Cambridge University Press.

Forde, Cyril Daryll. 1946. “Rural Economies.” In *The Economics of a Tropical Dependency*, edited by Margery Perham and Cyril Daryll Forde, 119–79. London: Published under the auspices of Nuffield College by Faber and Faber.

Fortes, M., and S. L. Fortes. 1936. “Food in the Domestic Economy of the Tallensi.” *Africa: Journal of the International African Institute* 9 (2): 237–76.

Fowler, Chris. 2004. *The Archaeology of Personhood: An Anthropological Approach*. Themes in Archaeology. London: Routledge.

———. 2013. “Identities in Transformation: Identities, Funerary Rites, and the Mortuary Process.” In *The Oxford Handbook of the Archaeology of Death and Burial*, edited by Liv N. Stutz and Sarah Tarlow, 511–26. Oxford: Oxford University Press.

Frank, Andre Gunder. 1998. *ReORIENT*. Berkeley: University of California Press.

Franklin, Maria. 2001. “The Archaeological and Symbolic Dimensions of Soul Food: Race, Culture and Afro-Virginian Identity.” In *Race and the Archaeology of Identity*, edited by Charles E. Orser, 88–107. Foundations of Archaeological Inquiry. Salt Lake City: University of Utah Press.

Freedman, Maurice. 1966. *Chinese Lineage and Society: Fukien and Kwangtung*. London School of Economics. Monographs on Social Anthropology, no. 33. London: Humanities Press.

Gao, Huazhong, Cheng Zhu, and Weifeng Xu. 2007. "Environmental Change and Cultural Response around 4200 Cal. Yr BP in the Yishu River Basin, Shandong." *Journal of Geographical Sciences* 17 (3): 285–92.

Gardner, Andrew. 2013. "Thinking about Roman Imperialism: Postcolonialism, Globalisation and Beyond?" *Britannia* 44: 1–25.

Gennep, Arnold van. 1960. *The Rites of Passage*. Chicago: University of Chicago Press.

Gibson, Alex M., and Ann Woods. 1997. *Prehistoric Pottery for the Archaeologist*. 2nd ed. London ; Washington: Leicester University Press.

Gillespie, Susan D. 2001. "Personhood, Agency, and Mortuary Ritual: A Case Study from the Ancient Maya." *Journal of Anthropological Archaeology* 20 (1): 73–112.

Gills, Barry K., and William R. Thompson, eds. 2006. *Globalization and Global History*. London: Routledge.

Goldenberg, Robert. 1991. "The Place of the Sabbath in Rabbinic Judaism." In *The Sabbath in Jewish and Christian Traditions*, edited by Tamara Cohn Eskenazi, Daniel J. Harrington, and William H. Shea, 31–44. New York: Crossroad.

Goldstein, Lynn G. 1980. *Mississippian Mortuary Practices*. Scientific Papers 4. Evanston, Illinois: Northwestern University archaeological Program.

Goody, Jack. 1982. *Cooking, Cuisine, and Class: A Study in Comparative Sociology*. Themes in the Social Sciences. Cambridge: Cambridge University Press.

Gopher, Avi, and Estelle Orrelle. 1995. "New Data onBurials on the Pottery Neolithic Period (Sixth-Fifth Millennium BC) in Israel." In *The Archaeology of Death in the Ancient Near East*, edited by Anthony Green and Stuart Campbell, 24–28. Oxbow Monograph 51. Oxford: Oxbow Books.

Gosden, Chris. 2001. "Postcolonial Archaeology: Issues of Culture, Identity, and Knowledge." In *Archaeological Theory Today,* edited by Ian Hodder, pp. 241-261. Polity Press, Oxford.

———. 2004a. *Archaeology and Colonialism: Cultural Contact from 5000 BC to the Present*. Cambridge: Cambridge University Press.

———. 2004b. "The Past and Foreign Countries: Colonial and Post-Colonial Archaeology and Anthropology." In *A Companion to Social Archaeology*, edited by Lynn Meskell and Robert W. Preucel, 161–78. Oxford: Blackwell publishing.

Gosselain, Olivier P. 1992. "Bonfire of the Enquiries. Pottery Firing Temperatures in Archaeology: What For?" *Journal of Archaeological Science* 19 (3): 243–59.

Graff, Sarah R., and Enrique Rodríguez-Alegría, eds. 2012. *The Menial Art of Cooking: Archaeological Studies of Cooking and Food Preparation*. Boulder, CO: University Press of Colorado.

Graham, A. C. 1986. *Yin-Yang and the Nature of Correlative Thinking*. Singapore: Institute of East Asian Philosophies, National University of Singapore.

———. 1989. *Disputers of the Tao: Philosophical Argument in Ancient China*. La Salle, Ill: Open Court.

Guedes, Jade d'Alpoim. 2011. "Millets, Rice, Social Complexity, and the Spread of Agriculture to the Chengdu Plain and Southwest China." *Rice* 4 (3-4): 104–13.

Gumerman, George I. 1997. "Food and Complex Societies." *Journal of Archaeological Method and Theory* 4 (2): 105–39.

———. 2010. "Big Hearths and Big Pots: Moche Feasting on the North Coast of Peru." In *Inside Ancient Kitchens: New Directions in the Study of Daily Meals and Feasts*, edited by Elizabeth Klarich, 111–32. Boulder: University Press of Colorado.

Gunn, Geoffrey C. 2003. *First Globalization: The Eurasian Exchange, 1500 to 1800.*. Lanham, Md: Rowman & Littlefield.

Guo, Dashun. 1996. "Lower Xiajiadian Culture." In *The Archaeology of Northeast China*, edited by Sarah M Nelson, 147–81. London: Routledge.

Guo, Yuanyuan, Duowen Mo, Longjiang Mao, Shougong Wang, and Shuicheng Li. 2013. "Settlement Distribution and Its Relationship with Environmental Changes from the Neolithic to Shang-Zhou Dynasties in Northern Shandong, China." *Journal of Geographical Sciences* 23 (4): 679–94.

Haaland, Randi. 2007. "Porridge and Pot, Bread and Oven: Food Ways and Symbolism in Africa and the Near East from the Neolithic to the Present." *Cambridge Archaeological Journal* 17 (02): 165–82.

Haapanen, Minna. 2005. *From a Community to Communities of Practice : The Late Shang Dynasty Site of Miaopu Locus North at Anyang, Henan Province, China*. Unpublished PhD, Los Angeles CA: UCLA.

Haas, Jonathan M.1982. *The Evolution of the Prehistoric State*. New York: Columbia University Press.

——— M. 1997. *Ethnic Identity in Greek Antiquity*. Cambridge: Cambridge University Press.

Hally, David J. 1983. "Use Alteration of Pottery Vessel Surfaces: An Important Source of Evidence for the Identification of Vessel Function." *North American Archaeologist* 4 (1): 3–26.

———. 1986. "The Identification of Vessel Function: A Case Study from Northwest Georgia." *American Antiquity* 51 (2): 267–95.

Hardy, Grant. 1999. *Worlds of Bronze and Bamboo: Sima Qian's Conquest of History*. New York: Columbia University Press.

Härke, Heinrich. 2001. “Cemeteries as Places of Power.” In *Topographies of Power in the Early Middle Ages*, edited by Mayke De Jong, F. Theuws, and Carine van Rhijn, 9–30. The Transformation of the Roman World, v. 6. Leiden ; Boston: Brill.

———. 2007. “Ethnicity Race and Migration in Mortuary Archaeology: An Attempt at a Short Answer.” In *Anglo-Saxon Studies in Archaeology and History 14: Early Medieval Mortuary Practices*, edited by Sarah Semple and Howard Williams, 12–18. Oxford: Oxford University Committee for Archaeology.

———. 2014. “Grave Goods in Early Medieval Burials: Messages and Meanings.” *Mortality* 19 (1): 41–60.

Harrington, Nicola. 2013. *Living with the Dead: Ancestor Worship and Mortuary Ritual in Ancient Egypt*. Oxford: Oxbow Books.

Harris, Anthea, ed. 2007. *Incipient Globalization? Long-Distance Contacts in the Sixth Century*. BAR International Series 1644. Oxford: Archaeopress.

Harris, Marvin. 1985. *Good to Eat: Riddles of Food and Culture*. New York: Simon and Schuster.

Harris, Marvin, and Eric B. Ross, eds. 1987. *Food and Evolution: Toward a Theory of Human Food Habits*. Philadelphia: Temple University Press.

Harris, Oliver J. T. 2012. “(Re)assembling Communities.” *Journal of Archaeological Method and Theory* 21 (1): 76–97.

Harry, Karen, and Liam Frink. 2009. “The Arctic Cooking Pot: Why Was It Adopted?” *American Anthropologist* 111 (3): 330–43.

Harry, Karen G., Lisa Frink, Brendan O’Toole, and Andreas Charest. 2009. “How to Make an Unfired Clay Cooking Pot: Understanding the Technological Choices Made by Arctic Potters.” *Journal of Archaeological Method and Theory* 16 (1): 33–50.

Hastorf, Christine A. 1991. “Gender, Space, and Food in Prehistory.” In *Engendering Archaeology: Women and Prehistory*, edited by Joan M. Gero and Margaret Wright Conkey, 132–59. Cambridge: Blackwell.

Hauck-Lawson, Annie S. 1998. “When Food Is the Voice: A Case Study of a Polish-American Woman.” *Journal for the Study of Food and Society* 2 (1): 21–28.

Hawkes, Christopher. 1954. “Archaeological Theory and Method: Some Suggestions from the Old World.” *American Anthropologist* 56 (2): 155–68.

Hayden, Brian. 2001. “Fabulous Feasts: A Prolegomenon to the Importance of Feasting.” In *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics, and Power*, edited by Michael Dietler and Brian Hayden, 23–64. Washington: Smithsonian Institution Press.

Heilen, Michael, ed. 2012. *Uncovering Identity in Mortuary Analysis: Community-Sensitive Methods for Identifying Group Affiliation in Historical Cemeteries*. Walnut Creek: Left Coast Press.

Hein, Anno, Noémi S. Müller, Peter M. Day, and Vassilis Kilikoglou. 2008. "Thermal Conductivity of Archaeological Ceramics: The Effect of Inclusions, Porosity and Firing Temperature." *Thermochimica Acta* 480 (1–2): 35–42.

Hendon, Julia A. 1996. "Archaeological Approaches to The Organization of Domestic Labor: Household Practice and Domestic Relations." *Annual Review of Anthropology* 25 (1): 45–61.

Henrickson, Elizabeth F., and Mary M. A. McDonald. 1983. "Ceramic Form and Function: An Ethnographic Search and an Archeological Application." *American Anthropologist* 85 (3): 630–43.

Heron, Carl, and Richard P. Evershed. 1993. "The Analysis of Organic Residues and the Study of Pottery Use." *Archaeological Method and Theory* 5: 247–84.

Hertz, Robert. 1960. *Death & The Right Hand*. Glencoe, Ill: Free Press.

Hildebrand, John A, and Melissa B. Hagstrum. 1999. "New Approaches to Ceramic Use and Discard: Cooking Pottery from the Peruvian Andes in Ethnoarchaeological Perspective." *Latin American Antiquity* 10 (1): 25–46.

Hingley, Richard. 2005. *Globalizing Roman Culture: Unity, Diversity and Empire*. New York: Routledge.

Hodder, Ian. 1978. "Simple Correlation between Material Culture and Society: A Review." In *The Spatial Organization of Culture*, edited by Ian Hodder. Pittsburgh: University of Pittsburgh Press.

———. 1982. *Symbolic and Structural Archaeology,* Cambridge: Cambridge University Press.

———. 2012. *Entangled: An Archaeology of the Relationships between Humans and Things*. Malden, MA: Wiley-Blackwell.

Hodos, Tamar. 2009a. "Colonial Engagements in the Global Mediterranean Iron Age." *Cambridge Archaeological Journal* 19 (02): 221–41.

———. 2009b. "Local and Global Perspectives in the Study of Social and Cultural Identities." In *Material Culture and Social Identities in the Ancient World*, edited by Shelley Hales and Tamar Hodos, 3–31. Cambridge: Cambridge University Press.

———. 2010. "Globalization and Colonization: A View from Iron Age Sicily." *Journal of Mediterranean Archaeology* 23 (1): 81–106.

Hopkins, Antony G., ed. 2006. *Global History: Interactions between the Universal and the Local*. Basingstoke: Palgrave Macmillan.

Hsu, Chou-yun. 1965. *Ancient China in Transition: An Analysis of Social Mobility, 722-222 B.C.* Stanford Studies in the Civilizations of Eastern Asia. Stanford: Stanford University Press.

———. 1980. *Han Agriculture: The Formation of Early Chinese Agrarian Economy, 206 B.C.-A.D. 220*. Seattle: University of Washington Press.

———. 1999. "The Spring and Autumn Period." In *The Cambridge History of Ancient China*, edited by Michal Loewe and Edward L. Shaughnessy, 545–86. Cambridge: Cambridge University Press.

Hsu, Chou-yun, and Katheryn M. Linduff. 1988. *Western Chou Civilization*. New Haven: Yale University Press.

Huang, Tsui-mei. 2004. "Gender Differentiation in Jin State Jade Regulations." In *Gender and Chinese Archaeology*, edited by Katheryn M. Linduff and Yan Sun, 137–60. Lanham, MD: Altamira Press.

Hu, Di. 2013. "Approaches to the Archaeology of Ethnogenesis: Past and Emergent Perspectives." *Journal of Archaeological Research* 21 (4): 371–402.

Hudson, john C. 1977. "Theory and Methodology in Comparative Frontier Studies." In *The Frontier: Comparative Studies*, edited by David H. Miller and Jerome O. Steffen, 11–31. Norman: University of Oklahoma Press.

Hulsewé, A. F. P., ed. 1985. *Remnants of Ch'in Law: An Annotated Translation of the Ch'in Legal and Administrative Rules of the 3rd Century B.C. Discovered in Yün-Meng Prefecture, Hu-Pei Province, in 1975*. Sinica Leidensia, v. 17. Leiden: Brill.

Hu, Yaowu, Stanley H. Ambrose, and Changsui Wang. 2006. "Stable Isotopic Analysis of Human Bones from Jiahu Site, Henan, China: Implications for the Transition to Agriculture." *Journal of Archaeological Science* 33 (9): 1319–30.

Insoll, Timothy. 2007a. "Introduction: Configuring Identities in Archaeology." In *The Archaeology of Identities: A Reader*, edited by Timothy Insoll, 1–18. London: Routledge.

———. , ed. 2007b. *The Archaeology of Identities: A Reader*. London: Routledge.

Irvine, Judith T. 1973. "Caste and Communication in a Wolof Village." Ann Arbor MA: Michigan Ann Arbor University Press.

Isaakidou, Valasia. 2007. "Cooking in the Labyrinth: Exploting 'Cuisine at Bronze Age Knossos." In *Cooking up the Past: Food and Culinary Practices in the Neolithic and Bronze Age Aegean*, edited by C. Mee and Josette Renard, 5–24. Oxford: Oxbow.

Ito, Michiharu [伊藤道治]. 1975. *Chūgoku Kodai ōchō No Keisei [中國古代王朝の形成]*. Toȳōgaku Sōsho 10. Tōkyō 東京: Sōbunsha 創文社.

Jaffe, Yitzchak Y. 2011. *Negotiating the Frontier: A Reexamination of the Western Zhou State of Yan*. Unpublished MA thesis, Jerusalem: Hebrew University.

———. 2012. "Materializing Identity—A Statistical Analysis of the Western Zhou Liulihe Cemetery." *Asian Perspectives* 51 (1): 47–67.

———. 2015. "Questioning Religious Essentialism – Ritual Change and Religious Instability in Ancient China." *Journal of Social Archaeology* 15 (1): 3–23.

———. 2016. Colonial developments in Global Contexts - Complex Connectivity in the Western Zhou World. In *The Routledge Handbook of Globalization and Archaeology* Edited by T. Hodos London: Routledge.

Jaffe Yitzchak Y. and Rowan K. Flad. Forthcoming. "Prehistoric Globalizing Processes in the Tao River Valley, Gansu, China?." In *Globalization and the People without History* Edited by Nicole Boivin & Michael Frachetti. Cambridge: Cambridge University Press.

Jamieson, Ross W. 2005. "Colonialism, Social Archaeology and Lo Andino: Historical Archaeology in the Andes." *World Archaeology* 37 (3): 352–72.

Jeffra, Caroline. 2008. "Hair and Potters: An Experimental Look at Temper." *World Archaeology* 40 (1): 151–61.

Jenkins, Richard. 1997. *Rethinking Ethnicity: Arguments and Explorations*. London: Sage.

Jennings, Justin. 2011. *Globalizations and the Ancient World*. Cambridge: Cambridge University Press.

Jessie Satia-Abouta, Ruth E. Patterson. 2002. "Psychosocial Predictors of Diet and Acculturation in Chinese American and Chinese Canadian Women." *Ethnicity & Health* 7 (1): 21–39.

Jing, Jun, ed. 2000. *Feeding China's Little Emperors: Food, Children, and Social Change*. Stanford:Stanford University Press.

Jin, Guiyun, Tongxiu Zheng, Changjiang Liu, Chuanming Wang, and Mingkui Gao. 2012. "An Important Military City of the Early Western Zhou Dynasty: Archaeobotanical Evidence from the Chenzhuang Site, Gaoqing, Shandong Province." *Chinese Science Bulletin* 57 (2-3): 253–60.

Jing, Yuan, and Rodrick B. Campbell. 2009. "Recent Archaeometric Research on 'the Origins of Chinese Civilisation.'" *Antiquity* 83 (319): 96–109.

Johannessen, Sissel. 1993. "Food, Dishes, and Society in the Mississippi Valley." In *Foraging and Farming in the Eastern Woodlands*, edited by C. Margaret Scarry, 182–205. The Ripley P. Bullen Series. Gainesville: University Press of Florida.

Johnson, Gregory Alan. 1973. *Local Exchange and Early State Development in Southwestern Iran*. Anthropological Papers, no. 51. Ann Arbor: Museum of Anthropology, University of Michigan.

Jones, Andrew. 1999. "Local Colour: Megalithic Architecture and Colour Symbolism in Neolithic Arran." *Oxford Journal of Archaeology* 18 (4): 339–50.

Jones, Martin, Harriet Hunt, Emma Lightfoot, Diane Lister, Xinyi Liu, and Giedre Motuzaite-Matuzeviciute. 2011. "Food Globalization in Prehistory." *World Archaeology* 43 (4): 665–75.

Jones, Siân. 1997. *The Archaeology of Ethnicity: Constructing Identities in the Past and Present*. Routledge.

Joyce, Rosemary A., and John S. Henderson. 2007. "From Feasting to Cuisine: Implications of Archaeological Research in an Early Honduran Village." *American Anthropologist* 109 (4): 642–53.

Juhl, Kirsten. 1995. *The Relation between Vessel Form and Vessel Function: A Methodological Study*. AmS-Skrifter 14. Stavanger: Arkeologisk museum.

Junker, Laura Lee, and Lisa Niziolek. 2010. "Food Preparation and Feasting in the Household and Political Economy of Prehispanic Philippine Chiefdoms." In *Inside Ancient Kitchens: New Directions in the Study of Daily Meals and Feasts*, edited by Elizabeth Klarich, 17–53. Boulder: University Press of Colorado.

Kamp, Kathryn A. 1998. "Social Hierarchy and Burial Treatments: A Comparative Assessment." *Cross-Cultural Research* 32 (1): 79–115.

Katz, Jacob. 1998. *Divine Law in Human Hands: Case Studies in Halakhic Flexibility*. Jerusalem: The Magnes Press, The Hebrew University.

Keightley, David N. 1978. "The Religious Commitment: Shang Theology and the Genesis of Chinese Political Culture." *History of Religions* 17 (3/4): 211–25.

———. 1983. "The Late Shang State: When, Where, and What?" In *The Origins of Chinese Civilization*, edited by David N. Keightley, 523–64. University California Press: Berkeley.

———. 1990. "Early Civilization in China: Reflections on How It Became Chinese." In *Heritage of China: Contemporary Perspectives on Chinese Civilization*, edited by Paul S. Ropp and Timothy Hugh Barrett, 15–54. Berkeley: University of California Press.

———. 2000. *The Ancestral Landscape: Time, Space, and Community in Late Shang China, Ca. 1200-1045 B.C.* China Research Monograph 53. Berkeley: Berkeley Univeristy Press.

———. 2004. "The Making of the Ancestors: Late Shang Religion and Its Legacy." In *Religion and Chinese Society*, edited by John Lagerwey, 1:3–63. Hong Kong: Chinese University Press.

Keng, Hsuan. 1973. "Economic Plants of Ancient North China as Mentioned in the Shih Ching (Book of Poetry)." *Economic Botany* 28 (4): 391–410.

Kerner, Susanne, Cynthia Chou, Morten Warmind, Susanne Kerner, Cynthia Chou, and Morten Warmind, eds. 2015. *Commensality: From Everyday Food to Feast*. London: Bloomsbury Academic.

Kern, Martin. 2009. "Bronze Inscriptions, the Shijing and the Shangshu: The Evolution of the Ancestral Sacrifice during the Western Zhou." In *Early Chinese Religion , Pt. 1. Shang through Han (1250 BC-220 AD)*, edited by John Lagerwey and Marc Kalinowski, 1:144–200. Leiden: Brill.

Khayutina, Maria. 2002. "A Personal History of a Western Zhou Official: The Case of Shanfu Ke." *Dokumentation Der Tagung Der China AG* 15-17 (2): 55–62.

———. 2008. "Western 'Capitals' of the Western Zhou Dynasty: Historical Reality and Its Reflections Until the Time of Sima Qian." *Oriens Extremus* 47: 25–65.

———. 2010. "Royal Hospitality and Geopolitical Constitution of the Western Zhou Polity." *T'oung Pao* 96 (1): 1–73.

Kidder, Tristram R. 2004. "Petrographic Thin-Section Analysis of Poverty Point Ceramics." In *Early Pottery: Technology, Function, Style, and Interaction in the Lower Southeast*, edited by Rebecca Saunders and Christopher T. Hays, 193–209. Tuscaloosa: University of Alabama Press.

Kilikoglou, V., G. Vekinis, Y. Maniatis, and P. M. Day. 1998. "Mechanical Performance of Quartz-Tempered Ceramics: Part I, Strength and Toughness*." *Archaeometry* 40 (2): 261–79.

Kittler, Pamela Goyan, Kathryn P. Sucher, and Marcia Nelms. 2011. *Food and Culture*. Cengage Learning.

Klarich, Elizabeth, ed. 2010. *Inside Ancient Kitchens: New Directions in the Study of Daily Meals and Feasts*. Boulder: University Press of Colorado.

Knapp, A. Bernard, and Peter van Dommelen. 2008. "Past Practices: Rethinking Individuals and Agents in Archaeology." *Cambridge Archaeological Journal* 18 (01): 15–34.

Knapp, Arthur Bernard. 2008. *Prehistoric and Protohistoric Cyprus: Identity, Insularity, and Connectivity*. Oxford: Oxford University Press.

Kobayashi, Yuich. 1994. "Use-Alteration Analysis of Kalinga Pottery: Interior Carbon Deposits of Cooking Pots." In *Kalinga Ethnoarchaeology: Expanding Archaeological Method and Theory*, edited by William A. Longacre and James M. Skibo, 127–68. Smithsonian Series in Archaeological Inquiry. Washington: Smithsonian Institution Press.

Kohl, Philip L. 1987. "The Use and Abuse of World Systems Theory: The Case of the Pristine West Asian State." *Advances in Archaeological Method and Theory* 11 (January): 1–35.

———. 1998. "Nationalism and Archaeology: On the Constructions of Nations and the Reconstructions of the Remote Past." *Annual Review of Anthropology* 27: 223–46.

———. 2007. *The Making of Bronze Age Eurasia*. Cambridge: Cambridge University Press.

Kolb, Michael J., and James E. Snead. 1997. "It's a Small World after All: Comparative Analyses of Community Organization in Archaeology." *American Antiquity* 62 (4): 609–28..

Kooiman, Susan M. ND. *Pottery Function, Cooking and Diet in The Upper Great Lakes Of North America*

Koppel, Moshe. 1997. *Meta-Halakhah: Logic, Intuition and the Unfolding of Jewish Law*. Northvale, N.J: Jason Aronson.

Kroeber, A. L. 1927. "Disposal of the Dead." *American Anthropologist* 29 (3): 308–15.

Kuijt, Ian. 2001. "Place, Death, and the Transmission of Social Memory in Early Agricultural Communities of the Near Eastern Pre-Pottery Neolithic." In *Social Memory, Identity, and Death:*

Anthropological Perspectives on Mortuary Rituals, edited by Meredith S. Chesson, 80–99. Archeological Papers of the American Anthropological Association, no. 10. Naperville, IL: American Anthropological Association.

LaBianca, Øystein Sakala, and Sandra Arnold Scham, eds. 2006. *Connectivity in Antiquity: Globalization as a Long-Term Historical Process*. Approaches to Anthropological Archaeology. London: Equinox Pub.

Lai, Guolong. 2015. *Excavating the Afterlife: The Archaeology of Early Chinese Religion*. Seattle: University of Washington Press.

Larsen, Clark Spencer, Rebecca Shavit, and Mark C. Griffin. 1991. "Dental Caries Evidence for Dietary Change: An Archaeological Context." In *Advances in Dental Anthropology*, edited by Marc A. Kelley and Clark Spencer Larsen, 179–202. New York: Wiley-Liss.

Lave, Jean, and Etienne Wenger. 1991. *Situated Learning: Legitimate Peripheral Participation*. g. Cambridge: Cambridge University Press.

Lawrence, Willis G., and Roger R. West. 1982. *Ceramic Science for the Potter*. 2 edition. Radnor, PA: Chilton Book Co.

Leach, Edmund Ronald. 1976. *Culture & Communication: The Logic by Which Symbols Are Connected: An Introduction to the Use of Structuralist Analysis in Social Anthropology*. Cambridge: Cambridge University Press.

LeCount, Lisa J. 2010. "Maya Palace Kitchens: Suprahousehold Food Preparation at the Late Classic Maya Site of Xunantunich." In *Inside Ancient Kitchens: New Directions in the Study of Daily Meals and Feasts*, edited by Elizabeth Klarich, 133–62. Boulder: University Press of Colorado.

Lee-Thorp, J. A. 2008. "On Isotopes and Old Bones." *Archaeometry* 50 (6): 925–50.

Lee, Yuan-Kuan. 2004. "Control Strategies and Polity Competition in the Lower Yi-Luo Valley, North China." *Journal of Anthropological Archaeology* 23 (2): 172–95.

Lee, Yun Kuen. 2002. "Building the Chronology of Early Chinese History." *Asian Perspectives* 41 (1): 15–42.

Legge, James, ed. 1967. *Li Chi: Book of Rites. An Encyclopedia of Ancient Ceremonial Usages, Religious Creeds, and Social Institutions*. New Hyde Park: University Books.

Lentz, Carola, ed. 1999. *Changing Food Habits: Case Studies from Africa, South America and Europe*. Food in History and Culture, v. 2. Amsterdam: Harwood Academic Publishers.

Lévi-Strauss, Claude. 1966. "The Culinary Triangle." *Partisan Review* 33 (4): 586–95.

Lewis, Mark Edward. 2006. *The Construction of Space in Early China*. SUNY Series in Chinese Philosophy and Culture. Albany, N.Y: State University of New York Press.

Lhote, Henri. 1955. *Les Touaregs Du Hoggar (Ahaggar)*. 2. éd., rev. et augm. Bibliothèque Scientifique. Paris: Payot.

Li, Boqian. 1999. "The Sumptuary System Governing Western Zhou Rulers' Cemeteries, Viewed from a Jin Rulers' Cemetery." *Journal of East Asian Archaeology* 1 (1-4): 251–76.

Liebmann, Matthew. 2008. "The Intersections of Archaeology and Postcolonial Studies." In *Archaeology and the Postcolonial Critique*, edited by Mattew Liebmann and Uzma Z. Rizvi, 1–20. Lanham: AltaMira Press.

———. 2013. "Parsing Hybridity: Archaeologies of Amalgamation in Seventeenth Century New Mexico." In *The Archaeology of Hybrid Material Culture*, edited by Jeb J. Card, 25–49. Occasional Paper, no. 39. Carbondale: Southern Illinois University Press.

Liebmann, Matthew, and Melissa S. Murphy. 2011. *Enduring Conquests: Rethinking the Archaeology of Resistance to Spanish Colonialism in the Americas*. Edited by Matthew Liebmann and Melissa S. Murphy. Santa Fe: SAR Press.

Liebmann, Matthew, and Uzma Z. Rizvi. 2008. *Archaeology and the Postcolonial Critique*. Lanham: AltaMira Press.

Li, Feng. 1997. "Ancient Reproductions and Calligraphic Variations: Studies of Western Zhou Bronzes with Identical Inscriptions." *Early China* 22: 1–41.

———. 2001. "Offices' in Bronze Inscriptions and Western Zhou Government Administration." *Early China* 26/27: 1–72.

———. 2003. "'Feudalism' and Western Zhou China: A Criticism." *Harvard Journal of Asiatic Studies* 63 (1): 115–44..

———. 2004. "Succession and Promotion: Elite Mobility during the Western Zhou." *Monumenta Serica* 52: 1–35.

———. 2006. *Landscape and Power in Early China: The Crisis and Fall of the Western Zhou, 1045-771 BC*. Cambridge: Cambridge University Press.

———. 2008. *Bureaucracy and the State in Early China: Governing the Western Zhou*. Cambridge: Cambridge University Press.

———. 2011. "Literacy and the Social Contexts of Writing in the Western Zhou." In *Writing & Literacy in Early China: Studies from the Columbia Early China Seminar*, edited by Feng Li and David Prager Branner, 271–301. Seattle: University of Washington Press.

———. 2013. *Early China: A Social and Cultural History*. Cambridge ; New York: Cambridge University Press.

Li, Feng, Elizabeth Berger, Zhonghe Liang, and Jeremiah Trinidad-Christensen. 2014. "Intrasite Organization in the Late Bronze-Age: The Application of Full-Coverage Survey Methods at Guicheng, Shandong Province, China." *Asian Archaeology* 2: 1–39.

Lightfoot, Kent G. 1995. "Culture Contact Studies: Redefining the Relationship between Prehistoric and Historical Archaeology." *American Antiquity* 60 (2): 199–217.

Lightfoot, Kent G., and Antoinette Martinez. 1997. "Interethnic Relationships in the Native Alaskan Neighborhood: Consumption Practices, Cultural Innovations, and the Construction of Household Identities." In *The Native Alaskan Neighborhood: A Multiethnic Community at Colony Ross*, edited by Kent G. Lightfoot, Thomas A. Wake, and Ann M. Schiff, 1–22. Contributions of the University of California Archaeological Research Facility, no. 55. Berkeley: Archaeological Research Facility, University of California at Berkeley.

Li, Ji. 1977. *Anyang*. Seattle: University of Washington Press.

Li, Min. 2008. *Conquest, Concord, and Consumption: Becoming Shang in Eastern China.* Unpublished PhD. Ann Arbor MA: University of Michigan Ann Arbor.

Linduff, Katheryn M. 1998. "The Emergence and Demise of Bronze-Producing Cultures Outside the Central Plain of China." In *The Bronze Age and Early Iron Age Peoples of Eastern Central Asia*, edited by Victor H. Mair, 619–46. Washington, D. C.: Institute for the Study of Man.

Linton, Ralph. 1944. "North American Cooking Pots." *American Antiquity* 9 (4): 369–80.

Liu, Fenggui, and Zhaodong Feng. 2012. "A Dramatic Climatic Transition at ~4000 Cal. Yr BP and Its Cultural Responses in Chinese Cultural Domains." *The Holocene* 22(10) 1181– 1197.

Liu, Li. 1996. "Settlement Patterns, Chiefdom Variability, and the Development of Early States in North China." *Journal of Anthropological Archaeology* 15 (3): 237–88.

———. 2000. "Ancestor Worship an Archaeological Investigation in Neolithic China." *Journal of East Asian Archaeology* 2 (1-2): 129–64.

———. 2003. "The Products of Minds as Well as of Hands': Production of Prestige Goods in the Neolithic and Early State Periods of China." *Asian Perspectives* 42 (1): 1-40

———. 2004. *The Chinese Neolithic: Trajectories to Early States*. Cambridge: Cambridge University Press.

———. 2006. "Urbanization in China: Erlitou and Its Hinterland." In *Urbanism in the Preindustrial World: Cross-Cultural Approaches*, edited by Glenn Storey, 161–89. Tuscaloosa: University of Alabama Press.

———. 2009. "State Emergence in Early China." *Annual Review of Anthropology* 38: 217–32.

Liu, Li, Sheahan Bestel, Jinming Shi, Yanhua Song, and Xingcan Chen. 2013. "Paleolithic Human Exploitation of Plant Foods during the Last Glacial Maximum in North China." *Proceedings of the National Academy of Sciences* 110 (14): 5380–85.

Liu, Li, and Xingcan Chen. 2001. "Cities and Towns: The Control of Natural Resources in Early States, China." *Bulletin-Museum of Far Eastern Antiquities* 73: 5–47.

———. 2003. *State Formation in Early China*. London: Duckworth.

———. 2006. "Sociopolitical Change from Neolithic to Bronze Age China." In *Archaeology of Asia*, edited by Mirriam T. Stark, 149–76. Malden, MA: Wiley-Blackwell.

———. 2012. *The Archaeology of China: From the Late Paleolithic to the Early Bronze Age*. Cambridge: Cambridge University Press.

Liu, Li, and Hong Xu. 2007. "Rethinking Erlitou: Legend, History and Chinese Archaeology." *Antiquity* 81 (314): 886-901.

Li, Xueqin. 1985. *Eastern Zhou and Qin Civilizations*. New Haven: Yale University Press.

———. 2002. "The Xia-Shang-Zhou Chronology Project: Methodology and Results." *Journal of East Asian Archaeology* 4 (1-4): 321–33.

Li, Yung-ti. 2003. *The Anyang Bronze Foundries: Archaeological Remains, Casting Technology and Production Organization*. Unpublished Phd. dissertation, Harvard University.

Loehr, Max. 1968. *Ritual Vessels of Bronze Age China*. New York: Asia Society.

Loewe, Michael. 1961. "The Measurement of Grain during the Han Period." *T'oung Pao* 49 (1/2): 64–95.

———. 1967. *Records of Han Administration*. University of Cambridge Oriental Publications, no. 11-12. London: Cambridge University Press

Lombard, Marlize. 2008. "Finding Resolution for the Howiesons Poort through the Microscope: Micro-Residue Analysis of Segments from Sibudu Cave, South Africa." *Journal of Archaeological Science* 35 (1): 26–41.

Longacre, William A. 1991. "Introduction." In *Ceramic Ethnoarchaeology*, edited by William A. Longacre. Tucson: University of Arizona Press.

Longacre, William A., Jingfeng Xia, and Tao Yang. 2000. "I Want to Buy a Black Pot." *Journal of Archaeological Method and Theory* 7 (4): 273–93.

Lucy, Sam. 2005. "Ethnic and Cultural Identitites." In *The Archaeology of Identity: Approaches to Gender, Age, Status, Ethnicity and Religion*, edited by Margarita Díaz-Andreu García, Sam Lucy, Stasa Babic, and David N. Edwards, 86–109. New York: Routledge.

Lu, Houyuan, Xiaoyan Yang, Maolin Ye, Kam-Biu Liu, Zhengkai Xia, Xiaoyan Ren, Linhai Cai, Naiqin Wu, and Tung-Sheng Liu. 2005. "Culinary Archaeology: Millet Noodles in Late Neolithic China." *Nature* 437 (7061): 967–68.

Lydon, Jane, and Uzma Z. Rizvi. 2010. "Introduction: Postcolonialism and Archaeology." In *Handbook of Postcolonial Archaeology*, edited by Jane Lydon and Uzma Z Rizvi, 17–27. Walnut Creek, Calif: Left Coast Press.

Lyons, Claire, and John K. Papadopoulos, eds. 2002. *The Archaeology of Colonialism*. Los Angeles: Getty Research Institute.

Mabry, Jonathan, James M. Skibo, Michael B. Schiffer, and Kenneth Kvamme. 1988. "Use of a Falling-Weight Tester for Assessing Ceramic Impact Strength." *American Antiquity* 53 (4): 829–39.

Major, John S., and Constance A. Cook, eds. 1999. *Defining Chu: Image and Reality in Ancient China*. Honolulu: University of Hawai'i Press.

Malinowski, Bronislaw. 1922. *Argonauts of the Western Pacific; an Account of Native Enterprise and Adventure in the Archipelagoes of Melanesian New Guinea*. London: Routledge & Sons, ltd.

Mann, Michael. 1986. *The Sources of Social Power*. Cambridge: Cambridge University Press.

Mantha, Alexis. 2009. "Territoriality, Social Boundaries and Ancestor Veneration in the Central Andes of Peru." *Journal of Anthropological Archaeology* 28 (2): 158–76.

Marshall, S. J. 2001. *The Mandate of Heaven: Hidden History in the Book of Changes*. Richmond, Surrey: Curzon.

Marshall, Yvonne. 2002. "What Is Community Archaeology?" *World Archaeology* 34 (2): 211–19.

Maspero, Henri. 1978. *China in Antiquity*. Folkestone, England: Dawson.

McGuire, Randall H. 1992. *Death, Society, and Ideology in a Hohokam Community*. Investigations in American Archaeology. Boulder: Westview Press.

Mead, Margaret. 1943. "The Factor of Food Habits." *The Annals of the American Academy of Political and Social Science* 225: 136–41.

Mee, Christopher, and Josette R. Renard, eds. 2007. *Cooking up the Past: Food and Culinary Practices in the Neolithic and Bronze Age Aegean*. Oxford: Oxbow.

Meiselman, H. L., and H. J. H. MacFie, eds. 1996. *Food Choice, Acceptance and Consumption*. Boston, Springer

Meltzer, David J. 2015. *The Great Paleolithic War: How Science Forged an Understanding of America's Ice Age Past*. Chicago: University of Chicago Press.

Meskell, Lynn. 2001. "Archaeologies of Identity." In *Archaeological Theory Today*, edited by Ian Hodder, 187–213. London: Wiley-Blackwell.

Meskell, Lynn, and Rosemary A. Joyce. 2003. *Embodied Lives: Figuring Ancient Maya and Egyptian Experience*. London: Routledge.

Meskell, Lynn, and Robert W. Preucel. 2004. "Identities." In *A Companion to Social Archaeology*, edited by Lynn Meskell and Robert W. Preucel, 121–41. Oxford: Blackwell publishing.

Miller, Harry. 2015. *Gongyang Commentary on the Spring and Autumn Annals: A Full Translation by Harry Miller*. New York: Palgrave Macmillan.

Mills, Barbara J. 1999. "Ceramics and the Social Contexts of Food Consumption in the Northern Southwest." In *Pottery and People: A Dynamic Interaction*, edited by James M. Skibo and Gary M. Feinman, 99–114. Salt Lake City: University of Utah Press.

———. , ed. 2004. *Identity, Feasting, and the Archaeology of the Greater Southwest*. Boulder: University Press of Colorado.

———. 2007. "Performing the Feast: Visual Display and Suprahousehold Commensalism in the Puebloan Southwest." *American Antiquity* 72 (2): 210–39.

Mintz, Sidney W., and Christine M. Du Bois. 2002. "The Anthropology of Food and Eating." *Annual Review of Anthropology* 31 (1): 99–119.

Mintz, Sidney W., and Daniela Schlettwein-Gsell. 2001. "Food Patterns in Agrarian Societies: The Core-Fringe-Legume Hypothesis" A Dialogue." *Gastronomica: The Journal of Critical Food Studies* 1 (3): 40–52.

Moore, Jerry D. 1996. "The Archaeology of Plazas and the Proxemics of Ritual: Three Andean Traditions." *American Anthropologist* 98 (4): 789–802.

Moore, Karl, and David Lewis. 2009. *The Origins of Globalization*. Routledge International Studies in Business History 16. New York: Routledge.

Morris, Ian. 1991. "The Archaeology of Ancestors: The Saxe/Goldstein Hypothesis Revisited." *Cambridge Archaeological Journal* 1 (02): 147–69.

———. 1992. *Death-Ritual and Social Structure in Classical Antiquity*. Cambridge: Cambridge University Press.

Mukherjee, Anna J., Robert Berstan, Mark S. Copley, and Alex M. Gibson. 2007. "Compound-Specific Stable Carbon Isotopic Detection of Pig Product Processing in British Late Neolithic Pottery." *Antiquity* 81 (313): 743–54.

Müller, Noémi S., Vassilis Kilikoglou, Peter M. Day, and George Vekinis. 2010. "The Influence of Temper Shape on the Mechanical Properties of Archaeological Ceramics." *Journal of the European Ceramic Society* 30 (12): 2457–65.

Murdock, George Peter. 1949. *Social Structure*. New York: Macmillan.

Murowchick, Robert, and David Joel Cohen. 2001. "Searching for Shang's Beginnings: Great City Shang, City Song, and Collaborative Archaeology in Shangqiu, Henan." *The Review of Archaeology* 22 (2): 47–61.

Nan, Cao. 2012. "On the Funeral Jades from the Marquise Graveyard of the Jin State." *Chinese Archaeology* 2 (1): 22–28.

Nederveen Pieterse, Jan. 2004. *Globalization or Empire?* New York: Routledge.

Nelson, Ben A. 1981. "Ethnoarchaeology and Paleodemography: A Test of Turner and Lofgren's Hypothesis." *Journal of Anthropological Research* 37 (2): 107–29.

Nelson, Sarah M, ed. 2006. *Handbook of Gender in Archaeology*. Lanham, MD: AltaMira Press.

Nelson, Sarah Milledge. 2003. "Feasting the Ancestors in Early China." In *The Archaeology and Politics of Food and Feasting in Early States and Empires*, edited by Tamara L. Bray, 65–89. New York: Kluwer Academic Publishers.

Neupert, Mark A. 1994. "Strength Testing Archaeological Ceramics: A New Perspective." *American Antiquity* 59 (4): 709–23.

Nicholas, Saunders, and Gary Politis. 2002. "Archaeological Correlates of Ideological Activity: Food Taboos and Spirit Animals in an Amazonian Rainforest Hunter-Gatherer Society." In *Consuming Passions and Patterns of Consumption*, edited by Preston T. Miracle, Nicky Milner, and Umberto Albarella, 113–30. Cambridge : University of Cambridge.

Nicolaisen, Johannes. 1963. *Ecology and Culture of the Pastoral Tuareg, with Particular Reference to the Tuareg of Ahaggar and Ayr*. Copenhagen: National Museum.

Nivison, David S. 1983. "The Dates of Western Chou." *Harvard Journal of Asiatic Studies* 43 (2): 481–580.

Nivison, David S., and Edward L. Shaughnessy. 2000. "The Jin Hou Su Bells Inscription and Its Implications for the Chronology of Early China." *Early China* 25: 29–48.

O'Brien, Michael J., and R. Lee Lyman. 2003. *Cladistics and Archaeology*. Salt Lake City: University of Utah Press.

Ohnuki-Tierney, Emiko. 1993. *Rice as Self: Japanese Identities through Time*. Princeton: Princeton University Press.

Olberding, Garret P. S. 2012. *Dubious Facts: The Evidence of Early Chinese Historiography.*. Albany: State University of New York Press.

Olsen, Bjørnar. 2010. *In Defense of Things: Archaeology and the Ontology of Objects*. Lanham MD: AltaMira Press.

Olsen, John W. 1987. "The Practice of Archaeology in China Today." *Antiquity* 61 (232): 282–90.

Orton, Clive, Paul Tyers, and A. G. Vince. 1993. *Pottery in Archaeology.*. Cambridge: Cambridge University Press.

O'Shea, John M. 1984. *Mortuary Variability: An Archaeological Investigation*. Orlando: Academic Press.

Parker Pearson. 1982. "Mortuary Practices, Society and Ideology: An Ethnoarchaeological Study." In *Symbolic and Structural Archaeology*, edited by Ian Hodder, 99–114. New Directions in Archaeology. Cambridge University Press.

Parker Pearson, Michael. 2000. *The Archaeology of Death and Burial*. Texas: Texas A&M University Press.

———. , ed. 2003. "Food, Culture and Identity: An Introduction and Overview." In *Food, Culture and Identity in the Neolithic and Early Bronze Age*, 1–30. BAR International Series 1117. Oxford: Archaeopress.

Pauketat, Timothy R. 1989. “Monitoring Mississippian Homestead Occupation Span and Economy Using Ceramic Refuse.” *American Antiquity* 54 (2): 288–310.

———. 2008. “The Grounds for Agency in Southwestern Archaeology.” In *The Social Construction of Communities: Agency, Structure, and Identity in the Prehispanic Southwest*, edited by Mark Varien and James M. Potter, 233–50. Archaeology in Society Series. Lanham: Rowman & Littlefield Publishers.

Paynter, Robert. 1985. “Surplass Flow between Frontiers and Homelands.” In *The Archaeology of Frontiers and Boundaries*, edited by Stanton W. Green and Stephan M. Perlamn, 163–211. Florida: Academic press Orlando.

Peebles, Christopher S., and Susan M. Kus. 1977. “Some Archaeological Correlates of Ranked Societies.” *American Antiquity* 42 (3): 421.

Peterson, Christian E., and Gideon Shelach. 2012. “Jiangzhai: Social and Economic Organization of a Middle Neolithic Chinese Village.” *Journal of Anthropological Archaeology* 31 (3): 265–301.

Pierce, Christopher. 2005. “Reverse Engineering the Ceramic Cooking Pot: Cost and Performance Properties of Plain and Textured Vessels.” *Journal of Archaeological Method and Theory* 12 (2):

Pines, Yuri. 2000. “The One That Pervades All in Ancient Chinese Political Thought: Origins of ‘The Great Unity’ Paradigm.” *Toung Pao* 86 (4): 280–324.

———. 2002. *Foundations of Confucian Thought: Intellectual Life in the Chunqiu Period, 722-453 B.C.E.* Honolulu: University of Hawaii Press.

———. 2005. “"Beasts or Humans: Pre-Imperial Origins of Sino-Barbarian Dichotomy.” In *Mongols, Turks, and Others: Eurasian Nomads and the Sedentary World*, edited by Reuven Amitai and Michal Biran, 59–102. Brill’s Inner Asian Library, v. 11. Leiden: Brill.

———. 2012. *The Everlasting Empire: The Political Culture of Ancient China and Its Imperial Legacy*. Princeton: Princeton University Press.

Pines, Yuri, Lothar von Falkenhausen, Gideon Shelach, and Robin D. S. Yates. 2013. “General Introduction: Qin History Revistied.” In *Birth of an Empire The State of Qin Revisited*, edited by Yuri Pines, Gideon Shelach, Lothar von Falkenhausen, and Robin D.S. Yates, 1–35. Berkeley: University of California Press.

Pirazzoli-t’Serstevens, Michèle. 1991. “The Art of Dining in the Han Period: Food Vessels from Tomb No. 1 at Mawangdui.” *Food and Foodways* 4 (3-4): 209–19.

Pitts, Martin. 2008. “Globalizing the Local in Roman Britain: An Anthropological Approach to Social Change.” *Journal of Anthropological Archaeology* 27 (4): 493–506.

Pollock, Susan, and Reinhard Bernbeck. 2004. *Archaeologies of the Middle East: Critical Perspectives*. Malden MA: Wiley-Blackwell.

Poo, Mu-Chou. 1998. *In Search of Personal Welfare: A View of Ancient Chinese Religion*. Albany: State University of New York Press.

———. 1999. "The Use and Abuse of Wine in Ancient China." *Journal of the Economic and Social History of the Orient* 42 (2): 1–29.

Potter, James M., and Scott G. Ortman. 2004. "Community and Cuisine in the Prehispanic Southwest." In *Identity, Feasting, and the Archaeology of the Greater Southwest*, edited by Barbara J. Mills, 173–91. Boulder: University Press of Colorado.

Potts, Daniel T. 1999. *The Archaeology of Elam: Formation and Transformation of an Ancient Iranian State*.. New York: Cambridge University Press.

Powers, Martin Joseph. 1991. *Art & Political Expression in Early China*. New Haven: Yale University Press.

Pratt, Jo Ann F. 1999. "Determining the Function of One of the New World's Earliest Pottery Assemblages: The Case of San Jacinto, Colombia." *Latin American Antiquity* 10 (1): 71–85.

Prothero, Donald R., and F. L. Schwab. 1996. *Sedimentary Geology: An Introduction to Sedimentary Rocks and Stratigraphy*. New York: W.H. Freeman.

Puett, Michael J. 2001. *The Ambivalence of Creation: Debates Concerning Innovation and Artifice in Early China*. Stanford: Stanford University Press.

———. 2002. *To Become a God: Cosmology, Sacrifice, and Self-Divinization in Early China*. Harvard-Yenching Institute Monograph Series 57. Cambridge, MA: Harvard University Press.

———. 2008. "Human and Divine Kingship in Early China: Comparative Reflections." In *Religion and Power: Divine Kingship in the Ancient World and Beyond*, edited by Nicole Maria Brisch, 199–212. University of Chicago Oriental Institute Seminars, no. 4. Chicago: Oriental Institute of the University of Chicago.

Radcliffe-Brown, Alfred R. 1922. *The Andaman Islanders: A Study in Social Anthropology*. Cambridge: The University press.

Rakita, Gordon F. M., Jane Buikstra, Lane A. Beck, and Sloan R. Williams, eds. 2005. *Interacting with the Dead: Perspectives on Mortuary Archaeology for the New Millennium*. Florida: University Press of Florida.

Rakita, Gordon F. M, and Jane E. Buikstra. 2005. "Intorduction." In *Interacting with the Dead: Perspectives on Mortuary Archaeology for the New Millennium*, edited by Gordon F. M. Rakita, Jane Buikstra, Lane A. Beck, and Sloan R. Williams. Florida: University Press of Florida.

Rawson, Jessica. 1987. *Chinese Bronzes: Art and Ritual*. London: Published for the Trustees of the British Museum in association with the Sainsbury Centre for Visual Arts, University of East Anglia [by] British Museum Publications.

———. 1988. "A Bronze-Casting Revolution in the Western Zhou and Its Influence on the Provincial Industries." In *The Beginning of the Use of Metals and Alloys*, edited by Robert Maddin, 228–38. Cambridge, MA: MIT Press.

———. 1989. "Statesmen or Barbarians? The Western Zhou as Seen Through Their Bronzes." *Proceedings of the British Academy* 75: 71–95.

———. 1990. *Western Zhou Ritual Bronzes from the Arthur M. Sackler Collections*. Ancient Chinese Bronzes in the Arthur M. Sackler Collections Cambridge, MA: Arthur M. Sackler Museum, Harvard University.

———. 1993. "Ancient Chinese Ritual Bronzes: The Evidence from Tombs and Hoards of the Shang (c. 1500-1050 BC) and Western Zhou (c. 1050-771 BC) Periods." *Antiquity* 67 (257): 805–23.

———. 1996. "The Ritual Bronze Vessels of the Shang and the Zhou." In *Mysteries of Ancient China: New Discoveries from the Early Dynasties*, edited by Jessica Rawson, , 248–65. New York: G. Braziller.

———. 1998. "Chinese Burial Patterns: Sources of Information on Thought and Belief." In *Cognition and Material Culture: The Archaeology of Symbolic Storage*, edited by Colin Renfrew and Christopher Scarre, 107–33. McDonald Institute Monographs. Cambridge: University of Cambridge Press.

———. 1999a. "Ancient Chinese Ritual as Seen in the Material Record." In *State and Court Ritual in China*, edited by Joseph Peter McDermott, 20–49. University of Cambridge Oriental Publications 54. Cambridge: Cambridge University Press.

———. 1999b. "Western Zhou Archaeology." In *The Cambridge History of Ancient China*, edited by Michal Loewe and Edward L. Shaughnessy, 352–449. Cambridge: Cambridge University Press.

———. 2013. "Ordering the Exotic: Ritual Practices in the Late Western and Early Eastern Zhou." *Artibus Asiae* 5: 5–76.

———. 2015. "Steppe Weapons in Ancient China and the Role of Hand-to-hand Combat". 33 *National Palace Museum Research Quarterly* 33(1):37-96.

Reagon, Bernice J. 1986. "African Diaspora Women: The Making of Cultural Workers." *Feminist Studies* 12 (1): 77.

Reents-Budet, Dorie. 1994. *Painting the Maya Universe: Royal Ceramics of the Classic Period*. Durham, N.C: Duke University Press.

Reid, Kenneth C. 1989. "A Materials Science Perspective on Hunter-Gatherer Pottery." In *Pottery Technology: Ideas and Approaches*, edited by Gordon Bronitsky, 167–80. Boulder: Westview Press.

Renfrew, Colin. 1986. "Introduction: Peer Polity Interaction and Socio-Political Change." In *Peer Polity Interaction and Socio-Political Change*, edited by John F Cherry and Colin Renfrew, 1–18. Cambridge: Cambridge University Press.

Rice, Prudence M. 1987. *Pottery Analysis: A Sourcebook*. Chicago: University of Chicago Press.

———. 1996. “Recent Ceramic Analysis: 1. Function, Style, and Origins.” *Journal of Archaeological Research* 4 (2): 133–63.

———. 1998. “Contexts of Contact and Change: Peripheries, Frontiers, And. Boundaries.” In *Studies in Culture Contact : Interaction, Culture Change, & Archaeology*, edited by James G. Cusick, 44–46. Carbondale: Southern Illinois Univeriesty.

Rice, Prudence M. 2015. *Pottery Analysis, Second Edition: A Sourcebook*. Second Edition edition. Chicago: University Of Chicago Press.

Richards, A. I., and E. M. Widdowson. 1936. “A Dietary Study in North-Eastern Rhodesia.” *Africa: Journal of the International African Institute* 9 (2): 166–96.

Richards, Audrey I. 1939. *Land, Labour and Diet in Northern Rhodesia; an Economic Study of the Bemba Tribe*. London: Oxford university press.

Ricquier, Birgit. 2014. “The History of Porridge in Bantuphone Africa, with Words as Main Ingredients.” *Afriques. Débats, Méthodes et Terrains D’histoire* 15 (05).

Robertson, Roland. 1992. *Globalization: Social Theory and Global Culture*. Theory, Culture & Society. London: Sage.

Roscoe, John, and Ethnological Expedition to Central Africa Mackie 1919-1920. 1924. *The Bagesu and Other Tribes of the Uganda Protectorate; the Third Part of the Report of the Mackie Ethnological Expedition to Central Africa*. Cambridge: Cambridge University Press.

Roth, Joel. 1986. *The Halakhic Process: A Systemic Analysis*. Moreshet Series, v. 13. New York: Jewish Theological Seminary of America.

Rothschild, Nan A. 1979. “Mortuary Behavior and Social Organization at Indian Knoll and Dickson Mounds.” *American Antiquity* 44 (4): 658-675.

Rouse, Irving. 1965. “The Place of ‘Peoples’ in Prehistoric Research.” *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 95 (1): 1-15.

Rowlands, Michael. 1987. “Centre and Periphery: A Review of the Concept.” In *Centre and Periphery in the Ancient World*, edited by Michal J. Rowlands, Mogens Trolle Larsen, and Kristian Kristiansen, 1–11. Cambridge: Cambridge University Press.

———. 1998. “The Archaeology of Colonialism.” In *Social Transformations in Archaeology*, edited by Kristian Kristianson and Michael Rowlands, 327–33. London: Routledge.

Rye, Owen S. 1976. “Keeping Your Temper under Control: Materials and the Manufacture of Papuan Pottery.” *Archaeology and Physical Anthropology in Oceania* 11 (2): 106–37.

———. 1981. *Pottery Technology: Principles and Reconstruction*. Manuals on Archeology 4. Washington, D.C: Taraxacum.

Sackett, James R. 1982. “Approaches to Style in Lithic Archaeology.” *Journal of Anthropological Archaeology* 1 (1): 59–112.

———. 1985. "Style and Ethnicity in the Kalahari: A Reply to Wiessner." *American Antiquity* 50 (1): 154.

Sahlins, Marshall David. 1976. *Culture and Practical Reason*. Chicago: University of Chicago Press.

Samuel, Delwen. 1999. "Bread Making and Social Interactions at the Amarna Workmen's Village, Egypt." *World Archaeology* 31 (1): 121–44.

Santley, Robert S, Clare Yarborough, and Barbara A Hall. 1987. "Enclaves, Ethnicity and the Archaeological Record at Matacapan." In *Ethnicity and Culture: Proceedings of the Eighteenth Annual Conference of the Archaeological Association of the University of Calgary*, edited by Réginald Auger, 85–100. Calgary: The Association.

Sassaman, Kenneth E. 1993. *Early Pottery in the Southeast: Tradition and Innovation in Cooking Technology*. Tuscaloosa: University of Alabama Press.

———. 1995. "The Social Contradictions of Traditional and Innovative Cooking Technologies in the Prehistoric American Southeast." In *The Emergence of Pottery: Technology and Innovation in Ancient Societies*, edited by William Barnett and John W. Hoopes, 223–40. Washington: Smithsonian Institution Press.

Sassaman, Kenneth E., and Wictoria Rudolphi. 2001. "Communities of Practice in the Early Pottery Traditions of the American Southeast." *Journal of Anthropological Research* 57 (4): 407–25.

Satia-Abouta, Jessie, Ruth E. Patterson, Alan R. Kristal, Chong Teh, and Shin-Ping Tu. 2002. "Psychosocial Predictors of Diet and Acculturation in Chinese American and Chinese Canadian Women." *Ethnicity & Health* 7 (1): 21–39.

Saxe, Arthur. 1970. *Social Dimensions of Mortuary Practices*. Unpublished PhD dissertation, Ann Arbor MA: University of Michigan Ann Arbor.

Sayer, Duncan, and Howard Williams, eds. 2009. *Mortuary Practices and Social Identities in the Middle Ages: Essays in Burial Archaeology in Honour of Heinrich Härke*. Exeter, U.K: University of Exeter Press.

Schiffer, Michael B. 1990. "The Influence of Surface Treatment on Heating Effectiveness of Ceramic Vessels." *Journal of Archaeological Science* 17 (4): 373–81.

Schiffer, Michael Brian, James M. Skibo, Tamara C. Boelke, Mark A. Neupert, and Meredith Aronson. 1994. "New Perspectives on Experimental Archaeology: Surface Treatments and Thermal Response of the Clay Cooking Pot." *American Antiquity* 59 (2): 197–217.

Schiffer, Michael B., and James M. Skibo. 1987. "Theory and Experiment in the Study of Technological Change." *Current Anthropology* 28 (5): 595–622.

Schwartz, Benjamin I. 1985. *The World of Thought in Ancient China*. Cambridge: Belknap Press of Harvard University Press.

Seidel, Anna K. 1987. "Traces of Han Religion in Funeral Texts Found in Tombs." In *Dokyō to shūkyō bunka*, edited by Kanei̓ Akizuki, Shohan, 21–57. Tōkyō: Hirakawa Shuppansha.

Selbitschka nd.*Reveiw of Excavating the Afterlife: The Archaeology of Early Chinese Religion*.

Sena, David M. 2005. *Reproducing Society: Lineage and Kinship in Western Zhou China. Unpublished* PhD Dissertation, Chicago: University of Chicago.

Shanks, Michael, and Christopher Y. Tilley. 1987. *Re-Constructing Archaeology: Theory and Practice*. New Studies in Archaeology. Cambridge: Cambridge University Press.

Shaughnessy, Edward L. 1981. "'New' Evidence on the Zhou Conquest." *Early China* 6: 57–79.

———. 1985a. "The 'Current' 'Bamboo Annals' and the Date of the Zhou Conquest of Shang." *Early China* 11/12: 33–60.

———. 1985b. "Zhouyuan Oracle-Bone Inscriptions: Entering the Research Stage?" *Early China* 11/12: 146–63.

———. 1989. "Historical Geography and the Extent of the Earliest Chinese Kingdoms." *Asia Major* 2 (2): 1–22.

———. 1991. *Sources of Western Zhou History: Inscribed Bronze Vessels*. Berkeley: University of California Press.

———. 1993. "The Duke of Zhou's Retirement in the East and the Beginnings of the Minister-Monarch Debate in Chinese Political Philosophy." *Early China* 18: 41–72.

———. 1999. "Western Zhou History." In *The Cambridge History of Ancient China*, edited by Michal Loewe and Edward L. Shaughnessy, 292–351. Cambridge: Cambridge University Press.

———. 2004. "Hordes and Family Histories in Qishan County, The Zhouyuan, during the Western Zhou Dynasty." In *New Perspectives on China's Past: Chinese Archaeology in the Twentieth Century*, edited by Xiaoneng Yang, 254–67. New Haven : Yale University Press.

Shelach, Gideon. 1996. "The Qiang and the Question of Human Sacrifice in the Late Shang Period." *Asian Perspectives* 35 (1): 1–26.

———. 2001. "Apples and Oranges? Cross-Cultural Comparison of Burial Data from Northeast China." *Journal of East Asian Archeology* 3 (3-4): 53–90.

———. 2004. "Marxist and Post-Marxist Paradigms for the Neolithic." In *Gender and Chinese Archaeology*, edited by Katheryn M. Linduff and Yan Sun, 11–27. Malden MA: Altamira Press.

———. 2005. "Early Pastoral Societies of Northeast China: Local Change and Interregional Interaction during C. 1100 to 600 BC." In *Mongols, Turks, and Others: Eurasian Nomads and the Sedentary World*, edited by Reuven Amitai and Michal Biran, 15–58. Brill's Inner Asian Library, v. 11. Leiden ; Boston: Brill.

———. 2006. "Economic Adaptation, Community Structure, and Sharing Strategies of Households at Early Sedentary Communities in Northeast China." *Journal of Anthropological Archaeology* 25 (3): 318–45.

———. 2009. *Prehistoric Societies on the Northern Frontiers of China: Archaeological Perspectives on Identity Formation and Economic Change during the First Millennium BCE*. Equinox Pub.

———. 2015. *The Archaeology of Early China From Prehistory to the Han Dynasty*. Cambridge UK: Cambridge University Press.

Shelach, Gideon, and Yitzchak Y. Jaffe. 2014. "The Earliest States in China: A Long-Term Trajectory Approach." *Journal of Archaeological Research* 22 (4): 327–64.

Shennan, Stephan J. 1989. "Introduction: Archaeological Approaches to Cultural Identity." In *Archaeological Approaches to Cultural Identity*, edited by Stephan J. Shennan, 1–32. London and New York: Routledge.

Shennan, Stephen. 1997. *Quantifying Archaeology*. Edinburgh: Edinburgh University Press.

———. 2002. *Genes, Memes and Human History: Darwinian Archaeology and Cultural Evolution*. London: Thames & Hudson.

Shepherd, Gillian. 2005. "Dead Men Tell No Tales: Ethnic Diversity in Sicilian Colonies and the Evidence of the Cemeteries." *Oxford Journal of Archaeology* 24 (2): 115–36.

Shim, Jaehoon. 1997. "The Jinhou Su Bianzhong Inscription and Its Significance." *Early China* 22: 43–75.

Sillar, B., and M. S. Tite. 2000. "The Challenge of 'technological Choices'for Materials Science Approaches in Archaeology*." *Archaeometry* 42 (1): 2–20.

Silliman, Stephen W. 2005. "Culture Contact or Colonialism? Challenges in the Archaeology of Native North America." *American Antiquity* 70 (1): 55–74.

———. 2013. "What Where and When Is Hybridity." In *The Archaeology of Hybrid Material Culture*, edited by Jeb J. Card, 486–500. Occasional Paper, no. 39. Carbondale: Southern Illinois University Press.

Simoons, Frederick J. 1991. *Food in China: A Cultural and Historical Inquiry*. Boca Raton: CRC Press.

Sinopoli, Carla M. 1991. *Approaches to Archaeological Ceramics*. New York: Plenum Press.

———. 1994. "The Archaeology of Empires." *Annual Review of Anthropology* 23 (1): 159–80..

Skibo, James M. 1992. *Pottery Function: A Use-Alteration Perspective*. New York: Plenum Press.

———. 2013. *Understanding Pottery Function*. Manuals in Archaeological Method, Theory and Technique. New York: Springer.

Skibo, James M., Tamara C. Butts, and Michael Brian Schiffer. 1997. "Ceramic Surface Treatment and Abrasion Resistance: An Experimental Study." *Journal of Archaeological Science* 24 (4): 311–17.

Skibo, James M., and Michael B. Schiffer. 2008. *People and Things: A Behavioral Approach to Material Culture*. New York: Springer.

Skibo, James M., Michael B. Schiffer, and Kenneth C. Reid. 1989. "Organic-Tempered Pottery: An Experimental Study." *American Antiquity* 54 (1): 122–46.

Smith, Edwin William, and Andrew Murray Dale. 1920. *The Ila-Speaking Peoples of Northern Rhodesia*. London: Macmillan.

Smith, Marion F. 1985. "Toward an Economic Interpretation of Ceramics: Relating Vessel Size and Shape to Use." In *Decoding Prehistoric Ceramics*, edited by Ben A. Nelson, 254–309. Publications in Archaeology. Carbondale: Southern Illinois University Press.

———. 1988. "Function from Whole Vessel Shape: A Method and an Application to Anasazi Black Mesa, Arizona." *American Anthropologist* 90 (4): 912–23.

Smith, Monica L. 2006. "The Archaeology of Food Preference." *American Anthropologist* 108 (3): 480–93.

Smith, Stuart Tyson. 2003. *Wretched Kush: Ethnic Identities and Boundaries in Egypt's Nubian Empire*. London: Routledge.

Spencer, Charles S. 2010. "Territorial Expansion and Primary State Formation." *Proceedings of the National Academy of Sciences* 107 (16): 7119–26.

Stahl, Ann Brower. 2002. "Colonial Entanglements and the Practices of Taste: An Alternative to Logocentric Approaches." *American Anthropologist* 104 (3): 827–45.

Stanley, Daniel Jean, Zhongyuan Chen, and Jian Song. 1999. "Inundation, Sea-Level Rise and Transition from Neolithic to Bronze Age Cultures, Yangtze Delta, China." *Geoarchaeology* 14 (1): 15–26.

Stark, Barbara L., and John K. chance. 2008. "Diachronic and Multidisciplinary Perspectives on Mesoamerican Ethnicity." In *Ethnic Identity in Nahua Mesoamerica: The View from Archaeology, Art History, Ethnohistory, and Contemporary Ethnography*, edited by Frances Berdan, Barbara L. Stark, Barbara L. Stark, and Emily Good Umberger, 1–37. Salt Lake City: University of Utah Press.

Stark, Miriam T. 2003. "Current Issues in Ceramic Ethnoarchaeology." *Journal of Archaeological Research* 11 (3): 193–242.

Stein, Gil. 1999. *Rethinking World-Systems: Diasporas, Colonies, and Interaction in Uruk Mesopotamia*. Tucson: University of Arizona Press.

Stein, Gil J., ed. 2005. *The Archaeology of Colonial Encounters: Comparative Perspectives*. School of American Research Advanced Seminar Series. Santa Fe: SAR Press.

———. 2012. "Food Preparation, Social Context, and Ethnicity in a Prehistoric Mesopotamian Colony." In *The Menial Art of Cooking: Archaeological Studies of Cooking and Food Preparation*, edited by Sarah R. Graff and Enrique Rodríguez-Alegría, 47–64. Boulder: University Press of Colorado.

Stein, Gill J. 2005. "The Comparative Archaeology of Colonial Encounters." In *The Archaeology of Colonial Encounters*, edited by Gill J. Stein, 1–29. Santa Fe: SAR Press.

Steponaitis, Vincas P. 1983. *Ceramics, Chronology, and Community Patterns: An Archaeological Study at Moundville*. Studies in Archaeology. New York: Academic Press.

Sterckx, Roel. 2004a. "Food and Philosohy in Early China." In *Of Tripod and Palate: Food, Politics and Religion in Traditional China*, edited by Roel Sterckx, 34–61. New York: Palgrave Macmillan.

———. , ed. 2004b. *Of Tripod and Palate: Food, Politics and Religion in Traditional China*. New York: Palgrave Macmillan.

Stockhammer, Philipp Wolfgang, ed. 2012. *Conceptualizing Cultural Hybridization - A Transdisciplinary Approach*. Heidelberg: Springer.

———. 2013." From Hybridity to Entanglement, from Essentialism to Practice". *Archaeological Review from Cambridge* 28, (1) 11–28.

Su, Bingqi. 1999. "A New Age of Chinese Archaeology." In *Exploring China's Past : New Discoveries and Studies in Archaeology and Art*, edited by Roderick Whitfield and Tao Wang, 17–25. London: Saffron.

Sugiyama, Saburo. 2011. "Interactions between the Living and the Dead at Major Monuments in Teotihuacan." In *Living with the Dead: Mortuary Ritual in Mesoamerica*, edited by James L. Fitzsimmons and Izumi Shimada, 161–202. Tucson: University of Arizona Press.

Sulivan, Lynne P., and Michael S. Harle. 2010. "Mortuary Practices andCultural Identity at the Turn of the Sixteenth Century in Eastern Tennessee." In *Mississippian Mortuary Practices: Beyond Hierarchy and the Representationist Perspective*, edited by Lynne P. Sullivan and Robert C. Mainfort, 234–49. Gainesville: University Press of Florida.

Sun, Yan. 2001. *Negotiating Cultural and Political Control in North China: Art and Mortuary Ritual and Practice of the Yan at Liulihe during the Early Western Zhou Period.*Unpublished PhD dissertation, University of Pittsburgh.

———. 2003. "Bronzes, Mortuary Practice and Political Strategies of the Yan during the Early Western Zhou Period." *Antiquity* 77 (298): 761–70.

———. 2006. "Colonizing China's Northern Frontier: Yan and Her Neighbors During the Early Western Zhou Period." *International Journal of Historical Archaeology* 10 (2): 159–77.

Symons, Michael. 1994. "Simmel's Gastronomic Sociology: An Overlooked Essay." *Food and Foodways* 5 (4): 333–51.

Tainter, Joseph A. 1978. "Mortuary Practices and the Study of Prehistoric Social Systems." *Advances in Archaeological Method and Theory* 1: 105–41.

Tani, Masakazu. 1994. "Why Should More Pots Break in Larger Households? Mechanisms Underlying Population Estimates from Ceramics." In *Kalinga Ethnoarchaeology: Expanding Archaeological Method and Theory*, edited by William A. Longacre and James M. Skibo, 51–70. Smithsonian Series in Archaeological Inquiry. Washington: Smithsonian Institution Press.

Teng, Mingyu. 2013. "From Vassal State to Empire: An Arhchaeological Examination of Qin Culture." In *Birth of an Empire The State of Qin Revisited*, edited by Yuri Pines, Gideon Shelach, Lothar von Falkenhausen, and Robin D.S. Yates, 71–112. Berkeley: University of California Press.

Thomas, Julian. 2004. *Archaeology and Modernity*. London: Routledge.

Thorp, Robert L. 1991. "Erlitou and the Search for the Xia." *Early China* 16: 1–38.

———. 2006. *China in the Early Bronze Age: Shang Civilization*. Philadelphia: University of Pennsylvania Press.

Thote, Alain. 2004. "Burial Practices as Seen in Rulers' Tombs of the Eastern Zhou Period : Patterns and Regional Traditions." In *Religion and Chinese Society*, edited by John Lagerwey, 1:65–107. Hong Kong: Chinese University Press.

———. 2009. "Shang and Zhou Funeral Practices : Interpretation of Material Vestiges." In *Early Chinese Religion , Pt. 1. Shang through Han (1250 BC-220 AD)*, edited by John Lagerwey and Marc Kalinowski, 1:103–42. Handbook of Oriental Studies. Leiden: Brill.

Tilley, Christopher Y., Webb Keane, Susanne Kuchler, Mike Rowlands, and Patrica Spyer, eds. 2006. *Handbook of Material Culture*. London: SAGE.

Tite, M. S. 2008. "Ceramic Production, Provenance and Use—a Review*." *Archaeometry* 50 (2): 216–31.

Tite, M. S., V. Kilikoglou, and G. Vekinis. 2001. "Strength, Toughness and Thermal Shock Resistance of Ancient Ceramics, and Their Influence On Technological Choice." *Archaeometry* 43 (3): 301–24.

Tong, Enzheng. 1989. "Morgan's Model and the Study of Ancient Chinese Society." *Social Sciences in China* 2: 182–205.

———. 1995. "Thirty Years of Chinese Archaeology (1949-1979)." In *Nationalism, Politics, and the Practice of Archaeology*, edited by P.L. Kohl and C.P. Fawcett, 177–97. Cambridge: Cambridge University Press.

Toulmin, Camilla. 1992. *Cattle, Women, and Wells: Managing Household Survival in the Sahel*. Oxford: Oxford University Press.

Trigger, Bruce G. 1984. "Alternative Archaeologies: Nationalist, Colonialist, Imperialist." *Man*, New Series, 19 (3): 355–70.

Trigger, Bruce G. 1999. "Shang Political Organization: A Comparative Approach." *Journal of East Asian Archaeology* 1: 43–62.

———. 2006. *A History of Archaeological Thought*. Cambridge: Cambridge University Press.

Turchin, Peter. 2009. "A Theory for Formation of Large Empires." *Journal of Global History* 4 (02): 191–217.

Turner, Christy G., and Laurel Lofgren. 1966. "Household Size of Prehistoric Western Pueblo Indians." *Southwestern Journal of Anthropology* 22 (2): 117–32.

Twiss, Katheryn. 2012. "The Archaeology of Food and Social Diversity." *Journal of Archaeological Research* 20 (4): 357–95.

Twiss, Katheryn C, ed. 2007. *The Archaeology of Food and Identity*. Occasional Paper, no. 34. Carbondale, Ill: Southern Illinois University Carbondale.

Twiss, Katheryn C., Amy Bogaard, Michael Charles, Jennifer Henecke, Nerissa Russell, Louise Martin, and Glynis Jones. 2009. "Plants and Animals Together: Interpreting Organic Remains from Building 52 at Çatalhöyük." *Current Anthropology* 50 (6): 885–95.

Ucko, Peter J. 1969. "Ethnography and Archaeological Interpretation of Funerary Remains." *World Archaeology* 1 (2): 262–80.

Underhill, Anne P. 2002. *Craft Production and Social Change in Northern China.*. New York: Kluwer Academic/Plenum Publishers.

———. , ed. 2013. *A Companion to Chinese Archaeology*. Malden, MA: Wiley-Blackwell.

Underhill, Anne P., Gary M. Feinman, Linda Nicholas, Gwen Bennett, Fengshu Cai, Haiguang Yu, Fengshi Luan, and Hui Fang. 1998. "Systematic, Regional Survey in SE Shandong Province, China." *Journal of Field Archaeology* 25 (4): 453–74.

Underhill, Anne .P., Gary.M. Feinman, L.M. Nicholas, H. Fang, F. Luan, H. Yu, and F. Cai. 2008. "Changes in Regional Settlement Patterns and the Development of Complex Societies in Southeastern Shandong, China." *Journal of Anthropological Archaeology* 27 (1): 1–29.

Underhill, Anne P., and Junko Habu. 2006. "Early Communities in East Asia: Economic and Sociopolitical Organization at the Local and Regional Levels." In *Archaeology of Asia*, edited by Mirriam T. Stark, 121–48. Malden, MA: Wiley-Blackwell.

Urem-Kotsou, Dushka, and Kostas Kotsakis. 2007. "Pottery, Cuisine and Community in the Neolithic of North Greece." In *Cooking up the Past: Food and Culinary Practices in the Neolithic and Bronze Age Aegean*, edited by C. Mee and Josette Renard, 225–46. Oxford:Oxbow.

van der Veen, Marijke. 2003. "When Is Food a Luxury?" *World Archaeology* 34 (3): 405–27.

van Dommelen, Peter. 1997. "Colonial Constructs: Colonialism and Archaeology in the Mediterranean." *World Archaeology* 28 (3): 305–23.

Velde, Bruce, and Isabelle C. Druc. 1999. *Archaeological Ceramic Materials: Origin and Utilization*. Natural Science in Archaeology. New York: Springer.

Vieugué, Julien. 2014. "Use-Wear Analysis of Prehistoric Pottery: Methodological Contributions from the Study of the Earliest Ceramic Vessels in Bulgaria (6100–5500 BC)." *Journal of Archaeological Science* 41 (January): 622–30.

Vogt, Nicholas. 2012. *Between Kin and King: Social Aspects of Western Zhou Ritual. Unpublished* Ph.D, Columbia Univeristy.

Voutsaki, Sofia, and Soultana Maria Valamoti, eds. 2013. *Diet, Economy and Society in the Ancient Greek World: Towards a Better Integration of Archaeology and Science: Proceedings of the International Conference Held at the Netherlands Institute at Athens on 22-24 March 2010*. Pharos Supplement 1. Leuven: Peeters.

Wagner, Mayke, Pavel Tarasov, Dominic Hosner, Andreas Fleck, Richard Ehrich, Xiaocheng Chen, and Christian Leipe. 2013. "Mapping of the Spatial and Temporal Distribution of Archaeological Sites of Northern China during the Neolithic and Bronze Age." *Quaternary International*, , 290–291 (2013): 344–57.

Wandsnider, LuAnn. 1997. "The Roasted and the Boiled: Food Composition and Heat Treatment with Special Emphasis on Pit-Hearth Cooking." *Journal of Anthropological Archaeology* 16 (1): 1–48.

Wang, Haicheng. 2014. "China's First Empire? Interpreting the Material Record of the Erligang Expansion." In *Art and Archaeology of the Erligang Civilization*, edited by Kyle Steinke, 67–98. Publications of the Department of Art and Archaeology, Princeton University. Princeton: P.Y. and Kinmay W. Tang Center for East Asian Art, Department of Art and Archaeology, Princeton University : in association with Princeton University Press.

Wang, Tao. 1997. "Establishing the Chinese Archaeological School: Su Bingqi and Contemporary Chinese Archaeology." *Antiquity* 71 (271): 31–36.

Waters, Malcolm. 2001. *Globalization*. 2nd ed. Key Ideas. London: Routledge.

Watson, James L. 1987. "From the Common Pot: Feasting with Equals in Chinese Society." *Anthropos* 82: 389–461.

———. 1988. "The Structure of Chinese Funerary Rites: Elementary Fors, Ritualy of Sequence. and the Primacy of Performance." In *Death Ritual in Late Imperial and Modern China*, edited by James L. Watson and Evelyn Sakakida Rawski, 3–19. Berkeley: University of California Press.

Watson, James L., and Evelyn Sakakida Rawski, eds. 1988. *Death Ritual in Late Imperial and Modern China*. S Berkeley: University of California Press.

Webster, Jane. 1997. "Necessary Comparisons: A Post-Colonial Approach to Religious Syncretism in the Roman Provinces." *World Archaeology* 28 (3): 324–38.

Wei, Qiaowei. Forthcoming. "Ceramic Management at Salt Production Sitea during the early Bronze Age in the North Shandong, China". To be published in *Asain Archaeology*.

Weismantel, Mary J. 1988. *Food, Gender, and Poverty in the Ecuadorian Andes*. Philadelphia: University of Pennsylvania Press.

Welch, Paul D., and C. Margaret Scarry. 1995. "Status-Related Variation in Foodways in the Moundville Chiefdom." *American Antiquity* 60 (3): 397–419.

Wendrich, Willeke, ed. 2012. *Archaeology and Apprenticeship: Body Knowledge, Identity, and Communities of Practice*. Tucson: University of Arizona Press.

Wenke, Steven A. 2011. "Convergences: Producing Early Colonial Hybridity at a Doctrina in Highland Peru." In *Enduring Conquests: Rethinking the Archaeology of Resistance to Spanish Colonialism in the Americas*, edited by Matthew Liebmann and Melissa S. Murphy, 57–76. Santa Fe: SAR Press.

Whitley, James. 2002. "Too Many Ancestors." *Antiquity* 76 (291): 119–26.

Wiessner, Polly. 1983. "Style and Social Information in Kalahari San Projectile Points." *American Antiquity* 48 (2): 253.

———. 1984. "Reconsidering the Behavioural Basis for Style: A Case Study among the Kalahari San." *Journal of Anthropological Archaeology* 3 (3): 190–234.

Wilkinson, Endymion P. 2001. "Chinese Culinary History." *China Review International* 8 (2): 285–304.

Wilson, Gregory D., and Christopher B. Rodning. 2002. "Boiling, Baking, and Pottery Breaking: A Functional Analysis of Ceramic Vessels from Coweeta Creek." *Southeastern Archaeology* 21 (1): 29–35.

Wobst, Martin H. 1977. "Stylistic Behavior and Information Exchange." *Anthropological Papers of the University of Michigan* 61: 317–42.

Wood, James ., Darryl J. Holman, Kathleen A. O'Connell, and Rebecca A. Ferrel. 2002. "Mortality Models for Paleodemography." In *Paleodemography: Age Distributions from Skeletal Samples*, edited by Robert D. Hoppa and James W. Vaupel, 130–68. Cambridge: Cambridge University Press.

Woods, A.J. 1986. "Form, Fabric and Function: Some Observations on the Cooking Potin Antiquity." In *Technology and Style*, edited by W. D. Kingery and Esther Lense, 157–72. Ceramics and Civilization, v. 2. Columbus, OH: American Ceramic Society.

Woolf, Greg. 1998. *Becoming Roman: The Origins of Provincial Civilization in Gaul*. Cambridge: Cambridge University Press.

Wu, Hung. 1995. *Monumentality in Early Chinese Art and Architecture*. Stanford,: Stanford University Press.

———. 1999. “The Art and Architecture of the Warring States Period.” In *The Cambridge History of Ancient China*, edited by Michal Loewe and Edward L. Shaughnessy, 651–744. Cambridge: Cambridge University Press.

———. 2010. *The Art of the Yellow Springs: Understanding Chinese Tombs*. Honolulu: University of Hawaii Press.

Wu, Minna. 2013. *On the Periphery of a Great 'Empire': Secondary Formation of States and Their Material Basis in the Shandong Peninsula during the Late Bronze Age, Ca. 1000-500 B.C.E. Unpublished* PhD dissertation Columbia University.

Wu, Wenxiang, and Tungsheng Liu. 2004. “Possible Role of the ‘Holocene Event 3’ on the Collapse of Neolithic Cultures around the Central Plain of China.” *Quaternary International* 117 (1): 153–66.

Xu, Jay. 1996. “The Cemetery of the Western Zhou Lords of Jin.” *Artibus Asiae* 56 (3/4): 193–231.

Yaeger, Jason, and Marcello A. Canuto. 2000. “Introducing an Archaeology of Communities.” In *The Archaeology of Communities: A New World Perspective*, edited by Marcello A. Canuto and Jason Yaeger, 1–15. London: Routledge.

Yao, Alice. 2008. “Precipitating Change or Sustaining Traditions: Social Patterns of a Bronze Age Community from the Upper Pearl River Drainage in Yunnan before the Han Imperial Period.” *Bulletin of the Indo-Pacific Prehistory Association* 28 (0): 23–33.

Yates, Robin D.S. 1997. “The City-State in Ancient China.” In *The Archaeology of City-States: Cross-Cultural Approaches*, edited by D.L. Nichols and T.H. Charlton, 71–90. Washington, D.C: Smithsonian Institution Press.

Yoffee, Norman. 2005. *Myths of the Archaic State: Evolution of the Earliest Cities, States and Civilizations*. New York: Cambridge University Press.

Yong, Ying. 2004. “Gender, Status, Ritual Regulations and Morturary Practice in the State of Jin.” In *Gender and Chinese Archaeology*, edited by Katheryn M. Linduff and Yan Sun, 161–202. Lanham, MD: Altamira Press.

Young, Lisa C., and Tammy Stone. 1990. “The Thermal Properties of Textured Ceramics: An Experimental Study.” *Journal of Field Archaeology* 17 (2): 195–203.

Yu, Liancheng, and Wenming Yan. 2005. “Society during the Three Dynasties.” In *The Formation of Chinese Civilization: An Archaeological Perspective*, edited by Kwang-chih Chang, Sarah Allan, and Pingfang Xu, 141–202. New Haven: Yale University Press.

Yu, Liu, Zhang Xiaomei, Yang Xianwei, and Yuan Sixun. 2001. “Study on the Conditions of Bronzes Excavated from the Jin State Cemetery at Tianma-Qucun.” *Chinese Archaeology* 1 (1): 74–75.

Zeder, Melinda A. 1991. *Feeding Cities: Specialized Animal Economy in the Ancient Near East*. Smithsonian Series in Archaeological Inquiry. Washington: Smithsonian Institution Press.

Zhang, L. S., X. Q. Fang, G. Y. Ren, and S. X. Fen. 1997. "Environmental Changes in the North China Farming Grazing Transitional Zone." *Earth Science Frontiers* 4 (1-2): 127–36.

Zhao, Huacheng. 2013. "New Explorations of Early Qin Culture." In *Birth of an Empire The State of Qin Revisited*, edited by Yuri Pines, Gideon Shelach, Lothar von Falkenhausen, and Robin D.S. Yates, 53–70. Berkeley: University of California Press.

Zohar, Michael. 1992. "Megalithic Cemeteries in the Levant." In *Pastoralism in the Levant: Archaeological Materials in Anthropological Perspectives*, edited by Ofer Bar-Yosef and Anatoly M. Khazanov, 43–63. Monographs in World Archaeology, no. 10. Madison: Prehistory Press.

Chinese Bibliography

Beijing (Beijing Daxue Kaogxi Shang Zhou Zu, 北京大学考古系商周组). 1987. 菏泽安邱堌堆遗址发掘简报 (Excavation of the Site at Gudai in Anqiu, Heze). *Wenwu 文物 [Cultural Relics]* 1987(7): 38-42.

Beijing [Beijing Shi Wenwu Yanjiusuo 北京市文物研究所]. 1995. *琉璃河西周燕国墓地 1973–1977* [*The Yan State Cemetery of the Western Zhou Period at Liulihe, 1973–1977*]. Beijing 北京: Wenwu Chubanshe文物出版社.

Beijing and Shanxi [Beijing Daxue Kaogu Xuexi 北京大学考古学系 and Shanxi Sheng Kaoguxuo 山西省考古研究所]. 1993. 1992 年春天马——曲村遗址墓葬发掘报告 [Excavation of Tombs at the Site Tiama-Qucun in 1992]. *Wenwu 文物 [Cultural Relics]* 1993 (3): 11-30.

———.1994. 天马——曲村遗址北赵晋侯墓地第二次发掘 (Second Campaign of Excavations of the Cemetery at the Jin State at Beizhao in Tianma-Qucun). *Wenwu 文物 [Cultural Relics]* 1994 (1): 4-28.

———.1995. 天马——曲村遗址北赵晋侯墓地第五次发掘 (Fifth Campaign of Excavations of the Cemetery at the Jin State at Beizhao in Tianma-Qucun). *Wenwu 文物 [Cultural Relics]* 1995 (7): 4-39.

Beijing and Shanxi [Beijing Daxue Kaogu Xuexi Shang Zhou Zu北京大学考古学系商周组 and Shanxi Sheng Kaoguxuo 山西省考古研究所]. 2000. *天马——曲村 1980-1989 [The Site of Tianma-Qucun: Report on Excavations during 1980-1989]*. Beijing 北京: Wenwu Chubanshe文物出版社.

Beijing and Shanxi [Beijing Daxue Kaogu Xuexi Wenboyuan 北京大学考古学系文博院 and Shanxi Sheng Kaoguxuo 山西省考古研究所]. 2001. 天马——曲村遗址北赵墓地第六次发掘（Fifth Campaign of Excavations of the Cemetery at the Jin State at Beizhao in Tianma- Qucun). *Wenwu 文物 [Cultural Relics]* 2001 (8): 4-21, 55.

Beijing and Yantai (Beijing Daxue Kaogu Shixi Dui 北京大学考古实习队 and Yantai Shi Bowuguan 烟台市博物馆). 2000. 烟台芝水遗址发掘报告 (Brief report on the excavation of the Zhishui Site, Yantai), in Beijing and Yantai [Beijing Daxue Kaoguxi 北京大学考古系 and Yantai Shi Bowuguan 烟台市博物馆] eds. *胶东考古 [Jiaodong arcaheology]*. Beijing 北京: Wenwu Chubanshe 文物出版社, pp. 96-150.

Beijing et al. (Beijing Daxue Kaogxi Shang Zhou Zu 北京大学考古系商周组, Shandong Sheng Anqiu Diqu Wenzhanguan 山东省地区安丘文展馆 and Shandong Sheng Anqiu Shi Wenhuaguan 山东省地区安丘市文化馆). 1987. 菏泽安邱堌堆遗址发掘简报 (Excavation of the Site at Gudai at Anqiu, Heze). *Wenwu 文物 [Cultural Relics]* 1987(7): 38-42.

Beijing et al. [Beijing Daxue Kaogu Zhuanye Shang Zhou Zu 北京大学考古专业商周组, Shanxi Sheng Kaogu Yanjiusuo 山西省考古研究所, Henan Sheng Anbu 河南省安阳, Xinxiang Diqu Wenhuaju 新乡地区文化局. Hebei Sheng Xiaogan Diqu Bowuguan 湖北省孝感地区博物馆]. 1982. 晋豫鄂三省考古调查简报 (Brief report of the Shanxi, Shaanxi and Henan Archeological surveys). *Wenwu 文物 [Cultural Relics]* 1982 (7): 1-16**.**

Beijing et al. (Beijing Daxue Kaogu Shixi Dui 北京大学考古实习队, Yantai Diqu Wenguanhui 烟台地区文管会 and Changdao Xian Bowuguan 长岛县博物馆). 1983. 山东长岛县史前遗址 (Prehistoric sites in Changdao, Shandong *Shiqian Yanjiu 史前研究 [Prehistoric Research]* : (1): 114-130.

Cao (Bin 曹斌). 2007 曹斌 先周文化研究述论 (Discussion on the Pre-Zhou Dynasty culture) *Jianghan Kaogu 江汉考古 [Jianghan Archaeology]*. 2007 (3): 60-66.

———. 2011. 商周铜昜研究 (A Study of Shang and Zhou Period *Yang* Bronze Artifacts). *Kaogu yu Wenwu 考古与文物 [Archaeology and Cultural Relics]* 2011 (3): 32-41.

———. 2015. 前掌大墓地性质辨 (Clarification and Investigation on the Nature of the Qianzhangda Cemetery). *Kaogu yu Wenwu考古与文物 [Archaeology and Cultural Relics]* 2015 (2) 40-46.

———. Forthcoming. 西周燕国的部族和社会等级 (A Socio-ethnic study of the Western Zhou Yan State).

Chao [Fulin, 晁福林]. 1996. *夏商西周的社会变迁 [Social Changes in the Xia, Shang and Western Zhou]*. Beijing 北京: Shifen Daxue Chubanshe 师范大学出版社.

———. 2003. *先秦社会形态研究 [Studies of Pre Qin Social Form]*. Beijing 北京: Beijing Shifan Daxue Chubanshe 北京师范大学出版社.

Chen [Ping, 陈平]. 2006. *燕文化 [The Yan Culture]*. Beijing 北京: Wenwu Chubanshe 文物出版社.

Chen (Xuexiang, 陈雪香). 2007. 山东地区商文化聚落形态演变初探 (A Preliminary Study of the Settlement Pattern of the Shang Culture in the Shandong Region). *Huaxia Kaogu 华夏考古 [Huaxia Arcaheology]* 2007 (1): 102-113, 139.

Cheng (Xiaozhong, 程 晓 钟). 1996. 甘肃省庄浪县出土的高领袋足鬲 (*Li* Tripods with High Necks and Baglike Feet Unearthed in Zhuanglang County, Gansu Province). *Huaxia Kaogu 华夏考古 [Huaxia Arcaheology]* 1996 (2): 89-92.

Chong and Lei (Chong Jianrong 种建荣 and Lei Xingshan 雷兴山). 2007. 先周文化铸铜遗存的确认及其意义 (The Identification of Bronze Casting Remains of Proto-Zhou Culture and its Significance). *中国文物报 [China Cultural Heritage]* 2007(7): 1-3.

Cui et al (Cui Jianfeng 崔剑锋, Yan Shengdong 燕生东, Li Shuicheng 李水城, Dang Hao 党浩 and Wang Shougong 王守功). 2010. 山东寿光市双王城遗址古代制盐工艺的几个问题 (Techniques of Salt Production at the Shuangwangcheng Site during Ancient Time). *Kaogu 考古 [Archaeology]* 2010(3): 50-56.

Dezhou (Dezhou Xingshu Wenwuju Wenwuzu 德州行署文化局文物组). 1981. 山东济阳刘台子西周早期墓发掘简报 (Excavation of the Early Western Zhou Tombs at Liutaizi at Jiyang County in Sahdnong Province). *Wenwu 文物 [Cultural Relics*] 1981(9): 18-24.

———. 1985. 山东济阳刘台子西周墓地第二次发掘 (Excavation of the Western Zhou Tombs at Liutaizi, Jiyang, Shadnong (second season). *Wenwu 文物 [Cultural Relics*]. 1985(12): 15-25.

Du (Zaizhong 杜在忠). 1989. 山东胶莱地区的素面陶鬲 (Plainware *Li* of the Jiaolai Region, Shandong) in 苏秉琦 [Su Bingqi] ed. *考古学文化论集（二）[Anthology of Archaeological Studies, Volume 2]*. Beijing 北京: Wenwu Chubanshe 文物出版社.

Fang (Hui, 方辉). 1988. 岳石文化的分期与年代 (Periodization Anddating of the Yueshi Culture). *Kaogu 考古 [Archaeology]* 1998 (4): 55–71.

———. 2004. 商周时期鲁北地区海盐业的考古学研究 (Archaeological Research on Salt Production during Shang and Zhou Period at North Shandong). *Kaogu 考古 [Archaeology]* 2004 (4): 53-67.

Gansu (Gansu Sheng Bowuguan 甘肃省博物馆). 1959. 甘肃渭河支流南河、榜沙河、漳河考古调查 (The Archaeological Survey of Southern Tributariy of Wei River, Bangsha River and the Chan River). *Kaogu 考古 [Archaeology]* 1959(7): 326-328, 399.

———. 1960. 甘甭古文化遗存 (The Remains of Ancient Cultures in Kansu). *Kaogu Xuebao 考古學報 [Acta Archaeologica Sirica]* 1960 (2): 11-51.

———.1963. 甘肃庄浪县柳家村寺洼墓葬 (A Siwa Burial at the Site of Lijiacun Zhuanglang County, Gansu). *Kaogu 考古 [Archaeology]* 1963 (1): 48.

Gansu (Gansu Sheng Bowuguan Wenwudui 甘肃省博物馆文物队). 1977. 甘肃灵台白草坡西周墓 (The Western Chou Tombs at Pai-Ts'ao-po in Ling-t'ai County, Kansu Province). *Kaogu Xuebao 考古學報 [Acta Archaeologica Sirica]* 1977(2): 99-129.

Gansu (Gansu Sheng Wenwu Gongzuodui 甘肃省文物工作队). 1986. 甘肃崇信于家湾周墓发掘简报 (A Brief Report on the Excavation of Zhou Tombs at Yujiawan, Chongxin Gansu Province). *Kaogu yu Wenwu 考古与文物 [Archaeology and Cultural Relics]*. 1986(1): 1-7.

Gansu (Ganxu Zangzu Zizhizhou Bowuguan 甘南藏族自治州博物馆).1994. 甘肃卓尼(卄也)儿遗址试掘简报 (A Brief Report on the Excavation of the Yaer site in Zhouni, Gansu Province. *Kaogu 考古 [Archaeology]* 1994 (1): 13-22, 104.

Gansu (Gansu Sheng Wenwu Yanjiusuo 甘肃省文物考古研究所). 2012. 甘肃岷县占旗寺洼文化遗址发掘简报 (A Brief Report on the Excavation of the Zhanqi Siwa Culture site in -Zhouni, Gansu Province). *Kaogu yu Wenwu 考古与文物 [Archaeology and Cultural Relics]* 2012 (4): 35-47.

Gansu and Beijing (Gansu Sheng Wenwu Gongzuodui 甘肃省文物工作队 and Beijing Daxue Kaogu Xuexi 北京大学考古学系). 1987. 甘肃省毛家坪遗址发掘报告 (The Excavation of The Maojiaping Site in Gangu County, Gansu Province). *Kaogu Xuebao 考古學報 [Acta Archaeologica Sirica]* 1987(3): 359-395.

Gansu and Lingtai (Gansu Sheng Bowuguan Wenwuju 甘肃省博物馆文物队 and Lingtai Xian Zhanghuaguan 灵台县文化馆). 1976. 甘肃灵台县两周墓葬 (Two Zhou Graves in Liangtai County, Gansu). *Kaogu 考古 [Archaeology]* 1976 (1): 38-48.

Gansu and Xibei (Gansu ShengWenwu Kaogu Yanjiusuo 甘 肃 省 文 物 考 古 研 究 所 and Xibei Daxue Sichouzhilu Wenhua Yichan yu Kaoguxue Yanjiu Zhongxin 西北大学丝绸之路文化遗产保护与考古学研究中心). 2014. 甘肃临潭磨沟墓地寺洼文化墓葬 2009 年发掘简报 (A Brief Report on the 2009 Excavation Season of the Siwa Culture burials at Mogou, Lintao County Gansu). *Wenwu 文物 [Cultural Relics*] 2014 (6): 24-38.

Gansu et al. (Gansu Sheng Wenwu Gongzuodui 甘肃省文物工作队 Beijing Daxue Kaogu Xuexi 北京大学考古学系 and Xihe Xian Wenhuaguan 西和县文化馆). 1987. 甘肃西和栏桥寺洼文化墓葬 (Siwa graves at Lanqiao Xihe County, Gansu). *Kaogu 考古 [Archaeology]* 1987 (8): 678-691, 770-772.

Gansu et al [Gansu Sheng Wenwu Gongzuosuo 甘肃省文物考古研究所 Zhongguo Guojia Bowuguan 中国国家博物馆, Beijing Daxue Kaogu Wenbo Xueyuan 北京大学考古文博学院, Shanxi Sheng Kaogu Yanjiusuo 陕西省考古研究院 and Xibei Daxue Weboxue 西北大学文博学]. 2008. *西汉水上游考古调查报告 [The Upper Western Han River Archaeological Survey Report]*. Beijing 北京: Wenwu Chubanshe 文物出版社.

Guojia (Guojia Wenwuju Kaogu Lingdui Peixunban 国家文物局考古领队培训班). 1991a. 山东济宁凤凰台遗址发掘简报 (Brief Report on the Excavations of the Fenghuangtai site, Jining Shandong). *Wenwu 文物 [Cultural Relics*] 1991(2): 55-60.

———. 1991b. 山东济宁潘庙遗址发掘简报 (Brief Report on the Excavations of the Panmiao Site, Jining Shndong). *Wenwu 文物 [Cultural Relics*] 1991(2): 68-80,104.

———. 1994. 泗水天齐庙遗址发掘的收获.Main Results of the Excavations at the Tianjimiao Site, Sishui). *Wenwu文物 [Cultural Relics*] 1994 (12): 34-41, 72.

He (Deliang 何德亮). 1996. 滕州市庄里西村龙山文化至汉代遗址 (The Longshang to Han site of Zhuanglixi, Tengzhou City). *中国考古学年鉴 1996 [Yearbook of Chinese Archaeology 1996]*. Beijing 北京: Wenwu Chubanshe 文物出版社, pp 158-159.

Hennan and Sanmenxia [Henan Sheng Wenwu Kaogu Yanjiusuo 河南省文物考古研究所 and Sanmenxia Shi Wenwu Gongzuodui 三門峽市文物工作隊]. 1999. *三門峽虢國墓* [*The Guo State Tombs in Sanmenxia*]. Beijing 北京: Wenwu Chubanshe 文物出版社.

Hu (Qianying 胡谦盈). 1980. 试论寺洼文化 (A Discussion of the Siwa Culture). *Wenwu Jikan 文物 [Cultural Relics Jurnal*] 1980 (2): 118-125.

———.2005.南邠碾子坡先周文化遗存的性质分析 (A Study of the Nature of the Zhou Cultural Remains at Nianzipo, Nanban). *Kaogu 考古 [Archaeology]* 2005(6): 87-91.

Hu (Zhixian 胡志祥). 1994. 先秦主食烹食方法探析 (A Study of Pre Qin cooking and food preparation methods). *Nongye Kaogu 农业考古 [Agricultural Archaeology]*. 1994 (1): 214-218, 213.

Ji (Jieren 冀介仁). 1995. 滕州市薛国故城龙山文化及商周城址 (The Longshang Culture and Shang Zhou Ancient State of Xue, Tengzhou City). *中国考古学年鉴 1995[Yearbook of Chinese Archaeology 1995]*. Beijing 北京: Wenwu chubanshe 文物出版社, pp 151-152.

Jiqing (Jiqing Gongsu Wenwu Kaogu Dui 济青公路文物考古队). 1992. 山东临淄后李遗址第一、二次发掘简报 (Short Report on the First and Second Excavation Seasons at the Houli Site, Linzi Shandong). *Kaogu 考古 [Archaeology]* 1992 (11): 987-996.

———. 1994. 山东临淄后李遗址第三、四次发掘简报 (Short Report on the Third and Fourth Excavation Seasons at the Houli Site, Linzi Shandong). *Kaogu 考古 [Archaeology]*. 1994(2): 97-112.

Jiang (Gang 蒋刚). 2008. 夏商西周文化对其西方和北方地区文化渗透的方向性与层级性 (The Cultural Penetration of the Xia, Shang and Western Zhou Cultures to the Regions North and West of Them). *Kaogu 考古 [Archaeology]* 2008 (12): 53-65.

Jiang and Wang (Jiang Gang 蒋刚 and Wang Zhigang 王志刚). 2010. 关于围坊三期文化和张家园上层文化的再认识 (Some New Opinions on the Weifang Phase III and Upper Xiajiadian Cultures). *Kaogu 考古 [Archaeology]*. 2010 (5): 67-78.

Jingchuan and Liu (Jingchuan Wenhuaguan 径川县文化馆 and Liu Yulin 刘玉林). 1977.甘肃泾川发现早周铜鬲 (An Early Western Zhou Bronze *Li* Found in Jingchuan, Gansu). *Wenwu 文物 [Cultural Relics*] 1977(9): 92.

Jun [Chengping 君盛平]. 2004. *早期中国文明：周原文化与西周文明 [Early Chinese Civilizations: Zhouyuan Culture and the Western Zhou Civilization]*. Jiangsu 江苏: Jiaoyu Chubanshe 教育出版社.

Lei [Xingshan 雷兴山]. 2010. 先周文化探索 [An exploration of Pre-Zhou Culture]. Beijing 北京: Kexue Chubanshe 科学出版社.

Li (Boqian 李伯谦). 2006. 从殷墟青铜器族徽所代表的族氏的地理分布看商王朝的统辖范围与统辖措施 [Reconstructing the Shang Dynasty's Scope of Control and Governance as Seen in the Family Emblems of Yinxu Bronze Vessels]. *Kaoguxue Yanjiu 考古学研究 [A Collection of studies on Archaeology]* 2006 (6): 138-151.

———. 2012. 回顾曲村——山西晋文化墓地发掘历程 (Looking Back to Qucun: The Excavation of the Jin Cemeteries in Shanxi). *Zhonguo Wenhua Yichan 中国文化遗产 [Chinese Cultural Heritage]* 2012 (4): 92-98.

Li (Chaoyun 李朝远). 2002. 晋侯青铜鼎探识 (Overview of Bronzes From the Cemetery of Jin Marquis) in 上海博物馆编 [Shanghai Museum] (eds), 晋侯墓地出土青铜器国际学术研讨会论文集 [Collected essays From the International Symposium of the Bronze Unearthed at the Cemetery of the Marquises of Jin]. Shanghai 上海 Shanghuai Shuhua Chubanshe上海书画出版社, Pp. 431-445.

Li (Feng 李峰). 1986. 试论陕西出土商代青铜器的分期与分区 (A Study on the Periodization and Delimitation of Unearthed Shang dynasty Bronze from Shaanxi). *Kaogu yu Wenwu 考古与文物 [Archaeology and Cultural Relics]* 1986 (3): 53–63.

———. 1988. 黄河流域西周墓葬出土青铜禮器的分期与年代 (A Chronological Study of The Ritual Bronze Vessels Unearthed from Western Zhou Tombs in The Valley of The Huanghe River). *Kaogu Xuebao 考古学报 [Acta Archaeologica Sirica]* 1988 (4) 383–419.

———. 1991. 先周文化的内涵及其渊源探讨 (A Study of the Contents and Origin of the Predynastic Zhou Culture) *Kaogu Xuebao考古学报 [Acta Archaeologica Sirica]* 1991(3): 265–84.

Li (Junshe 刘军社). 1994. 郑家坡文化与刘家文化的分期及其性质 (Periodization and Character of the Zhengjiapo and Liujia Cultures) *Kaogu Xuebao 考古學報 [Acta Archaeologica Sirica]*. 1994 (1): 25-62.

———. 2003. *先周文化研究 [Proto-Zhou Culture]*. Xian 西安: San Qin Chubanshe 三秦出版社.

Li (Shuicheng 李水城). 1998. 刘家文化来源的新线索 (New evidence on the origins of the Liujia Culture) in 委会 [Wei Hui] ed. *远望集: 陕西考古研究所华诞四十周年纪念文集 [Festschrift in Honor of the Fortieth Anniversary of the Birthday of Yuan Wang, Shaanxi Institute of Archaeology]*. Shaanxi 陕西: Renmin Mo Chubanshe 人民美术出版社.

———. 2005. 西北与中原早期冶铜业的区域特徵及交互作用(Characteristics and interactions of bronze metallurgy in the northwest and the Central Plains). *Kaogu Xuebao 考古學報 [Acta Archaeologica Sirica*] 2005 (3): 239–278.

Li and Wang (Li Buqing 李步青 and Wang Xiping 王錫平). 1988. 胶东半岛新石器文化初论 (Prelimanry studies of the JIadong Peniniula Neolitihc cultures). *Kaogu 考古 [Archaeology]* 1988 (1): 66-77.

Li et al. (Li Shuicheng 李水城, Lan Yufu 兰玉富 and Wang Hui 王辉). 2009. 鲁北—胶东盐业考古调查记 (Archaeological Surveys of Salt Production in Northern Shandong to the Jiaodong Peninsula). *Huaxia Kaogu 华夏考古 [Huaxia Archaeology]* 2009 (1):11-25.

Li et al. (Li Xuecheng 李水城, Shui Tao 水濤 and Wang Hui 王輝). 2010. 河西走廊史前考古调查报告 [The Hexi corridor Prehistoric Survey Report]. *Kaogu Xuebao 考古學報 [Acta Archaeologica Sirica]* 2010 (2): 229–264.

Li et al (Li Shuicheng李学勤, Liu Qingzhu 刘庆柱, Li Boqian李伯谦, Li Ling 李零, Zhu Fanghan 朱凤瀚, zhang Xuehai 张学海, Wang Entian 王恩田, Wang Shuming 王树明, Fang Hui 方辉, Zheng Tongxiu 郑同修, Wei Chengming 魏成敏, Wang Qing 王青 and Jin Guiyun 靳桂云). 2011. 山东高青县陈庄西周遗址笔谈 (Experts' Comments on the Chenzhuang Site in Gaoqing County, Shandong). *Kaogu 考古 [Archaeology]*. 2011(2): 118-128.

Li (Xueqin 李学勤) 2005. 夏商周与山东 (Xia, Sahng and Zhou in Shandong). In Li [Xueqin 李学勤] ed. *中国古代文明研究 [Ancniet Chinese Civilizations]*. Shanghai 上海: Huadong Shifan Daxue 华东师范大学, pp. 374-382.

Lin et al 2013 [Lin Yongchang 林永昌, Zhong Jianrong 种建荣 and Lei Gongshan 雷公山] 周公廟商周時期聚落動物資源利用初識 (The Utilization and Consumption of Animal Resources in Western Zhou High Rank Settlements: A Case Study of the Zhougongmiao Site. *Kaogu yu Wenwu 考古与文物 [Archaeology and Cultural Relics]* 2013 (3): 40-49.

Lin (Yun 林沄). 1986. 关于中国早期国家形式的几个问题 (On the form of China's earliest states). *Jilin Daxue Shehui Kexue Xuebao 吉林大学社会科学学报 [Jilin University Journal Social Sciences Edition]* 1986 (6) 1-2.

Liu (Dezhen 刘得祯). 1981. 甘肃灵台两座西周墓 (Two Western Zhou Graves in Lingtai, Gansu). *Kaogu 考古 [Archaeology]* 1981 (6): 557-558.

Liu [Xu 刘绪]. 2007. *晋文化 [Jin Culture]*. Beijing 北京: Wenwu Chubanshe 文物出版社.

Liu (Yanchang 刘延常).2000. 山东潍坊市会泉庄遗址发掘报告 (Breif report on the excavations at Huiquanzhuang，Weifang City Shandong) in *山东省高速公路考古报告集 [A Collection of Brief Reports fn the Shandong Province Super Highway Excavations] ed.* 山东省文物考古研究所 [Shandong Sehng Wenwu Kaogu Yanjiusuo]. Beijng 北京Kexue Chubanshe科学出版社, pp.119-132.

———. 2001. 珍珠门文化初探 (A Preliminary Study of the Zhenzhumen Culture). *Huaxia Kaogu 华夏考古 [Huaxia Arcaheology]* 2001 (4): 94-105.

Lu (Guoqian 路国权). 2013. 路国权 泾、洛、渭河上游西周文化边界及相关问题初论 (The Boundary of the Western Zhou Culture in the Upper Reaches of the Jing, Luo,and Wei River and Its Relevant Issues: the Research of the History and Culture in the Marginal Crescent Transmission Zone of Culture). *Kaogu yu Wenwu 考古与文物 [Archaeology and Cultural Relics]* 2013 (3):48-56.

Lu (Liangcehng 卢连成). 1985. 扶风刘家先周墓地剖析一论先周文化 (Analysis of the Pre-Zhou Liujia Cemetery in Fufeng County). *Kaogu yu Wenwu 考古与文物 [Archaeology and Cultural Relics]*. 1985(2):1-12.

Lu and Hu [Lu Liancheng 盧連成 and Hu Zhisheng 胡智生]. 1988. *宝鸡虞国墓地* [Yu State Cemeteries in Baoji]. Beijing 北京: Wenwu Chubanshe 文物出版社.

Luan (Fengshi 栾丰实). 1999. 商时期鲁北地区的夷人遗存 (Yi People remains in the Lubei region during the Period) in Li[Xueqin，李学勤] ed, *三代文明研究 [Three Dynasties Civilization Research]*. Beijing 北京: Kexue Chubanshe 科学出版社, pp.270-279..

Luoyang [Luoyang Shi Wenwu Gongzuodui 洛阳市文物工作队] 2002. *洛阳北窑西周墓* [The Western Zhou Cemetery at Beiyao, Luoyang]. Beijing 北京: Wenwu Chubanshe 文物出版社.

Mao et al. (Mao Ruilin 毛瑞林, Liang Yun 梁云 and Nan Yushang 南宝生). 甘肃清水县的商周时期文物 (Shang and Zhou period cultural Relics From Qingshui County, Gnasu). *Zhonguo Lishi Wenwu中国历史文物 [Journal of National Museum of China]* 2006(5): 38-45.

Nan (Yuquan, 南玉泉). 1989:《辛店文化序列及其与卡约、寺洼文化的关系 (Xindian Culture Assembaldges and their relatnships to the Kayue and Siwa Cultures). In Yu [Weichao 俞伟超] ed. *考古类型学的理论与实践 [Chinese Typology: Theory and Practice]* Beijing 北京: Wenwu Chubanshe文物 出版社, pp. 73-109.

Nan and Guo (Nan, Yuqian 南玉泉 and Guo, Chenhui 郭晨辉). 1987. 寺 洼 一 安 国 系 统 陶 高 的 序 列 (Sequnce and order of the Siwa Anguo Type Ceramics). *Wenwu 文物 [Cultural Relics*] 1987 (2): 27-34;43

Peng [Yusahng, 彭裕商]. 2003. 西周青铜器年代综合研究成 [A Comprehensive Synthesis of Western Zhou Bronzes Dates and Periodization]. Chengdu 成都: Ba Shu Shushe 巴蜀书社.

Ping [Shi 冯时]. 1997. 晋侯稣钟与西周历法 (The Jin Mrquis Su Bell's and the Western Zhou calendar). *Kaogu Xuebao 考古学报 [Acta Archaeologica Sirica]*. 1997(4): 407-442.

Qingyang (Diqu Bowguan 庆阳地区博物馆). 1985. 甘肃庆阳韩家滩庙嘴发现一座西周墓 (A Western Zhou Burial Unearthed in Tianmiaozui Hanjia Qingyan, Gansu Province) *Kaogu 考古 [Archaeology]* 1985 (9):853-854.

Ren [Wei 任伟]. 2004. *西周封国考疑 [The Feudal State system of the Zhou Dynasty]*. Shanghai 上海: Shehui Kexue Wenbo Chubanshe 社会科学文献出版社.

Ren et al (Ren Xianghong 任相宏, liu zhongjin刘忠进, Zhang Guangming 张光明, Cao Yanfang曹艳芳 and Yin Yichao 尹懿超). 2006. 淄川北沈马商代，西周遗存的发掘 (The Excavation of the Shang and Zhou period Remains at Beishenma, Zichuan) In Liu [Dongheng 刘东车] ed. *临淄考古 [Linzi Kaogu]*. Jinan 济南: Qilushushe 齐鲁书社, pp. 43-109.

Shandong (Shandong Daxue Lishixi Kaogu Zhanye 山东大学历史系考古专业). 1982. 山东邹平丁公遗址试掘简报 (Short Report on the Excavation of the Dinggong site, Zouping Shandong. *Kaogu 考古 [Archaeology]*. 1989 (5): 391-398.

———. 1985. 泗水尹家城遗址第二、三次发掘简报 (Short Report on the Second and Third excavation Seasons at the Yinjiacheng site, Sishui Shandong). *Kaogu 考古 [Archaeology]* 1985 (7): 595-601,632.

———.1992. 山东邹平丁公遗址第二、三次发掘简报 (Short Report on the second and Third Excavation Seasons at the Dinggong site, Zouping Shandong). *Kaogu 考古 [Archaeology]*. 1992 (6): 496-504,577-578.

Shandong (Shandong Daxue Kaoguxi 山东大学考古系). 1988. 山东长清县仙人台周代墓地及相关问题初探 (On the Zhou Dyansty Xianrentai Cemetery in Changqing Shandong and Related Issues). *Kaogu 考古 [Archaeology]*. 1998 (9): 26-35.

Shandong [Shandong Daxue Lishixi Kaogu Jiaoyanshi 山东大学历史系考古教研室]. 1990.四水尹家城 *[Yinjiacheng in Sishui]*. Beijing 北京: Wenwu chubanshe 文物出版社.

Shandong (Shandong Jining Shi Wenwuju 山东省济宁市文管局). 1991. 薛国故城勘查和墓葬发掘报告 (Explorations of The Ruined Xue State City and Excavations of Its Tombs) . *Kaogu Xuebao 考古学报 [Acta Archaeologica Sirica]*. 1991 (4): 449-495, 521-534.

Shandong [Shandong Sheng Wenwu Kaogu Yanjiusuo 山东省文物考古研究所]. 1982. *Qufu Lugu Chengshi* 曲阜鲁国故城 [The Ancient city of Qufu of the Lu state]. Jinan 济南: Qilushushe 齐鲁书社.

———.1989. 青州市凤凰臺遗址发掘 (Short report on the excvations at th Fenghuangtai site, Qingzhou city Shandong). *Haidai Kaogu*海岱 *[Haidai Arcaheology]* 1(1989): 141-182.

———.1993. 章丘宁家埠遗址发掘报告 (Brief report on the excvations at the Ningjiabu site, zhangqiu. In山东省文物考古研究所 [Shandong Sehng Wenwu Kaogu Yanjiusuo] ed. 济青

高级公路章丘工段考古发掘报告集 *[A Collection of Reports from the Qingdao High Road Zhangqiu Station Excavations]*. Jinan 济南: Qilu Shushe 齐鲁书社, pp.5-114.

———.1996. 山东济阳刘台子西周六号墓清理报告 (Excavation of Tomb 6 at Liutaizi, Jiyang, Shandong). *Wenwu 文物 [Cultural Relics*] 1996 (12): 4-25, 97-101.

———. 2010a.山东阳信县李屋遗址商代遗存发掘简报 (Preliminary Reports of Archaeological excavations of Shang period at the Liwu Site, Yangxin County, Shandong). *Kaogu考古 [Archaeology]* 2010 (3):3-17.

———. 2010b. 山东高青县陈庄西周遗址 (The Western Zhou Site at Chenzhuang Village, Gaoqing County, Shandong). *Kaogu考古 [Archaeology]* 2010 (8): 27-34.

———. 2011. 山东高青县陈庄西周遗存发掘简报 (The Excavation of the Western Zhou Remains at Chenzhuang Village, Gaoqing County, Shandong). *Kaogu考古 [Archaeology]* 2011 (2): 99-117.

———. Manuscript in preparation. 山东临朐县陈家河遗址发掘简报（The Excavation of the Western Zhou Remains at Chenjiahe Village, Liqu County, Shandong).

Shandong and Qingzhou (Shandong Sheng Wenwu Kaogu Yanjiusuo 山東省文物考古研究所 and Qingzhoushi Bowuguan 青州市博物館). 1989. 青州市苏埠屯商代墓葬发掘报告 (Short Report on the Excavations at Xubutun Shang Period Cemetery, Qingzhou city). *Haidai* 海岱 *Kaogu [Haidai Arcaheology]* 1(1989): 254-273.

Shandong et al. [Shandong Sheng Wenwu Kaogu Yanjiusuo 山东省文物考古研究所, Shandong Sheng Bowuguan山东省博物馆, Jining Diqu Wenwuzu济南地区文物组 and Qufu Xian Wenguanhui 曲阜縣文管會]. 1982. 曲阜鲁国故城 *[Site of Lu state at Qufu]*. Jinan 濟南: Qilu shushe 齊魯書社.

Shandong et al. (Shandong Sheng Wenwu Kaogu Yan Jiusuo 山东省文物考古研究所 Beijing Da Xue Zhongguo Kaoguxue Yanjiu Zhongxin 北京大学中国考古学研究中心 and Shouguan Shi Wenhuaju寿光市文化局). 2010. Shandong Shouguang Shi Shuangwangcheng Yan Ye Yizhi 2008 nian de fa jue 山东寿光市双王城盐业遗址 2008. 年的发掘 (Reports of 2008 Season Excavation on the Shuangwangcheng Salt Production Sites, Qingzhou, Shandong). *Kaogu考古 [Archaeology]* 2010(3): 18-36.

Shandong et al. (Shandong Saxue Lishixi Kaogu Zhanye 山东大学历史系考古专业, Shandong Kaogu Yanjiusuo 山东省文物考古研究所 and Jinan Shi Bowuguan 济南市博物馆). 1995. 1984 年秋济南大辛庄遗址试掘述要 (Excavation of the Daxinzhuang Site at Jinan in Fall of 1984). *Wenwu 文物 [Cultural Relics*] 1995(6): 12:27.

Shandong et al. (Shandong Daxue Dongfang Kaogu Yanjiu Zhongxin 山东大学东方考古研究中心, Shandong Sheng Wenwu Kaogu Yanjiusuo 山东省文物考古研究所 and Jinan Shi Kaogusuo 济南市考古所). 2003. 济南市大辛庄遗址出土商代甲骨文 (Inscribed Oracle Bones of the Shang Period Unearthed from the Daxinzhuang site in Jinan City). Kaogu *考古 [Archaeology]*. 2003(6): 483-486.

———.2004. 济南市大辛庄商代居址与墓葬 (Shang Period Site and Tombs at Daxinzhuang in Jinan City). Kaogu *考古 [Archaeology]* 2004(7): 25-33

Shanxi [Shanxi Sheng Kaogu Yanjiusuo, 山西省考古研究所, Yun Chengshi Wenwu Gongzuozhan 运城市文物工作站, Jiang Xian Wenhuaju 绛县文化局]. 2006. 山西绛县横水西周墓地 (Western Zhou Cemetery at Hengshui, Jiangxian, Shanxi). Kaogu*考古 [Archaeology]* 2006 (7): 16-21.

Shanxi [Shanxi Kaogu Ynajiu Suo 陕西省考古研究院]. 2009. *少陵原西周墓地 [The Western Zhou Shaolingyuan Cemtery]*. Beijng 北京 Kexue Chubanshe 科学出版社.

Shanxi and Beijing [Shanxi Sheng Kaoguxuo Yanjiusuo and Beijing Daxue Kaogu Xuexi 北京大学考古学系]. 1994a. 天马——曲村遗址北赵墓地第四次发掘 (Forth Campaign of Excavations of the Cemetery at the Jin State at Beizhao in Tianma-Qucun) *Wenwu 文物 [Cultural Relics]* 1994 (8): 4-21.

———.1994b. 天马——曲村遗址北赵墓地第三次发掘 (Third Campaign of Excavations of the Cemetery at the Jin State at Beizhao in Tianma-Qucun). *Wenwu 文物 [Cultural Relics]* 1994 (8): 22-33, 68.

Shanxi et al [Shanxi Sheng Wenwuju 陕西省文物局, Beijing Daxue Kaogu Wenboyuan 北京大学考古学系文博院, Shanxi Sheng Kaogu Yanjiusuo 山西省考古研究所 and Shanghai Bowuguan 上海考古博物馆]. 2002. *晋国奇珍: 山西晋侯墓群出土文物精品 [Treasures of the Jin state: Gems from Excavations of Cemetery of Marquis of Jin in Shanxi Province]*. Shanghai Shi 上海市: Shanghai Renmin Meishu Chubanshe 上海人民美术出版社.

Shanxi et al. [Shanxi Sheng Kaogu Yanjiusuo, 山西省考古研究所, Yun Chengshi Wenwu Gongzuozhan 运城市文物工作站, Jiang Xian Wenhuaju 绛县文化局]. 2006. 山西绛县横水西周墓发掘简报 (A Brief Archaeological Report of Western Zhou Tombs at Hengshui, Jiangxian, Shanxi). *Wenwu 文物 [Cultural Relics]* 2006 (8): 4-18

Shaanxi (Shaanxi Sheng Wenwu Guanli Wenyuanhui 陕西省文物管理委员会). 1956. 凤县古文化遗址清理简报 (Brief report on the Ancient Cultural Relics site in Feng County), *Wenwu Cankao Ziliao 文物参考资料 [Cultural Relics Reference Materials]* 1956 (2): 34-41. Shaanxi (Shaanxi Zhouyuan Kaogudui).

———.1984. 扶风刘家姜戎墓葬发掘简报 (Breif Report on the Excavation of the Jiang Rong/Liujia Graves in Fufeng). *Wenw 文物 [Cultural Relics*] 1984(7): 16-29.

Shaanxi [Shaanxi Zhouyuan Kaogudui]. 1984. 扶风刘家姜戎墓葬发掘简报 (Breif Report on the Excavation of the Jiang Rong/Liujia Graves in Fufeng). *Wenwu 文物 [Cultural Relics*] 1984 (7): 16-29.

Shaanxi et al. [Shanxi Sheng Kaogu Ynajiuxuo 陕西省考古研究院, Beijing Daxue Kaogu Wenbo Xueyaun 北京大学考古文博学院, Zhongguo Shehui Kexueyaun Kaogu Yanjiusuo 中国社

会科学院考古研究所 and Zhouyuan Kaogudui 周原考古队]. 2010. *周原——2002 年度齐家制玦作坊和礼村遗址考古发掘报告 [Zhouyuan - The 2002 Qijia Workshop and Ritual Site Archaeological Excavation Report]*. Beijng 北京 Kexue Chubanshe 科学出版社.

She (Shizhi, 束世澂). 1956. 夏代和商代的奴隶制 (Slave Systems of the Xia and Shang dynasties), *Lishi Yanjiu 历史研究 [Historical Research]* 1956 (1): 31-61.

Shui (Tao 水涛). 1989 关于寺哇文花研究的几个问题 (Some Problems Concerning the Study of the Siwa Culture). *Xibei Shidi 西北史地 [Historical and geographical review of Northwest China]* 1989 (3): 110-114

———.2001. 甘青青铜器时代的文化结构和经济态研究地区 (A Study of Cultural Structure and Economic Form in the Bronze Age of Gansu and Qinghai), in Shui Tao [水涛] ed. 中国西北地区青铜时代考古论集 *[Collected Essays on the Bronze Age Archaeology of China's Northwestern Regions]*. Beijing 北京: Kexue Chubanshe 科学出版社, pp. 193-322.

Tian [Cahngwu, 田昌五]. 1980.*古代社会形态研究 [Studies on Ancient Social Forms]*. Tianjing 天津: Tianjing Renmin Chubanshe 天津人民出版社.

Tian and Cang [Tian, Changwu 田昌五 and Cang, Zhifei 藏知非]. 1996. *周秦社会形态研究 [Studies on Zhou and Qin Social Forms*]. Xian 西安: Xibei Daxue Chubanshe 西北大学出.

Wang (Fuqiang 王 富 强). 2006. 从 珍 珠 门 到 南 黄 庄 (From Zhenzhumen to Nanhuangzhuang). In烟 台 市 博 物 馆 [Yantai Shi Bowuguan] ed.*考 古 烟 台 [Yantai Archaeology]*, Pp. 95 – 120. Jinan 济南: Qilu Chubanshe齐鲁出版社。

Wang (Hui 王辉). 2012. 甘青地区新时期-青铜器代考古学文化的谱系与格局 (An Archaeological Study of the Structure and System of the Neolithic through Bronzes Age Cultures in the Ganqing Region). *Kaoguxue Yanjiu 考古学研究 [A collection of studies on Archaeology]*. 2012 (9): 210–243.

———.2013. 甘肃发现的两周时期的"胡人"形象 (Iconography of Hu Barbarians Discovered in Gansu Province during the Zhou Dynasties). *Kaogu yu Wenwu 考古与文物 [Archaeology and Cultural Relics]* 2013 (6): 59-68.

Wang [Xun, 王迅]. 1994. *东夷文化与淮夷文化研究 [The Dongyi and Huaiyi Cultures]*. Beijing 北京: Kexue Chubanshe 科学出版社.

Wang and Zhu (Wang Qing 王青 and Zhu Jiping 朱继平). 2006.山东北部商周盔形器的用途与产地再论 (The Distribution and Manufacturing of the Briquetage Kuixingqi at North Shandong). *Kaogu考古 [Archaeology]* 2006 (4): 61-68.

Wang and Xu (Wang Wei 王巍 and Xu Lianggao 徐良高). 2000. 先周文化的考古学探索 (An Archaeological Study of the Pre-dynastic Zhou Culture). *Kaogu Xuebao 考古學報 [Acta Archaeologica Sirica]* 2000 (3): 385-310.

Wang and Shui (Wang Zhangkui 王占奎 and Shui Tao 水涛). 1997. 甘肃合水九站遗址发掘报告 (The Excavation Report of the Jiuzhan Site in Heshui, Gansu Province). *Kaoguxue Yanjiu 考古学研究 [A Collection of studies on Archaeology]* 1997 (3): 300-549.

Wei (Qiaowei 魏峭巍). 2015. 试论鲁北地区的珍珠门文化 (On the Zhenzhumen Culture of Northern Shandong Area). *Zhongyuan Wenwu 中原文物 [Cultural Relics of Central China]* 2015 (4): 23-27,110.

Wei et al. (Wei Qiaowei 魏峭巍, Zhao Yichao 赵益超 and Yitzchak Jaffe 哈克). Forthcoming. 鲁北商周陶器使用情景的再思考(Rethinking Shang and Zhou Period Ceramic Use in Lubei, Shandong) *Wenwu 文物 (Cultural Relics).*

Wei (Chengming 魏成敏). 2010 陈庄西周城与齐国早期都城 (The Western Zhou City of Chenzhuang and the Qi States's Early Period Capital). *Kaogu yu Wenuu* 考古与文物 [Archaeology and Cultural Relics] 2010 (3): 106-114.

Wei and Yan (Wei Chengmin 魏成敏 and Yan Shengdong 燕生东). 2003. 博兴县寨卞商周时期遗址 (Reports of the Settlements during Shang and Zhou Period at the Zhaibian, Baoxing County). *中国考古学年鉴 2003 [Yearbook of Chinese Archaeology 2003]*. Beijing 北京: Wenwu chubanshe 文物出版社*,* pp *207-208*

Weishi and Changle (Weishi Shi Bowugun潍坊市博物馆 and Changle xian Wenguansuo昌乐县文管所). 1990. 山东昌乐岳家河周墓 (Zhou Dynasty Tombs at Yuejiahe, Changle County, Shandong). *Kaogu Xuebao考古学报 [Acta Archaeologica Sirica]* 1990 (1): 69-102.

Xie [Duanju 谢端琚]. 2002. *甘青地區史前考古 [Prehistoric Archaeology of the Qanqing region]*. Beijing 北京: Wenwu chubanshe 文物出版社.

Xia (Nai 夏鼐). 1949. 临洮寺洼山发掘记 (Report on the excavations at Siwashan in Lintao). 中國考古學報 *[Chinese archaeological reports]* 1949(4): 71-187.

Xie [Weiyang 谢维扬]. 1995. *中国早期国家. [China's Earliest States]*. Zhijiang 浙江: Zhijiang Renmin Chubanshe 浙江人民出版社.

Xie [Yaoting 谢尧亭]. 2010. *晋南地区西周墓葬研究 [The Research of Western Zhou Cemetery in Southern Shanxi Province]*. Unpublished dissertation, Jilin Univeristy 吉林大学博士学位论文.

Xu [Hong 许宏]. 2000. *先秦城市考古学研究* [*An Archaeology Research on Cities in pre-Qin period]* Beijing 北京: Yanshan Chubanshe 燕山出版社.

———.2009. *最早的中国* [*Earliest China]*. Beijng 北京 Kexue Chubanshe 科学出版社.

Xu (Ji 徐基). 1999. 关于济南大辛庄商代遗存年代的思考 (On the Chronology of the Shang Cultural Remains at Daxinzhuang of Jinan) in Li [Xueqi 李学勤] ed. *夏商周文明研究*

[Studies of the Xia, Sahng and Zhou civilizations]. Beijing 北京: Zhongguo Wenlian Chubanshe 中国文联出版社, pp. 65-84.

Xu (Tianjin 徐天进). 2006. 周公庙遗址的考古所获及所思 (Disscsuion on the Archaeological Finds in the Zhougongmiao Site). *Wenwu 文物 (Cultural Relics)* 2006 (8): 55–62.

Xu (Xinguo许新国). 1988. 试论卡约文化的类型与分期 (The Typology and Periodization of the Kayue Culture). *Qinghai Wenwu 青海文物 [Qinghai Cultural Relics*] 1988 (1): 10-14.

Xu [Zhouyun 许倬云]. 1994. *西周史 [Wester Zhou History]*. Xianggang 香港: Sanlian Shudian 三联书店.

Xu and Liu (Xu Junchen 许俊臣 and Liu Dezhen 刘得桢).1987. 甘肃合水庆阳县出土早周陶器 (Early Chinese Ceramics unearthed in Qingyang County, Heshui Gansu Province). *Kaogu考古 [Archaeology]* 1987 (7):660-661.

Yan (Wenming 严文明). 1987. 中国史前文化的统一性与多样性 (Unity and Diversity in Chinese Neolithic Culture). *Wenwu 文物 [Cultural Relics*] 1987 (3): 38–50.

———.1989. 东夷文化的探索 (Explorations in Dongyi Culture) *Wenwu 文物 [Cultural Relics*] 1989 (3): 1-12.

Yan [Shengdong, 燕生东]. 2013. *商周时期渤海南岸地区的盐业 [Salt Production at the Bohai South Shore during Shang and Zhou Period]*. Beijing 北京: Wenwu Chubanshe 文物出版社.

Yang [Kuan 杨宽]. 2003. *西周史 [History of the Western Zhou]*. Shanghai 上海: Shanghai Renmin Chubanshe上海人民出版社.

Ye and Yu (Ye Wansong 葉萬松 and Yu Fuwei 余扶危). 1984. 关于西周洛邑城址的探索 (On the Exploration of the Western Zhou City of Luoyi). *Xizhou Lishi Yanjiu 西周史研究 [Western Zhou Historical studies]*. 1984 (2) 317–24.

Yin and Ren (Yin Chengming 尹盛平 and Ren Zhoufang 任周芳). 1984. 先周文化的初步研究 (The Development of Pre-Zhou Zulture). *Wenwu文物 [Cultural Relics*] 1984 (7): 42-49.

Zhang (Changshou 张长寿). 1980. 论宝鸡茹家庄发现的西周铜器 (A Discussion on the Western Zhou Bronzes Unearthed from Rujiazhuang Baoji). *Kaogu 考古 [Archaeology]*. 1980 (6) 526-529.

Zhang [Kun, 张琨]. 2010 *东夷文化的考古学研究 [An Archaeological Study of the Dongyi Culture]*. Unpublished Dissertation 博士学位论文: Zhounguo Shehui Kexueyuan 中国社会科学院.

Zhang [张广志, Guangzhi]. 2007. *西周史与西周文明 [History and Culture of The Western Zhou Civilization]*. Shanghai Shi 上海市: Shanghai Keji Wenxian Chubanshe 上海科技文献出版社.

Zhang and Liang (Zhang Changshou 张长寿 and Liang Xingpeng 梁星彭). 1989. 关中先周青铜文化的类型与周文化的渊源 (On the Prototype of The Zhou Culture). *Kaogu Xuebao 考古學報 [Acta Archaeologica Sirica]* 1989 (1): 1-23.

Zhang and Liu [Zhang Shudong 张树栋 and Liu Wenming 刘广明]. 1991. *古代文明的起源与演进 [The Origin and Development of Ancient Civilization]*. Nanjing 南京: Nanjing Daxue Chubanshe 南京大学出版社.

Zhao (Huacheng 赵化成). 1989. 甘肃东部秦和羌戎文化的考古学探索 (An Archaeological Study of the Qin and Qian Rong Cultures in Eastern Gansu) in Yu [Weicaho 俞伟超] ed, *考古类型学的理论与实践* [*Chinese Typology: Theory and Practice*]. Beijing 北京: Wenwu Chubanshe 文物出版社, pp. 145-176.

Zhongguo [Zhongguo Shehui Kexueyuan Kaogu Yanjiusuo 中国社会科学院考古研究所]. 1999. *张家坡西周墓地 [The Zhangjiapo Western Zhou Cemetery]*. Beijing 北京: Zhongguo Dabaike Quanshu Chubanshe 中国大百科全书出版社.

———. 2004. *中国考古学: 两周卷 [Chinese Archaeology: The Zhou Volume]*. Beijing 北京: *Zhouguo Shehui* Chubanshe 中国社会出版社.

———. 2005. *滕州前掌大墓地 [Qianzhangda Cemetury in Tengzhou]*. Beijing 北京: Wenwu Chubanshe 文物出版社.

Zhonguo (Zhongguo Shehui Kexueyuan Kaogu Yanjiusuo Jing Wei Gongzuodui 中国社会科学院考古研究所泾渭工作队). 1982.甘肃庄浪县徐家碾寺洼文化墓葬发掘纪要 (A Summary of the Excavation at the Xujianian Siwa Graveyard Zhuangliang County, Gansu). *Kaogu 考古 [Archaeology]* 1982 (6): 584-590

Zhongguo (Zhongguo Shehuikexueyuan Kaogu Yanjiusuo Gansu Gongzuodui 中国社会科学院考古研究所甘肃工作队). 1980. 甘肃永靖县张家嘴与姬家川遗址的发掘 (Excavations at the sites of Zhangjiazui and Jijiachuan in Yongjing, Gansu). *Kaogu Xuebao 考古學報 [Acta Archaeologica Sirica]* 1980 (2): 187-220.

———. 1983. 甘肃天水地区考古调查纪要 (Report on the Archaeological survey in the Tianshui region, Gansu). *Kaogu 考古 [Archaeology]* 1983 (12): 1066-1107.

———. 2000. 山东滕州市前掌大商周墓地 1998 年发掘简报 (Excavation of the Shang and Zhou Cemetery at Qianzhangda in Tengzhou City, Shandong in 1998). *Kaogu 考古 [Archaeology]* 2000 (7): 3-28, 109-113.

———. 2006.*徐家碾寺洼文化墓地 [Excavation Report of the Siwa Culture Xujianian Cemetery]*. Beijng 北京: Kexue Chubanshe 科学出版社.

Zhonggou [ZhonguoWenwuju Kaogu Lingdui Peixunban 国家文物局考古领队培训班].1990. *兖州西吴寺 [Xiwusi site of Yanzhou County]*. Beijing 北京: Wenwu Chubanshe 文物出版社.

Zhongmei (Zhongmei Lianhe Guicheng Kaogudui 中美联合归城考古队). 2011. 山东龙口市归城两周城址调查简报 (The Preliminary Report of the Survey to the Western and Eastern Zhou Guicheng City Site in Longkou City, Shandong). *Kaogu 考古 [Archaeology]* 2011(3): 30-39, 105.

Zhi (Zi 知子). 1986a 我国古代餐叉考索 (An Inquiry into Dining Forks in Ancient China) *Zhongguo Pengren 中国烹饪 [Chinese Cookery]* 1986 (1) 16-19.

———. 1986b. 我国文明时代的餐勺中国烹饪 (Spoons and Ladles in Chinese Civilization) *Zhongguo Pengren 中国烹饪 [Chinese Cookery*] 1986 (6): 21-22.

Zhou [Shucan, 周书灿]. 2000. *西周王朝经营四土研究 [Land Management of the Western Zhou Dynasty]*. Zhengzhou Shi 郑州市: Zhongzhou Guji ChubanShe 中州古籍出版社.

Zibo et al (Zibo Wenwuju 淄博市文物局, Zibo Shi Bowuguan 淄博市博物馆 and Huantai Xian Wenwu Guanlisuo 桓台县文物管理所). 1997. 山东桓台县史家遗址岳石文化木构架祭祀器物坑的发掘 (The Excavation of the Wodden Ritual Structure and Sacrificial Pits at the Lijia site in Huantai County, Shandong). *Kaogu 考古 [Archaeology]* 1997(11): 1-18.

Zou (Heng 邹衡). 1980. 论先周文化 (A Discussion on the Pre-Zhou Culture) in Zou [Heng 邹衡] ed. *夏商周考古学*论文集 [A collection of essays on Xia, Shang and Zhou Archaeology]. Beijing 北京 Wenwu Chubanshe 文物出版, pp. 297-361.

———. 1987. 中国文明的诞生 (The Birth of Chinese Civilization). *Wenwu 文物 [Cultural Relics*] 1987(12): 69-74.

Zou and Xu (Zou Heng 邹衡 and Xu, Ziqiang 徐自强).1981. 商周青铜器群综研究整理后记 (Some Final Thoughts on Shang and Zhou Bronze hoards), in Guo [Baojun 郭宝钧], ed, *商周青铜器群综合研究 [Studies on Shang and Zhou Bronze hoards]*. Beijing 北京 Wenwu Chubanshe 文物出版, pp 191-214

Zhu [Fenghan, 朱凤瀚]. 2009. *中国青铜器综论 [An Overview of Western Zhou Bronzes]*. Shanghai 上海: Shanghai Guji Chubanshe 上海古籍出版社.