Anke Hein

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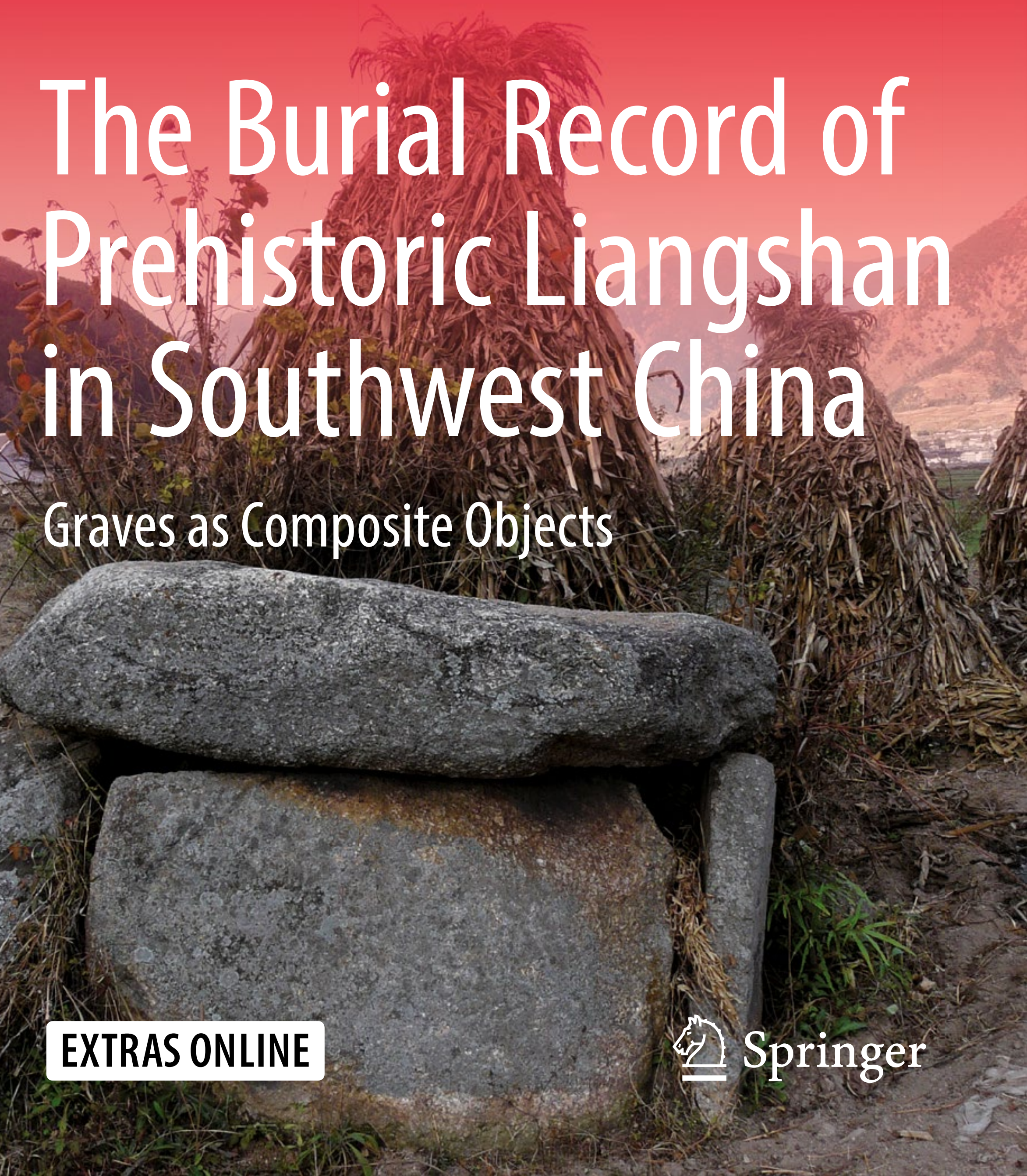
Graves as Composite Objects



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My mentors and teachers Lothar von Falkenhausen and Sun Hua 孫華*:*
"We are like dwarfs sitting on the shoulders of giants so that we may see more and further"
(John of Salisbury: Metalogicon 3,4,46–50).

Preface

This book draws on many sources of inspiration and has gone through quite a long gestation period starting about 10 years ago. When studying at Peking University in 2006–2007, I encountered for the first time the wide variety of prehistoric grave forms and burial customs characterizing the Liangshan Region. Intrigued by this diversity, I decided to focus on this area for my dissertation research, integrating grave remains, settlement material, object deposits, and single finds to understand this generally overlooked place on the eastern rim of the Tibetan Plateau.

The major problem that I had to address was how to analyze this heterogeneous body of data and tell its story. During my search for a suitable approach, two sources of inspiration came to be particularly important: Dwight W. Read's work on classification and statistics in archaeology; and a class on life history analysis for lithic technology with P. Jeff Brantingham. When taking Jeff Brantingham's class, my main focus of research was on graves and not lithics, so why not apply the life history approach to graves for a change? This was how my idea of "graves as composite objects" was born. Prior to taking Dwight Read's classes on classification and statistics, I had thought the material from the Liangshan Region to be too diverse and limited in number of objects and sites to allow for any meaningful statistical analysis. Thinking further about issues of classification, it soon became clear to me that in combination with a life histories/chaîne opératoire approach, statistical analyses of well-defined subsections of the material at hand could go far in understanding even this rather problematic body of evidence from Southwest China. Additionally, when searching for a potential connection between the large variability of the local archaeological material and its multifaceted environment, I turned to geospatial analysis as well as ethnographic accounts from high-altitude marginal environments.

Combining these different strands of inquiry, my research on "Cultural Geography and Interregional Contacts in Prehistoric Liangshan (Southwest China)" laid the foundation for a number of separate projects, one of them being the analysis of the burial material from the Liangshan Region and the development of a scheme of analysis fitting for such a varied body of data. The results of this project are described in this volume. Having grown from one aspect of my dissertation, this monograph combines two aims: to provide an analysis of the understudied burial record of the Liangshan Region and to propose and test a scheme of burial analysis that allows for integrating complex and unevenly preserved and/or reported data sets.

Such a project would never have been possible without the support of a considerable number of people. First and foremost, I would like to thank Lothar von Falkenhausen and Sun Hua 孫華 who—one in the USA, the other in China—have accompanied my first steps on the ground of Chinese archaeology, have taught and supported me throughout my studies and beyond, and have opened doors for me so that I could gain access to original material, meet excavators, and become involved in local fieldwork myself.

For the formation of my methodological framework, Dwight Read, Jeff Brantingham, and John Papadopoulos have been particularly inspirational and I am very thankful for their readiness to discuss my ideas at various points during my research. During the initial phase of designing my database, discussions with Willeke Wendrich were particularly important, and I am very grateful for her insistence on a solid bridging argument between theory and material that pushed me to develop my approach further.

My research would never have been possible without the support of numerous people in China, especially during my year of field research in 2010–2011 and during a number of summer visits when I re-examined old material, collected information on new finds, and acquired relevant publications. At my home base in Chengdu, Jiang Zhanghua 江張華 from the Archaeological Institute of Chengdu 成都文物考古研究所 has been exceedingly helpful, granting me access to material, introducing me to archaeologists in various parts of Southwest China, and advising me in practical matters concerning life and research in Sichuan. Discussions with him have greatly helped me in making sense of the complex archaeological record of Southwest China, and he and his family have made me feel welcome and at home in Chengdu. Li Yongxian 李永憲, Lü Yongliang 呂宏亮, and Zhao Deyun 趙德云 from Sichuan University 四川大學 have been very helpful and welcoming as well, sharing their thoughts and publications freely and allowing me access to their library and collections. Many other people at both institutions and at the Archaeological Institute of Sichuan Province 四川省文物考古研究院 have been of great help during my various research trips to China as well.

In the Liangshan Region itself, I am greatly indebted to Liu Hong 劉弘, former head of the Liangshan Museum 涼山彝族自治州博物館, who welcomed me to Xichang, granted me access to all of their finds, and arranged for me to be taken to a considerable number of local sites. I am very grateful to the other members of our excursion team as well, especially Song Ge 松哥 (Huang Yunsong 黃云松), our skillful and always cheerful driver, and Wang Nan 王楠, with her great knowledge of the local landscape and wonderful singing voice. In Huili, Tang Xiang 唐翔, the head of the Cultural Bureau of Huili 會理縣文管所, allowed me to investigate in detail the burial goods and excavation records from the cemetery of Fenjiwan糞箕湾, and I am greatly indebted to him for this wonderful opportunity. In Yunnan, Liu Xu 劉旭 and Min Rui 閔銳 from the Archaeological Institute Yunnan 雲南省文物考古研究院 showed me some of their material and connected me with local

researchers in northern Yunnan, allowing me to include much firsthand material from this region into my research as well.

The Cotsen Institute of Archaeology at UCLA provided a very nurturing atmosphere during my studies and dissertation research from 2007 to 2013, and both the Institute and UCLA as a whole supported me greatly in many ways—institutionally, inspirationally, and financially. The Studienstiftung likewise has provided both material and ideational support throughout all my studies. On the intellectual and personal level, many teachers, friends, and peers have been greatly supportive, especially everyone at the Cotsen Institute of Archaeology as well as many other scholars working in China. In terms of laying the foundations for my concept of burial analysis, discussions with Chen Pochan were particularly inspiring, as were his enthusiasm and great kindness that is missed by all who had the privilege to know him. I am also greatly indebted to Lin Kuei-chen with her quiet kindness and support during our studies at UCLA and our fieldwork in Sichuan. Her love for mathematics, the hard sciences, and ceramics has had an inspirational effect on me, and I am thankful that she opened my eyes to these complex worlds.

For writing the present volume, my postdoctoral time at The Hebrew University of Jerusalem and at the Ludwig-Maximilians-Universität München has been particularly productive. While at Hebrew University in 2013–2014, my postdoctoral advisor Gideon Shelach gave me great freedom to pursue my work as I choose but was still there to discuss questions of research when the need arose. Discussions with various people at Hebrew University greatly helped me to gain a wider perspective whenever I was stuck in matters of detail. I am especially grateful to Yuri Pines who accompanied my stumbling readings of bamboo-slip texts; to Leore Grossmann who welcomed me generously into her lab community; to my lab mates who opened my eyes to various areas of archaeological research and life in Israel; to Michal Biran and her team of Mongolia specialists who introduced me to yet another area of research; and to the financial staff of Hebrew University who was very supportive and helpful with my constant travels to sites, libraries, and conferences.

In Munich where I spent a little over a year from 2014 to 2015, the Center for Advanced Studies (CAS) was a very inspirational place for interdisciplinary discussions and a source of uncomplicated support for various types of endeavors. These include research trips to China to gather further material for this volume, participation in conferences to present my ideas and receive constructive feedback, and a lecture series on questions of culture contact that I organized at the University of Munich with the help of my colleague Catrin Kost and support from the Graduate School Distant Worlds. I would like to thank Susanne Schaffratt and her team at CAS for their help throughout all of these activities and I am very grateful to the CAS as a whole for its generous financial support. I am especially indebted to Thomas O. Höllmann and Hans van Ess from the Institut für Sinologie who made my research there possible by matching the funding for my position at the CAS from funds of their own and welcoming me into their institute. Venturing from Chinese Studies into the Institute of Archaeology, Carola Metzner-Nebelsick let me be part of her Graduate and Postgraduate Colloquium that became my second home during my time in Munich. I am very grateful for her warm welcome and great

interest in connecting research and researchers throughout Eurasia. Discussions at her colloquium as well as at the colloquium in Chinese Studies helped me rethink and sharpen my arguments expressed in the present monograph, and my colleagues at both institutes made me feel more at home in Munich.

A number of people have been extremely helpful in reading and commenting on my manuscript in various stages of writing. Lothar von Falkenhausen's suggestions on its structure and his comments on the outline and the first draft have been of great help. During the process of writing, Emily Cole's help has been indispensable for sharpening my line of argument and rendering the prose readable. I want to thank her for reading and rereading large parts of the present book, commenting on it in great detail, and discussing questions of content and structure. I am greatly indebted to Bryan Miller for his valuable comments and edits on all chapters and appendices, as well as for his help with literature on Mongolia and northern China. I would also like to thank my editor, Hana Nagdimov, for her patience and her support throughout the long process from book proposal to publication. Likewise, I would like to thank the anonymous reviewers who commented on my book proposal and sample chapters and helped me greatly in improving them.

My family and friends in Europe, China, and the United States have helped me to preserve my good spirits during the writing process and the many rounds of editing and rewriting in between job searches, teaching, and administrative duties as well as several intercontinental moves. None of this would have been possible without the help of my husband, Lawrence Kao, who patiently accompanied me on the near-nomadic life of a young academic between temporary jobs, field work, and conferences in various parts of the world. He has taken care of many of the practical aspects of our various moves and daily life so that I could concentrate on writing and still keep my sanity during the whole process.

Oxford, United Kingdom Anke Hein

Contents

About the Author

Anke Hein holds the Peter Moores Associate Professorship for Chinese Archaeology at the Institute of Archaeology at the University of Oxford. She is an anthropological archaeologist focusing on prehistoric and early historic China. In 2013, she received her doctorate at the Interdepartmental Program in Archaeology at UCLA with a thesis entitled, "Cultural Geography and Interregional Contacts in Prehistoric Liangshan (Southwest China)." Her work in the region has resulted in publications in top-tier journals such as *Quaternary International* and *Asian Archaeology*, and in important Chinese archaeological journals such as *Sichuan Wenwu*. Her interest in questions of intercultural contact is reflected in an edited volume on *The "Crescent-Shaped Cultural-Communication Belt": Tong Enzheng's Model in Retrospect* that was published in 2014. She has been involved in archaeological and ethnographic work in the mountains of Southwest China for many years. In her newest research project, she is turning her attention to another expression of group identities reflected in patterns of ceramic production and usage in prehistoric Northwest China.

Chapter 1
Introduction

Burial data have long been a major source for archaeological research into past identities, social organization, and belief systems. To arrive more easily at inferences on sumptuary rules, cultural norms, and social structures, previous studies have generally focused on large, well-preserved, and well-excavated cemeteries with clear spatial arrangements. By contrast, this book grew out of encounters with the insufficiently preserved, unevenly researched, and culturally diverse burial record of the Liangshan Region in Southwest China. While most other scholars working in Sichuan or Yunnan have so far given this body of material a wide berth, regarding it as too patchy and too heterogeneous to serve as basis for a research project, it is exactly this diversity and idiosyncrasy that has attracted me to the prehistoric remains of this remote mountain region. After all, real life—like most datasets in archaeology—is neither simple nor homogenous; to understand mechanisms of past and present life (and death), it is therefore crucial to address this complexity instead of searching for seemingly more ideal case studies.

Located at the rim of the Tibetan Plateau and bordering the Sichuan Basin and the Yunnan-Guizhou Plateau, the Liangshan Region in Southwest Sichuan is an intersection point of several cultural–geographic regions. The high peaks and narrow valleys of the north–south ranging Hengduan Mountains dissect the landscape into many subregions with their own microclimates and cultural developments. Even today, the Liangshan Region is inhabited by a multitude of ethnic groups that have adapted to the local geography in a variety of ways, making it an ideal place for observations on the interconnection between human behavior and the natural environment (Hein 2015).

Not surprisingly, the prehistoric and early historic archaeological material of the region is highly complex as well, varying strongly between and within subregions. To complicate matters even further, the mountains of southwest Sichuan have been a much-travelled thoroughfare since early prehistoric times. The archaeological material shows a variety of influences, mainly from the northern steppe, but connections with Yunnan in the South are also abundantly clear, as are later contacts with the Han-dominated East (Hein 2014). The archaeological material from the

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Liangshan Region is therefore ideally suited for discussions on various types of identity and their expression in the material record. As most of the known archaeological finds from Southwest China come from graves, the region furthermore provides an ideal case study for the new approach to mortuary data that I am proposing in this book.

The archaeological record of the Liangshan Region is characterized by a wide variety of different grave forms, including earth-pit graves and megalithic graves, and various kinds of stone-built structures. None of these seem to be coupled with a fixed set of objects or funerary rituals. Furthermore, many graves are either isolated or form only small groups; cemeteries are virtually absent, making it difficult to draw inferences on overall social structures.

Although the burial record of the Liangshan Region desperately needs a systematic classification system, archaeologists have so far failed to agree on how to produce one. They usually treat the main grave types separately, associating them directly with distinct archaeological cultures that they then try to connect with specific ethnic groups mentioned in historical records. In reality, however, there is too much variability for such a simple equation: grave layout, burial rites, and grave goods vary significantly within all grave types and some graves of different types are associated with similar burial customs or object assemblages.

In the analysis of the grave record of prehistoric Southwest Sichuan that lies at the core of this book, I therefore emphasize the variability of human behavior in connection with burials and mortuary rituals instead of smoothing it out. To embrace the heterogeneity and still gain insights into the mechanisms of human encounters with death (and thus life), I propose a scheme of analysis that treats burials as composite objects, considering their various elements separately in their respective life histories. In this manner, it becomes possible to gain new insights into the particular grave sites of the Liangshan Region and at the same time propose and test a new approach to burial analysis that can be applied to other regions and time periods. At the same time, in this book I provide a detailed description and analysis of the previously underresearched Liangshan Region, suggesting a chronological scheme and artifact classification that create a foundation for future research on the prehistory of this area. Throughout this analysis, I am evaluating the distribution of various archaeological phenomena and grave and object types in relation to each other and to the natural environment that allow me to identify several burial traditions and identity groups. These insights form the basis for telling the story of local prehistoric cultural developments and their integration into the environment of Southwest China.

As the material is unevenly preserved and not always fully published, this study also presents an opportunity for developing an approach that allows archaeologists to integrate various types of patchy data with which they are often confronted. To cope with the unevenness of the data, I am introducing a reliability index that assigns every site and every feature a specific number composed of four parameters: (1) amount of field research (i.e., extensiveness of excavation and survey work), (2) preservation, (3) state of publication, and (4) access to original material, with a maximum number of 2 or 2.5 points per category. All analyses are then conducted including and excluding data of varying reliability to reach as accurate a picture as possible.

Instead of treating each burial as a self-contained and solid unit, as is customary in mortuary archaeology, I define material variability at multiple levels, considering grave construction, interred body, objects, and traces of ritual acts in and around the grave separately before setting them in relation to one other and their surrounding environment. This dissection and reassembling of all elements makes it possible to assess their exact relationship and relative significance as expressions of past identities, beliefs, and material preconditions. Approached in this fashion, mortuary archaeology allows insights into a wide range of past behavioral patterns and their underlying motivations. Additionally, this study takes temporal developments and geographical variation into account, conducting statistical and spatial analyses to identify underlying patterns and assess the influence of the natural environment on past burial customs.

To allow for inferences on past human behavior and their underlying reasons, be they culturally, situationally, or environmentally determined, I turn to the notion of life histories of objects, which has grown out of the more technical approach of chaîne opératoire analysis (Sellet 1993). Most commonly used for describing production processes, the concept of chaîne opératoire is based on a materialist perspective, while the life histories approach pays attention to the social function and changing meaning of objects and processes. This approach, which allows inferences on past communities of practice, is thus a very promising avenue for understanding both technological and cultural aspects of object production and use.

In archaeology, the concept of communities of practice usually describes mechanisms of transmission and learning in ceramic production (e.g., Wendrich 2012). The idea of people interacting with each other in common endeavors and developing a repertoire that is connected to a shared identity can be applied equally well to mortuary studies, but few scholars have so far done so. The concepts of chaîne opératoire and communities of practice visible in the material record therefore form the basis for my new approach to mortuary analysis that I present in this book.

By considering the various parts and aspects of the burial record separately and linking them to past patterns of behavior and local material and environmental preconditions, it thus becomes possible to gain insights into past identity groups and their expression in the material record, even if this material record is highly heterogeneous and has come to us in uneven states of preservation. This approach is thus ideal to analyze a body of material as diverse as the one from the Liangshan Region.

With this book I therefore pursue a twofold aim. First, I seek to advance the understanding of the archaeology of an otherwise underrepresented but very intriguing region of China. This work is especially intended to provide a much-needed systematic classification of the burial record of the Liangshan Region, to identify various identity groups that inhabited the region in the past, to understand their integration into the local environment, and to throw light on general prehistoric and early historic cultural developments and human movements throughout the Hengduan Mountain Range. Second, I propose and test a new scheme of burial analysis. This scheme allows the integration of complex and problematic datasets, illuminates the patterns of human behavior that created them, and provides insight into past identity groups and their interaction with their natural environment and expression in the material record.

To reach this double goal, in Chap. 2, I develop a model of the life history of graves, a "mortuary chaîne opératoire," so to speak. As a first step, I introduce general theoretical and methodological issues pertaining to the analysis of burial material and the identification of past identity groups in the archaeological record. Based on these insights, I create a model of graves as composite objects: first treating the different elements of grave, body, and objects separately and then connecting them in space and time. To illustrate the model, I provide examples from ethnographic and textual records that highlight the relationship between mortuary customs and material culture. Chapter 2 thus sets the stage and explains the underlying theoretical assumptions and methodological approach of this study.

In Chap. 3, I introduce the test case and object of study, the prehistoric and early historic burial material from the Liangshan Region, broadly defined. In my definition of this region, I do not adhere to modern-day provincial boundaries but include all graves within the geographic confines of the Jinsha River in the South, the Dadu River in the North, the mountains of Muli in the West, and the Great Liangshan in the East, which circumscribe a contained cultural–geographic region (Figs. 1.1, 1.2, and 1.3). To identify independent local developments not yet influenced by the large state rising in the Central Plains of China, I choose to concentrate on the material pre-dating the inclusion of the Liangshan Region into the Han realm during the Middle Eastern Han period (AD 24-220). Because of the questionable dates of

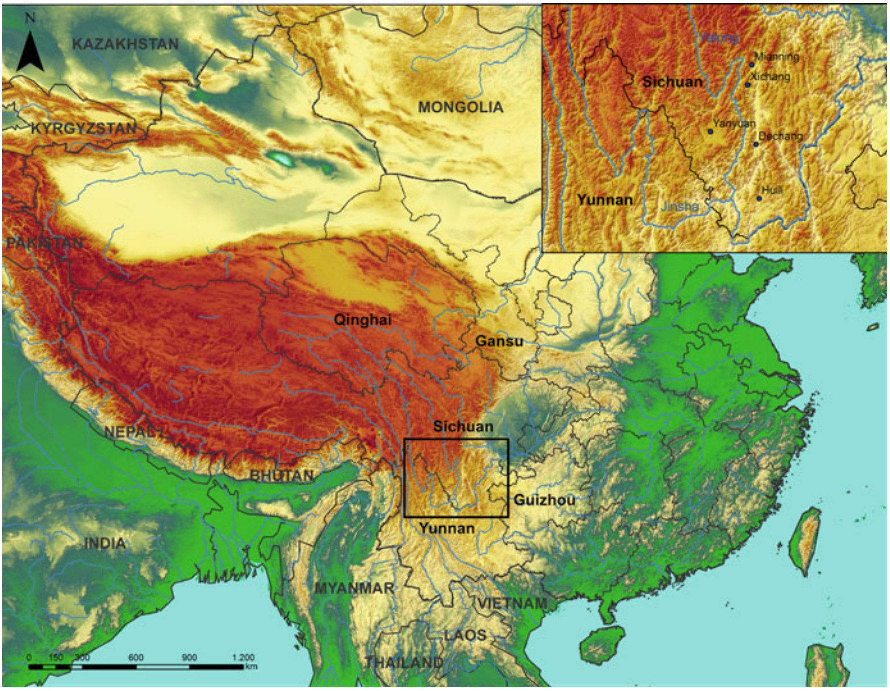

Fig. 1.1 Topographical map of China (research area marked)

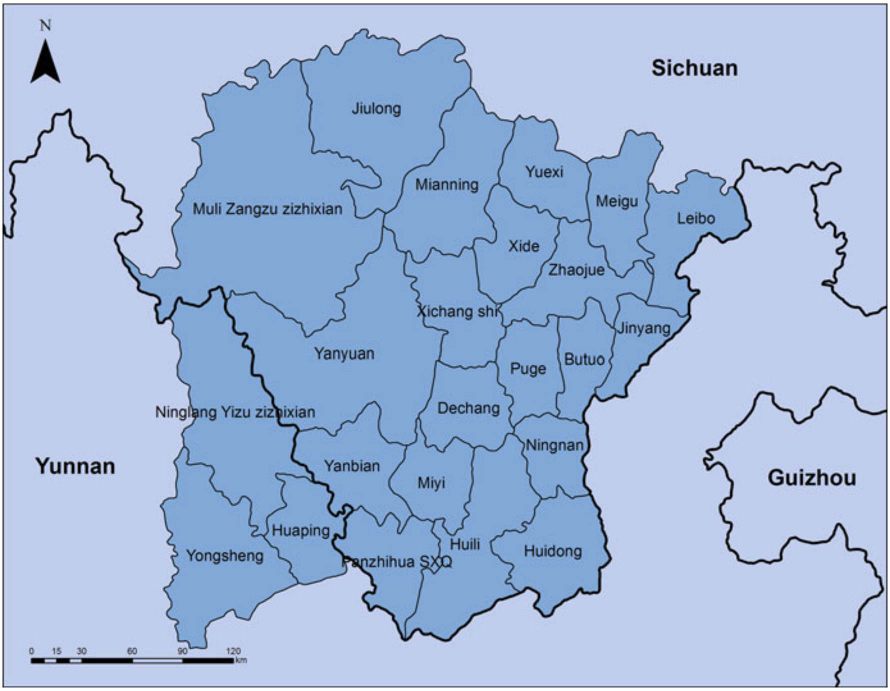

Fig. 1.2 Map of administrative units included in the research area

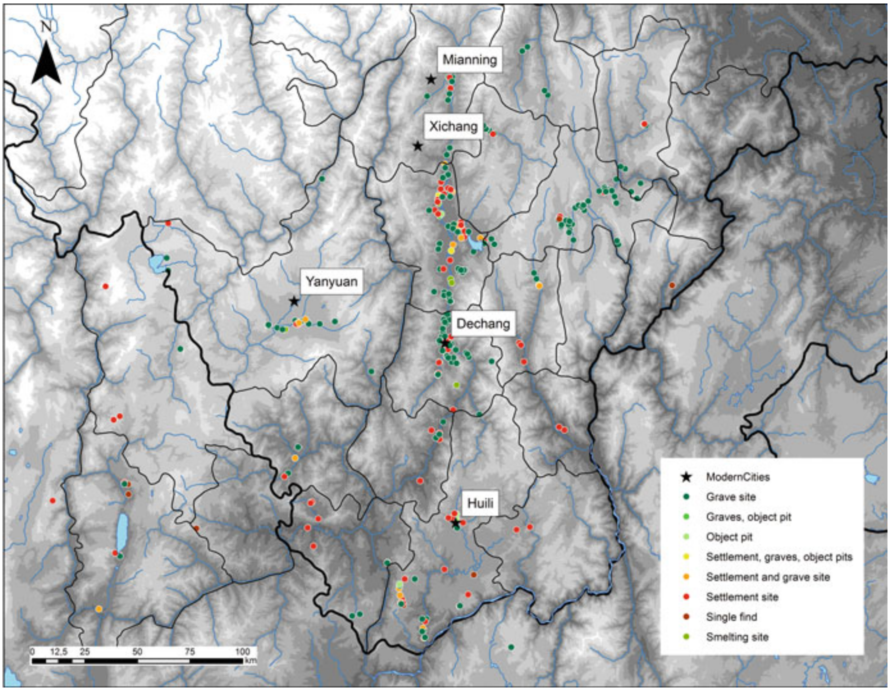

Fig. 1.3 Sites by site type with major modern cities for reference

many sites and the great variability in local trajectories of development, I take into consideration all graves pre-dating this period. To set the stage, I introduce the geographic background; then I describe the nature of the dataset and the specific parameters of analysis, establishing the range and limits of the data and therewith the limits of subsequent inferences. Based on these preconditions, I establish parameters for applying the model to this heterogeneous body of data.

What follows in the remaining chapters is meant both as a contribution to the archaeology of Southwest China and as a case study for the method of burial analysis proposed in this book; it is thus also an example of how similarly problematic material from other regions can be analyzed. Chapters 4–8 present the results of my analysis of the data according to the model outlined in Chap. 2. In this analysis, I examine the spheres of grave construction, body, and object assemblage separately; only afterward do I connect them with each other by assessing their relationship in space and time.

In Chap. 4, I first address grave construction, detailing measurements, construction parts, installations (outside and inside), and raw material choices. Combining the various parameters, I suggest burial types that can later be correlated with other elements of the burial ritual. In the next step, I address the body and its treatment, discussing details of interment practices and other related rituals (Chap. 5).

After grave and body, then the object assemblages can be analyzed (Chap. 6). First, I describe the range of objects occurring in graves separately by function, treating containers, weapon and tools, ornaments and clothing applications, body armor and horse gear, and probable ritual items separately. To assess the individual history of these objects and their function in the burial ritual, in a second step, I discuss raw material choices and production techniques as well as object placement and treatment in connection with their deposition. Then I address the association of different object types in assemblages and the correlation between these assemblages and the grave types previously identified. For this purpose, I am using various statistical methods to identify connections, e.g., between different grave construction types and various aspects of the burial ritual that might indicate common beliefs or identities. To find out what kind of identity these elements might signify, I pay particular attention to their interconnectivity with elements such as age, sex, and body treatment. Patterns of object placement and other aspects of burial ritual are informative on this point as well.

At first sight, it is naturally not clear if these variations in behavioral patterns are due to cultural or social differentiation or if we are witnessing change over time. In a next step, I therefore address the correlation of these different aspects of the burial ritual in space and time (Chap. 7). Using spatial analysis, I connect the various kinds of human behavior reflected in the burial record of the Liangshan Region with each other and with geographic preconditions. To ascertain the influence of practical considerations, I pay particular attention to questions of location in relation to rivers, landmarks, specific soil types, as well as other graves or settlements. Resource availability, especially the availability of stone material used in grave construction, also has to be taken into account. Working from a micro perspective out to a macro perspective, I first discuss questions of location choice, connecting individual graves and grave types to both geomorphological preconditions and other graves in the vicinity. In the next step, spatial analysis is used to identify the distribution of specific object types, object groups, grave types, and other traces of mortuary behavior throughout all sites, with the aim of identifying various kinds of local and regional groups, their habitat, signs of interconnection between them, and their development over time. On this basis, I then turn to the question of chronological variation between different sites and phenomena. Based on stratigraphic evidence and comparison with securely dated finds from neighboring regions, I reconsider the much-debated local chronology.

In the third and final part of this book, I venture to draw an overall picture of the cultural layout of the prehistoric groups in the Liangshan Region and their development over time as reflected in the burial record (Chap. 8). Based on these results, I reconsider the questions of method and theory in mortuary archaeology outlined in the first two chapters, and I discuss the possibility of identifying identity groups in the archaeological record in general (Chap. 9). In this fashion, I hope to advance our understanding of both the prehistoric developments in the Liangshan Region and the nature of past identity groups and their expression in the material record.

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Part I
The Model and the Material

Chapter 2
Introducing the Tools: Theory, Method, and Model

2.1 Laying the Foundations: Theoretical and Methodological Considerations

As numerous ethnographic studies have shown, one cultural or ethnic group can be characterized by multiple burial rituals, while other practices might cross such boundaries. Ucko (1969: 257) therefore suggests moving attention “away from one exclusive burial form (e.g. cremation vs. inhumation) to the exceptional and possibly diagnostic cultural trait […] or the varying proportions of different burial practices within a particular group or area, in order to construct any sort of diagnostic typology of funerary customs.”

Indeed, the material from the Liangshan Region shows very clearly that a simple typology of grave forms does not lead us far in identifying past identity groups; however, neither is identifying “diagnostic cultural traits” itself a straightforward or unproblematic matter. In any research on identity, we first need to make clear what we mean when talking about cultural, ethnic, and other forms of identity, be they related to a group or single individuals. Only then can we discuss how different forms of identity are related to material culture and archaeological phenomena and how we may infer one from the other.

2.1.1 Culture, Objects, and the Archaeological Record

The traditional, cultural–historical definition of archaeological culture as brought forth by Childe (1929: v–vi) focuses on the constant co-occurrence of a specific set of material remains that is seen as related to a cultural group, which in turn is equated with a “people.” Following this tradition, in research on prehistoric material from Southwest China, archaeological cultures are often equated with ethnic groups mentioned in transmitted texts. The boundaries between different archaeological

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cultures, however, are not clear-cut, as Childe himself remarked in later publications (Childe 1956). Clarke (1968) therefore proposed a polythetic model of culture, in which the distribution of different artifact categories overlaps only in part, forming diffuse units of archaeological culture. Nevertheless, he still held that archaeological cultures mapped real entities, even though these were not identical to historic, political, linguistic, or ethnic units.

One of the main issues here is the nature of the relationship between archaeological cultures and past individuals and groups. Since the 1960s some archaeologists sought an answer in discussions on style. Sackett (1977), for instance, held that stylistic variation reflected social variation and therefore represented ethnic differences (isochrestic style) as well as personal identities (iconological style). Based on ethnographic observations, Wobst (1977) took a somewhat different angle; he saw the function of style as one of boundary maintenance that expresses social and ethnic differentiation in highly visible and repetitive ways.

Striving to identify ethnic groups in the archaeological record has been a highly controversial endeavor since the beginnings of the discipline. For most of the first half of the twentieth century, archaeologists generally considered tribes, races, and peoples to be unified wholes with clear-cut boundaries. Clarke (1968) pointed out that archaeological cultures as a functional whole mapped by a set of well-defined diagnostic types were not necessarily identical with historical, political, linguistic, or racial entities; nevertheless, he was content with concentrating on archaeological cultures as real entities without discussing their relationship with past identity groups.

Although coming from a completely different approach, like Clarke, proponents of the processual school of thought tended not to address the ethnicity question but focused on the systemic context and outer constraints to human actions.[1] Nevertheless, processual archaeologists have pointed out that past societies were not self-contained static entities but continuously interacted with other groups, other systems, or subsystems, and therefore a multivariate and contextual approach is needed to explain variability and patterns in the material record. Similarly, the postprocessual school of thought as represented by Hodder (1982) and other scholars characterized individual self-perception and perception by others as produced, recreated, and maintained in intergroup and interpersonal contact as the main defining factors in the establishment of ethnic and other forms of identity.

Already in the 1960s, Barth (1969) had proposed a similar definition of ethnic identities, declaring that they were formed by two processes: ascription by outsiders and self-identification of the group itself. In this process, he believed, not all objective differences between groups are significant, but only those regarded by the actors as significant—those which are articulated in the course of social interaction.

The problem remains how to identify objects or other archaeologically retrievable remains that are related to expressions of group identities, be they defined by social or ethnic relations. It is generally agreed that some objects are more suitable

[1] Processual archaeologists defined culture as man's extrasomatic means of adaptation (White 1949), which made discussions about individual or group identity in the sense of self-perception and perception by others superfluous.

as markers of identity than others: Wobst (1977) held that it is mainly objects not preserved in the archaeological record such as clothes—in his ethnographic example, widely visible headdresses—that broadcast the broader group identities. As reflections of past concepts of life and death and the place of single individuals in the world, graves are likewise seen as fairly good indicators of different kinds of identities—cultural, social, religious, and personal.

Nevertheless, as Hodder (1982) pointed out, material objects and symbols can have different meanings depending on the context in which they appear. Furthermore, identities and beliefs are not the only factor shaping the material, and in this case mortuary, record: as Read (2007) argued, practical preconditions of object production and usage have to be taken into account as well. The chaîne opératoire approach, which has gained popularity since the 1990s, provides a means of approaching this dilemma; it takes into account practical and cultural choices involved in material procurement as well as production, use, and discard of objects (Sellet 1993).[2] This approach is thus a very promising avenue for understanding both technological and cultural aspects of object production and use, allowing inferences on past communities of practice in the widest sense, not only in the production of utilitarian objects but also, for instance, in grave construction and burial behavior. The model that I am proposing in this study therefore starts from the concept of chaîne opératoire and the notion of life histories, adopting a materialist perspective from the former but combining it with the emphasis on social function and context of the life histories approach.

The chaîne opératoire approach tends to focus on the production of objects, most often stone tools or ceramics. Here, I take this concept to a new level by applying it to graves, suggesting a "mortuary chaîne opératoire," as it were. In doing so, I conceptualize graves as composite objects emerging from various actions by individuals and groups of people uniting in shared burial rituals and other related acts. Shared burial traditions as well as shared—or differing—customs of object production and usage is what defines communities of practice.[3] These in turn provide indicators for various types of identity groups; nevertheless, the question remains as to what kind of communal identities are identified in this manner.

2.1.2 Identity and the Material Record: Questions of Ethnicity, Culture, and Social Differentiation

The main question from the archaeologists' point of view is how individual or group identities are reflected in the material record and how one may distinguish between different forms of identity on the basis of material remains alone. The main

[2] The term, chaîne opératoire, was coined by Leroi-Gourhan (1964) in the 1950s but the approach gained wide popularity in archaeological research only at a later point in time.

[3] Originally developed in cognitive anthropology to describe mechanisms of transmission and learning within a group sharing a craft (Lave and Wenger 1991; Cox 2005), the concept of communities of practice in archaeology is most commonly associated with processes of ceramic production (e.g., Stark 2006).

approach open to archaeologists is an analysis of the spatial distribution of different aspects of material culture and traces of human behavior as it changes over time and space. The relationship between objects, spatial distribution, and identity, however, is not straightforward but highly complex, each influencing and preconditioning the others in a web of connections that changes over time. It is therefore absolutely necessary for the archaeologist to voice clearly his or her ideas about these underlying mechanisms and develop a model of past relationships between human behavior, material culture, and the natural . This is most often done in connection with patterns of exchange and their geographic preconditions (e.g., Cusick 1998).

Hodder (1978, 1982), cautioned by the results of his ethnoarchaeological research, held that there was no simple correlation between resource distribution, material culture patterning, and degrees of economic competition. Nevertheless, he believed that areas of cultural similarity reflected areas of high social interaction. As statistical analysis can distinguish between random clustering and meaningful distributions, so Hodder held, it was possible to conduct spatial analysis on these distributions. Furthermore, he argued that stress and competition, especially for resources, led to the overt expression of ethnic differences and to the formation of clear cultural boundaries, and that "it may be possible to interpret such boundaries as being related to an enhanced consciousness of ethnic differences with increased competition between ethnic groups" (Hodder 1982: 187).

The "may" in his statement shows that caution is nevertheless in order as stress might not lead to ethnic differences in all cases. The archaeological material from two subregions of the Liangshan Region provides several such examples: Zhaojue County in the high mountains of the Northeast and Huili in the Southwest. In the marginal region of Zhaojue, in the pre-Han period many different kinds of grave forms and burial ritual coexisted without disturbing each other's monuments, indicating that various groups lived next to each other, respecting the graves of the others and adopting selected aspects of the other's burial customs and object repertoire (Hein 2014a: 211). In Huili, in the southeastern part of the research area, the presence of the valuable resource of metal did not lead to the emergence of competing ethnic groups or a visible stratification of local societies while in Yanyuan County in the Southwest social stratification emerged based on uneven access to natural resources (Hein 2014b).

Another problem is that we have to find a means to decide in which cases the patterning in our data reflects the existence of ethnic groups and when there are other reasons behind it. Eriksen (1991) argued that ethnicity, although being manipulated and transformed according to context, is not infinitely malleable. Once an individual or group has chosen a certain ethnic identity, their behavior is shaped by this attribution, even though it might not be emphasized in all situations. Eriksen saw ethnic distinctions as being rooted in perceptions of differences between lifestyles and other behavioral patterns. The effects of these behaviors and their differences should be visible in the archaeological record.

Even if we accept that identities are reflected in the material record and can therefore be recognized, mapped, and placed in relation to each other, the question remains: how can we distinguish between ethnic and other forms of identity?

Following the definition by Jones (1997), I hold that ethnic identity is only one aspect of a person's self-conceptualization, which results from identification with a broader group in opposition to others. Furthermore, ethnicity as a form of shared identity based on common culture or descent need not be important in all contexts and to all groups of people, but mainly arises in contact situations—especially in contact situations that involve conflicts and competition. As a consequence, several scholars very rightfully have questioned the applicability of the ethnicity concept in archaeology (e.g., Emberling 1997; Gellner 1983; Smith 1987). After all, even if analysis of genetic material are available that may testify to actual ethnic relations (and they are not available for the Liangshan Region), these genetic relations may not be identical with perceived ethnic relations. Perceived ethnic relations, however, are largely impossible to assess in the absence of contemporaneous written accounts.

Furthermore, as Rowlands (1980) pointed out, prehistoric groups probably were much smaller than the communities observed in present-day ethnographic research, and although past communities were in contact with other groups, they did not necessarily experience instances of open conflict where ethnic differentiation might have arisen. Ethnoarchaeological research in the Baringo district in Kenya led Rowlands to realize that in that part of the world the emphasis on blood relations was a relatively new phenomenon that probably came about as a result of colonial contact. He concluded, therefore, that in prehistoric research the concept of ethnicity was not valid. Some scholars (e.g., Gellner 1983) see ethnicity as an entirely modern phenomenon that started only with industrialism, replacing class identity or village–community affiliation that had previously been the principle distinguishing factor between individuals and groups. Early historical texts, however—be they from ancient Rome, Greece, or China—indicate a perception of, and emphasis on, ethnic differences by the inhabitants of powerful states when drawing contrasts between themselves and surrounding groups. Consequently, Smith (1987), Emberling (1997), and others argue that ethnicity emerges with the formation of early states, with ethnic groups arising in their peripheries as a reaction against these new entities.

Given that ethnic identity is generally accepted as something that arises situationally during instances of contact, the strict boundary between state societies with ethnic identities and prestate societies without such differentiations does not seem to be appropriate. I therefore agree with Jones that ethnicity is something that cannot be assumed to exist but has to be tested for in every context. She presents a bird's eye view, in which the distribution patterns of different cultural practices of a particular group are supposed to show overlapping ethnic boundaries constituted by representations of cultural difference. This suspiciously resembles the obsolete idea of clearly defined archaeological cultures corresponding to ethnic groups as proposed by the school of cultural history, even if for Jones the borders are more blurred.

Contrary to previous theoretical models then, I propose to define material variability at a variety of levels, considering the different aspects constituting a burial separately before setting them in relation to each other and their surrounding environment. I thus start from the individual view of the single element, and then widen the view to the individual grave, the cemetery, the subregion, and finally the regional and supra-regional level. Only such a meticulous operation will make it possible to identify regular associations of materials, to infer their connections with specific materials, and to clarify their significance and interconnection—as opposed to random association—in their specific contexts.

As group identities refer to a shared way of doing things (i.e., *habitus* as defined by Bourdieu 1977), which in turn leave recoverable traces in the material record, these traces can in turn be used to infer the communities of practice behind them. The identification of self-conscious ethnic groups claiming a common descent, however, is more problematic and might even be impossible, especially in the absence of written records as in the case here. I therefore do not endeavor to equate the material clusters emergent from my analyses with specific ethnic groups mentioned in ancient textual sources.[4]

My main focus therefore aims at communities, cultural groups, and social strata. I am using the term **communities** to refer to people acting together in specific contexts, e.g., living together (settlement communities) or conducting mortuary rituals together (burial communities). **Cultural groups**, on the other hand, are larger entities showing similar behavioral patterns in object production and usage, as well as subsistence and modes of burial that indicate a shared identity, but not necessarily within an enclosed spatial region. They may not even be engaged in repeated joint actions like communities would be, but constitute something of an imagined community rather than a physical one. Within these groups, **social strata** can be observed through differences in dress and object assemblages in burials throughout the same cemetery or adjacent cemeteries of comparable date. The relationship between the burial record and different forms of identity groups has been the subject of much debate and thus requires some further discussion.

2.1.3 Burial Analysis and Identification of Identity Groups

Burial data have long been a major focus of theoretical discussions in archaeology, centering mainly on the relation between mortuary rituals and underlying social structures.[5] In the 1960s, proponents of the New Archaeology held that there was a direct correlation between the burial record and underlying social structures; consequently, they believed that one could be read from the other in a straightforward manner by applying quantitative methods (e.g., Saxe 1970; Binford 1971). This assumption has been heavily criticized for being too simplistic, and various scholars have convincingly argued that the material record constituting a grave is by no means a direct reflection of past social structures or beliefs. As Thomas (1991: 104) put it pointedly: “Societies, after all, ‘do’ a lot of other things besides being internally ranked.”

[4] Another aspect of research similarly limited by the nature of the material record is gender identity. Given that the skeletal material in the area is poorly preserved, the available data does not allow for research on questions of sex vs. gender in prehistoric groups of the Liangshan Region.

[5] For a detailed review on the related literature, consult O’Shea (1984: 23–49).

The factors influencing the burial record are manifold, including geographic preconditions, cultural, social, and ritual factors, and potentially even personal preferences and happenstance. Furthermore, ethnographic examples and archaeological data show equally clearly that the cross-cultural generalizations on the relationship between social structures and burial remains are not appropriate (e.g., Hodder 1982; Ucko 1969; and Chap. 3 in this book). After all, "burial ritual is not a passive reflection of other aspects of life," as Hodder (1982: 141) put it, but actively created by the funeral participants. Burial objects and other aspects of the material record are not just "elements of an identity kit but are the culmination of a series of actions by the mourners to express something of their relationship to the deceased as well as to portray the identity of the deceased" (Parker Pearson 1999: 84). Likewise, grave goods or any other aspect of material culture are not firm in their meaning but can change in significance and function with context and time.

I therefore hold that burials cannot be treated as static units but should be seen as the outcome of an array of processes and activities involving a considerable number of people and a variety of materials that can be effectively rationalized in a chaîne opératoire, in this case a mortuary one. Additionally, the spatial aspect has to be taken into consideration, both on the practical level of geographic preconditions and under sociocultural and religious aspects of burial content and cemetery organization. As Ucko (1969: 274) inferred from ethnographic studies, "rather mundane matters may radically affect burial customs." Furthermore, spatial arrangements—between graves within a cemetery, for instance—can reflect distinctions in group affiliation. Communities may signal their distinctiveness through burial monuments in the landscape and related rituals that have a spatial component as well. It is therefore this spatial component that promises to be particularly helpful in identifying past identity groups in the material record. At the same time, we have to keep in mind that various kinds of identity—whether self-proclaimed or projected onto the individual—can and do influence the formation of the burial record, and that even they are only one factor of many. The potential simultaneous presence of various kinds of identity as well as external influencing factors (such as the environment) is especially important for the model of grave formation that underlies the method of burial analysis I propose in this book.

2.2 Developing a Model: The Mortuary Chaîne Opératoire

One of the basic assumptions guiding my model is that grave assemblages consist of elements reflecting choice (intentional data), actions (functional data), and outer preconditions (nonintentional data).[6] Furthermore, objects in a grave rarely come into being at the moment of the actual burial, but each has a past life of its own. Based on these assumptions, I propose an analytical scheme that treats burials as

[6] For a treatment of the problem of nonintentional and intentional data, see Härke (1993).

composite objects and considers their components separately and according to their respective life histories.

I base my approach on the notion of life histories of objects, which has grown out of the more technical approach of chaîne opératoire analysis.[7] The concept of chaîne opératoire comes from a materialist perspective in which “artefacts are created, they have a finite use-life, they become worn and are discarded,” while the life histories approach “encompasses the idea that objects are used to construct and maintain social identities” (Jones 2002: 84). Meanings associated with artifacts are not fixed but transform according to context and may express different modes of identity at various points in their life histories. The life histories approach is therefore a very useful means of thinking about the ways in which people, artifacts, and places are related in time. The more materialistically oriented background of use-life analysis can aid in the process of evaluating the possible effects of “mundane matters,” such as material availability and other practical issues.[8]

As a first step toward constructing the model, I concentrate on the logic by which people create the funerary record. My model outlines the life histories of the various pieces of the burial record, including the grave as a physical structure, plus its furnishings, objects, and the human body. I outline the processes that form these various elements, from procurement of raw material to placement in the grave. Next, I consider transportation, preparation, production, use, modification, and reuse. This model structures the material systematically, but it has the potential to tear the elements apart and runs the danger of neglecting temporal and spatial aspects. In order to avoid this pitfall, I lay out how these processes and elements are connected in time and space.

In this process, I treat the body according to the “concept of the human body as a cultural artifact, shaped and perceived according to the social context” (Douglas 1970: 93), which would include all status, gender, ethnic affiliation, and other types of identity. This places the body into a category similar to the aspects of grave construction, installations, and burial objects and thus allows the same kind of analyses to be applied to all of them.

My model treats all constituents of the burial separately in their respective life histories, concentrating on three core aspects which I will discuss as follows: grave structure, body, and object assemblage. All elements go through three main stages: preparation, mortuary ritual (including funerary rites (i.e., actions of the burying group that utilizes and/or consumes items that may leave traces in the burial record) and interment rites (final deposition of objects and body in the grave)), and postburial changes (Table 2.1, Figs. 2.1, 2.2, and 2.3). Following this model, in Part II, I analyze these three elements of the burial record of the

[7] The life history approach to objects can be traced back to Appadurai (1986) and was applied to archaeology, e.g., by Kopytoff (1986) and Hoskins (1998).

[8] Friedel (1993), for example, lists a number of factors that can influence the choice of a certain kind of material for making particular objects. These are function, availability, economy, style, tradition, all of which are subject to change as circumstances (i.e., geography, technology, science, fashion, competition) change.

Table 2.1 The main elements and stages constituting the burial record

I. Preparation (can happen parallel to each other or in a temporarily staggered sequence)		
1. Grave	2. Body	3. Objects
• Choice of the location of the cemetery within the landscape	• Life history of the individual	• Grave furnishings
– Preparation of the locale	– Social standing and function	• Material to be used on the corpse including means of transportation
• Choice of the location of the grave within the burial site	– Material wealth	• Grave goods/*Beigaben* (specifically for use in the afterlife)
– Preparation of the location	– Health	• *Mitgaben*
• Procurement and preparation of construction material	– Age/sex/gender/ethnicity/individuality	– Personal belongings
• Choice of grave form, orientation, layout	– Individual preferences/habits of the dead person	– Cloths
– Orientation of the grave	• Modification of the body (dismembering, burning, putting in a special position, closing body apertures)	– Body ornaments
– Form, depths, layout	• Cleaning	– Magical objects
– Or: modification/creation of a new grave within an existing monument/preparation of a tomb to take in further burials	• Painting	• Traditional gifts and spontaneous "love gifts"
	• Clothing	• Material to be used in funerary process (enter the grave as *Nachgaben* after the actual mortuary ritual just before the grave is closed)
	• Adorning	
	• Wrapping and further bedding	
II. Mortuary ritual		
1. Grave	2. Body	3. Objects
• Finishing the last parts of the grave structure	• Transport toward the grave, possibly first going through other places and stages of the ritual process	• Transport of the objects toward the grave
• Closing the tomb	• Laying the corpse into the grave	• Altering the objects during the burial process
• Adding aboveground elements/additional structures	• Closing wrapping/coffin	

(continued)

Table 2.1 (continued)

III. Postburial changes		
1. Grave	2. Body	3. Objects
• Reopening and or removing/adding/destroying elements during postdepositional activities (later rituals such as ancestor worship or for multiple burials or grave robbery)	• Exhumations for ritual or other reasons (reburial, worship, ritual, making space for new interments)	• New objects entering the grave due to postburial rituals or grave robbery
• Natural postdepositional dislocation, shifting, and other changes	• Disturbance due to grave robbery	• Objects are changed or destroyed due to postburial rituals or robbery
	• Natural decay	• Objects are removed due to postburial rituals, making space for new interments, or robbery (can be reentered into the circle of reuse/reshaping/discard)

Liangshan Region separately, following the life histories and subsections identified later, and then reconnect them by investigating the crosscutting variable of time and space.

2.2.1 Separate Life Histories: Grave, Body, and Objects

2.2.1.1 The Grave

Graves can be described along a considerable number of parameters comprising size (length, width, depth), form, layout (including construction elements, internal and external features), raw material, orientation, and general location within the landscape. Most of these observable characteristics come about during the preparatory phase and can be modified or added during the process of mortuary ritual and postdepositional changes.

The preparatory phase of the grave consists of the following steps:

1. Choice of location for the cemetery (or individual burial location)
2. Choice of the location of the grave within the cemetery
3. Preparation of the locale
4. Choice of grave form
5. Choice of grave orientation
6. Procurement and preparation of construction material and tools

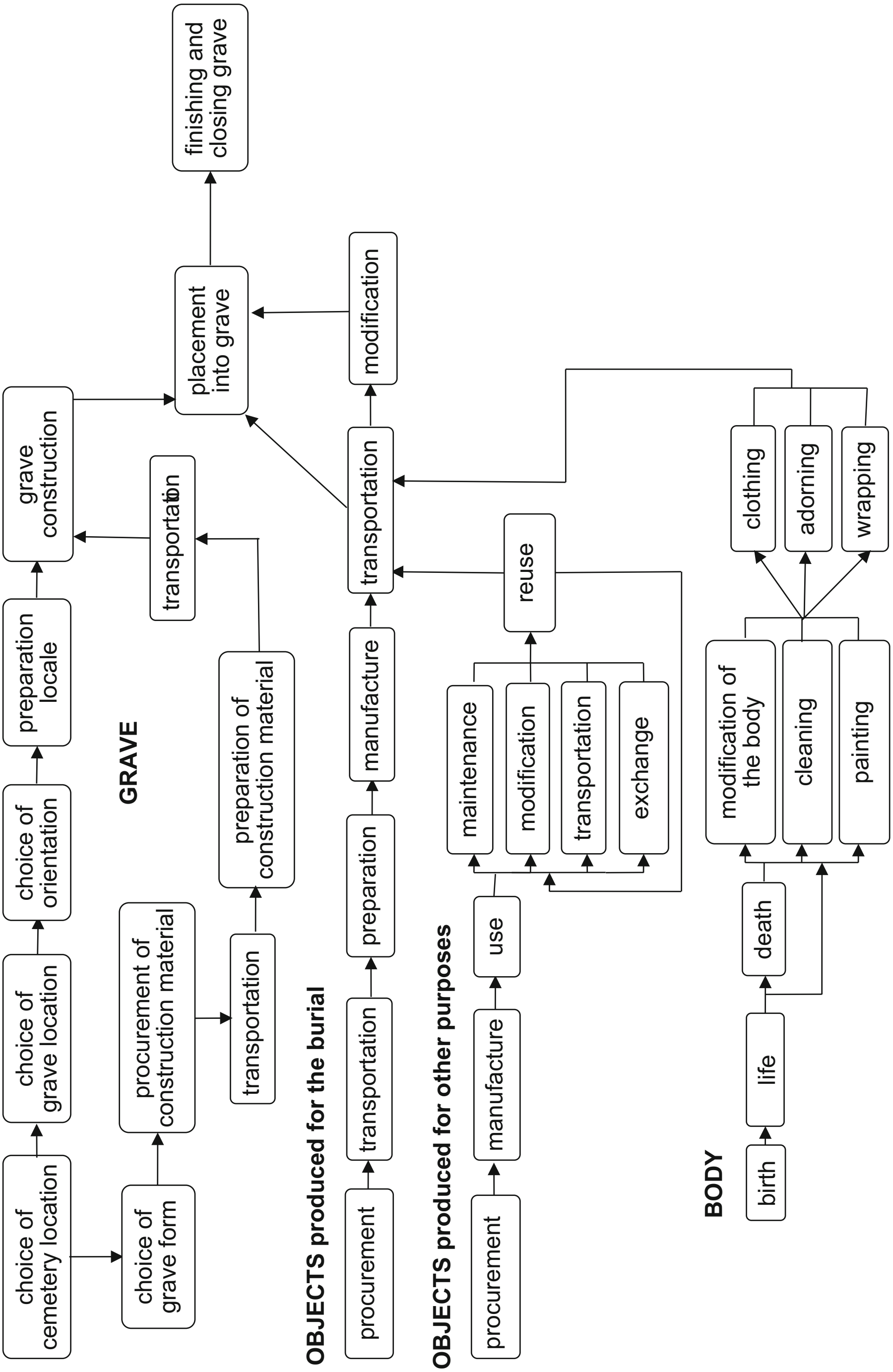

Fig. 2.1 Preparation and burial process

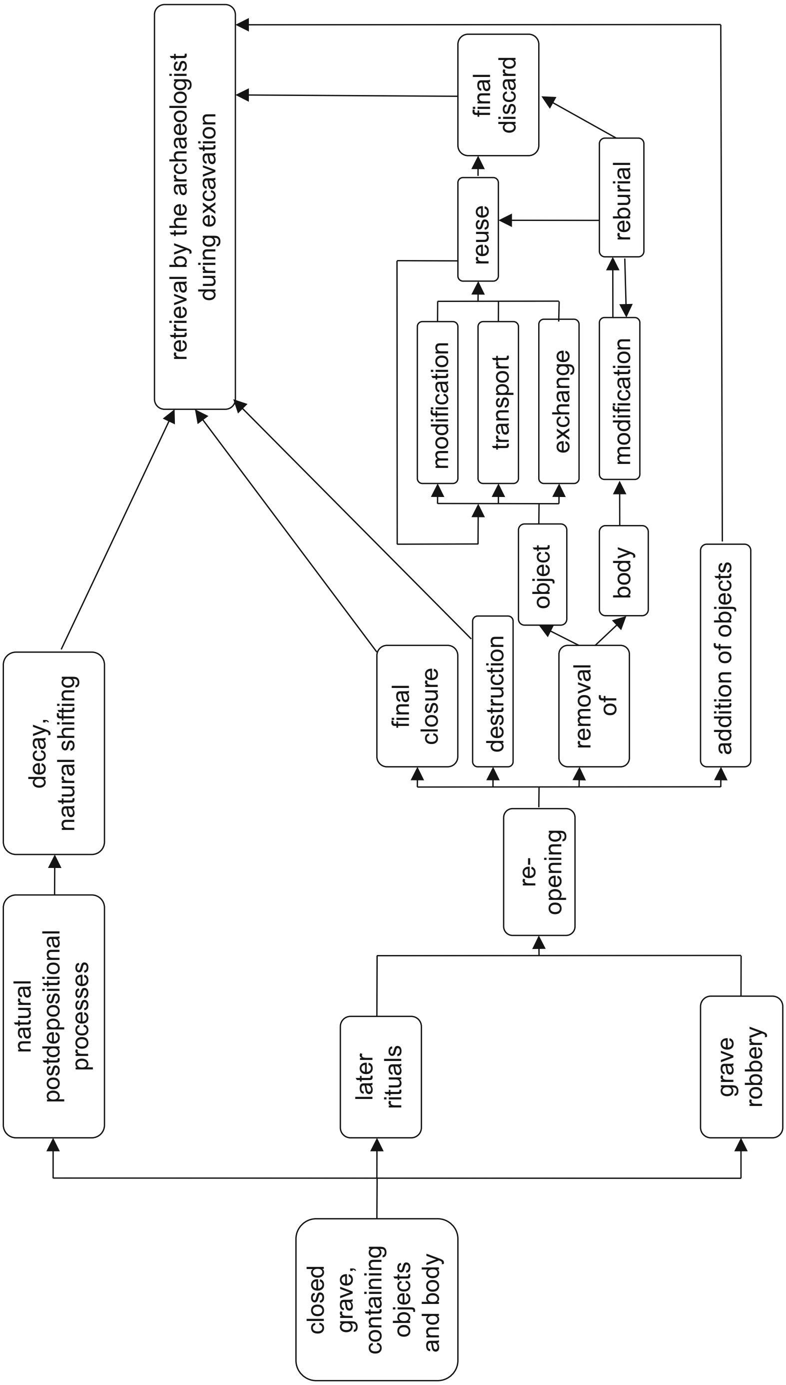

Fig. 2.2 Postburial changes

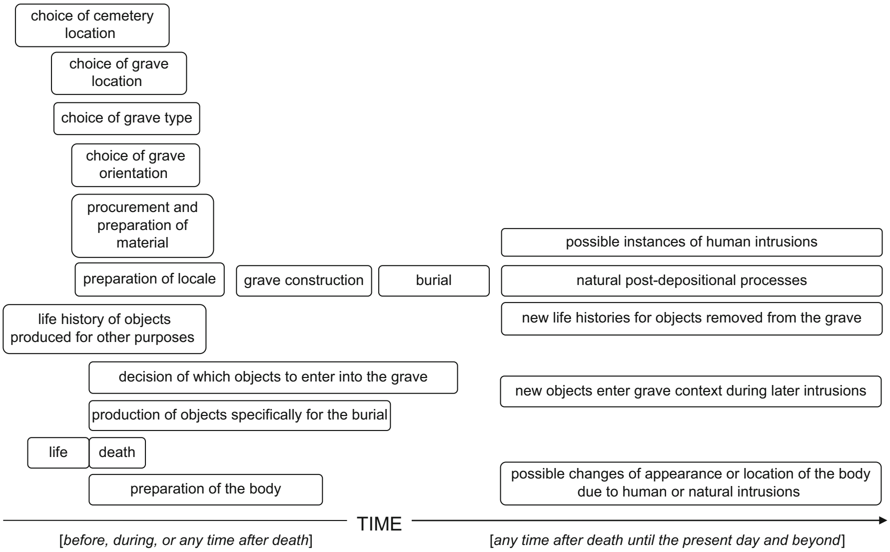

Fig. 2.3 Time slots for the various factors forming and influencing the grave

Steps 2–6 may take place in any sequence and are likely to happen in parallel.

If the burying community modifies an existing grave or larger monument to make room for a new tomb or new interment, the procedure takes a different form. It requires less time and effort but it also limits the range of choices for location and grave form. People creating graves make these choices according to a range of factors including:

1. Material availability
2. Availability of suitable ground, direction of slopes
3. Accessibility of locale, problems of transport
4. Time constraints
5. Religious beliefs
6. Other social and cultural factors

Most of these factors, but particularly 5 and 6, influence the actual mortuary ritual during which the mourners or religious specialists finish the last parts of the grave, close the tomb, and add aboveground elements and other structures. From this point onward, the process has hardly any connection with the deceased on an individual basis but is determined by cultural and social norms and restrictions guiding the people conducting the burial. Finally, the model accounts for the reopening, shifting, removing, adding, or destroying of elements due to postburial changes, such as later rituals (such as ancestor worship and/or multiple burials), grave robbery, or natural postdepositional processes (decay, trampling, disturbance by animals, soil movement).

There is always the possibility of later reuse of the grave and thus modification of any of the elements. For objects and materials deposited in the grave, reuse (if it takes place) requires retrieval and is eventually followed by final discard. The grave as a whole therefore goes through a life history process consisting of:

1. **Preparation**: site/material preparation → construction →
2. **Mortuary ritual**: funerary rituals → interment rituals → closure rituals →
3. **Potential reuse**: one/several instances of reopening → modification → reuse →
4. **Final closure**
5. **Postdepositional processes**
6. **Excavation**.

2.2.2 The Body

The life history of the body interred in the grave begins with the life history of the individual, including social standing, occupation, material wealth, health, age, sex, gender, ethnicity, and other aspects of identity. Individual preferences and habits in life influence the bone composition and bodily appearance, as do occupation and nutrition, which might in turn be connected to social status. Paleoanthropological analyses are key to discerning information about the deceased's social status and lived personal preferences, while the analyses of objects and their placement reveal more about decisions made by the mourners than preferences of the deceased.

Modifications to the body after death can likewise reflect religious ideas held by the burying group, and possibly by the deceased as well, as burial instructions may have been given prior to death. Members of the burying group may, for example, dismember, burn, or arrange the body into a special position. They may alter or remove parts of the body and/or close body apertures. Additionally, the mourners might clean, paint, adorn, wrap, and/or bed the body in preparation for the interment or for other preburial rituals. Depending on the procedures, preparers may perform several episodes of body treatment.

During the mortuary ritual, mourners or ritual specialists transport the corpse to the grave, possibly first moving through other locations and stages of the ritual process. They place the body in the grave and close the wrapping or coffin over it. After interment, the body may be exhumed for reburial, worship, various rituals, and/or grave reallocation, or disturbed by robbers. At the same time, decomposition processes may also lead to a slight shifting of the body and other parts of the grave content. Even the grave structure may degrade to the point of collapse or complete obliteration below later soil layers.

Thus, the life history of the body starts from the lifetime of the individual itself from birth to death, including illness, instances of violence and stress inflicted on the body, possibly old age, and finally death, be it natural or violent. After death, the corpse is prepared for burial as described earlier, including the potential steps of intrusion into the body, dismemberment, cleaning, painting, clothing, adorning, and wrapping. Miscellaneous rituals (e.g., display and burning) may leave traces on the body before it is finally interred. Interment consists of the placing of the body in the grave, and the closing of wrappings and the coffin, if present, and the sealing of the grave itself. Postburial changes include decay, as well as potential instances of exhumation for ritual or other reasons, and disturbance through grave robbery or other human-induced or natural disturbances. These various phases are reflected in the condition of the body, e.g., signs of premortal violence or postmortem modification, movement of the body after interment, health, sex, clothing, traces of body treatment, personal ornaments and burial objects, as well as grave structure and the position of the grave within the cemetery. The nature of the grave itself and the burial goods are particularly sensitive indicators of social standing and identity and rise in significance for archaeological investigation if the bone material is insufficiently preserved.

2.2.3 The Objects

The broad category of objects used in connection with the grave include grave furniture; material used on the corpse including means of transportation such as a stretcher, bier, or coffin; and a range of objects usually called "grave goods." As Hachmann and Penner (1999) have pointed out, there are a number of reasons why various kinds of objects enter the grave; therefore, we must classify them in different groups according to function. The main categories that Hachmann and Penner (1999: 173–177) named are as follows:

1. "**Beigaben**," grave goods in the narrow sense of objects specifically meant to be used in the afterlife by the deceased;
2. "**Mitgaben**," objects belonging to the dead, clothes, body ornaments, magical objects;
3. "**Traditionsgaben**" (traditional gifts) or "**Liebesgaben**" (love gifts), both given by mourners, the former prepared in advance and following a tradition, the second given spontaneously;
4. "**Zeremonialgerät**," ceremonial tools used during the burial ritual but without function in the afterworld; and
5. "**Nachgaben**," objects that entered the grave context after the actual mortuary ritual; this includes objects discarded after the burial ritual as ritually untouchable, objects placed in the grave during later ritual acts, and objects that grave robbers left behind accidentally.

What happens to all of these objects during and after the burial ritual is fairly clear: mourners or ritual specialists transport them to the grave and may alter them during the burial. Later on, natural postdepositional processes or human activities such as ritual reopening of the grave or grave robbery may lead to the deformation, destruction, or removal of these objects. If they are removed from the grave, the objects can reenter into the cycle of transportation, modification, reuse, and discard (Fig. 2.1).

The histories of objects can vary significantly depending on their nature and usage in the given cultural context as well as issues of material preservation. Actual grave goods (*Beigaben*) and traditional gifts (*Traditionsgaben*), as well as grave furniture and some of the material used in the burial ritual have a single life cycle of procurement of raw material → preparation → production → use → discard. Between these stages, one or several instances of transportation, relocation, exchange, or modification may occur. For objects that existed in different context(s) before their deposition in the grave, we have to consider several instances of prior use. For objects retrieved from the burial after closure, there follows an additional life cycle of one or several instances of reuse, modification, transport, and final discard.

It is difficult to determine why objects were originally made and how many life cycle stages they went through before they became refuse, lost objects, or permanently deposited objects eventually retrieved by archaeologists.[9] Nevertheless, if we analyze specific formal properties, traces of use-wear, reshaping, repair, and organic residues, we can often find some indications regarding the previous use lives of objects. Additionally, the exact location in the grave and condition of the object help us to distinguish between "Beigaben," "Mitgaben," and "Nachgaben."

2.2.4 Reconnecting the Parts: Time and Space

Technically speaking, the only point when all components constituting an interment have to come together temporally and spatially is at the location of the grave during the interment itself. While the time windows are getting smaller and smaller, moving toward and centering on the moment of burial, the possible locales are moving closer and closer toward the grave as well. We can envision the whole process as many trajectories starting out from different places at different times and moving toward the "destination" of the grave in various intervals. It is at the grave, during the burial ceremony, that all elements meet, having the potential to remain together through the postdepositional processes. If they are removed from the grave, the objects can move away from this time–space entity again, starting a new life cycle of their own.

In a general model, we can thus depict the overall process as a movement from a diverse array of locations and points in time toward the one time–space unit of the instance of burial, and then possibly moving away again (Fig. 2.3). The grave is thus the focal point in space while the act of burial the focal point in time. As the time line moves away from the instance of interment, processes of disturbance or decay may alter the arrangement, but usually all elements will stay with the grave until they are retrieved by tomb robbers or archaeologists. To move the practically infinite number of possible temporal and spatial combinations from the abstract to the concrete, in the following I illustrate the model with a few ethnographic examples.

[9] In the general archaeological sense of discarded material as established by Schiffer (1972: 129): "Refuse labels the post-discard condition of an element-the condition of no longer participating in a behavioral system."

2.3 Illustrating the Model: Ethnographic Examples and Textual Evidence

The goal of presenting these examples is not to find a perfect ethnographic analogy for the Liangshan Region. Instead, I have chosen a few cases that provide some insight into the possible range of burial practices, paying special attention to the material traces and their spatial and temporal arrangements. The cases were chosen from various parts of China, Africa, and Europe to cover a wide variety of environments and societies, showing how complex customs and social rules may or may not leave traces in the burial record.

The first case of North China in late Imperial and Early Modern times was chosen as an illustration of the variety of objects that may appear in the burial context, and an example of how religious, social, and circumstantial factors can influence the varying time lines of burial procedures. The studies of burial customs among orthodox Christians in rural Greece on the one hand and the LaDagaa in West Africa on the other are well-known examples of traditions that leave hardly any traces in the material record. They are well worth recounting in some detail here as they demonstrate how social and situational circumstances can lead to the deposit of human remains of the same community in a variety of places.

The lesser known example of minority groups in western Sichuan is of particular importance not only because it describes an area that is geographically close and geomorphologically similar to the Liangshan Region, but also because it provides important evidence of how ethnic differences may or may not be reflected in burial remains.

While all of the studies mentioned so far describe groups that would be difficult to identify in the archaeological record, the textual and archaeological evidence of the Central Plains of China in the Bronze Age shows a nearly ideal example of correspondence between social status and funerary wealth. The last example thus provides a contra-point to the first three case studies of groups whose traces in the material record are particularly difficult to interpret. Together, the four cases chosen provide a wide range of material for pointing out real-life correlates of different aspects of the model developed earlier before embarking on the actual analysis of the material from the Liangshan Region.[10]

2.3.1 Late Imperial and Early Modern North China

In Late Imperial and Early Modern north China,[11] certain preparations for a funeral such as buying a coffin, sewing burial clothes, or locating a burial site could be made far in advance of the occurrence of death, while the rituals themselves would

[10] The usefulness of ethnographic examples as a way to widen the cultural and intellectual horizon of the archaeologist has been discussed extensively elsewhere (e.g., Ascher 1961, 1962; Fischer 1990; Kramer 1979; Stanislawski 1978; Ucko 1969; Wylie 1985).

[11] In the case of China, the Late Imperial period has usually been defined as the time from the early Ming to the declining years of the Qing Dynasty, i.e., 1400–1850, and Early Modern China is term

begin just before death (here and in the following after Naquin 1990). Because it was unlucky for death to occur on the *kang* (a heated living and sleeping platform made of brick), relatives or servants would transfer the dying person onto a stretcher and transported him or her into a special ceremonial room in the house. After the person died, the family began mourning and preparing the corpse by washing and clothing him/her in a special gown that signified class and occupation (a *Mitgabe*). The family would cover the face of the dead with a piece of cloth or paper, tie the feet with a colored string, and place pearls or coins in the mouth and jewelry and/or mirrors on the body (all of these are *Mitgaben*, as well).

A diviner determined the best time and orientation of the grave, reconfirming or altering the burial site that the family had chosen prior to death. On the third day, close relatives placed the body into a coffin, surrounded it with further objects such as food and a stick to feed and beat the vicious dogs in the next world (i.e., providing *Beigaben*), and finally closed the coffin. A number of complex rituals followed, none of which would have left any traces on the coffin or the deceased. At the point of potential excavation, an archaeologist would thus be able to infer the status of the deceased in life using any preserved clothing, as well as some spiritual beliefs the mourners held, but they would have no indicators of how much time elapsed between the placement of the deceased in the coffin and the actual burial.

In the case of north China, a family might wait months or years to bury the dead. The relatively dry and cool local climate made this waiting period less problematic than it might have been in the tropical or subtropical environment dominating much of southern China. Even though, one might imagine that waiting for such a long period might have been less common in the summer months when decay processes would have made the wait problematic. Conversely, frozen ground and subzero temperatures halting the decay of the body may have been factors that influenced the decision for a later burial. The spiritual reasons for such a delay vary, but common examples include waiting for an auspicious date or for the passing away of a husband or wife to be buried in the same grave (Naquin 1990: 42). Then the burying community usually placed the coffin in an earth-pit grave. In rare cases, the bereaved may have burned the body if the death had been unnatural or unusual. The grave site was always at considerable distance from any human settlement, and burial participants transported the coffin there in an elaborate procession. After burial, the family only rarely exhumed and reburied the body. The only reasons for doing so included declining family fortunes resulting in the need for a more auspicious place or the repurposing of the burial grounds for a

usually applied to the period between 1840 and 1911 (Clausen 2000: 3–5). The appropriateness of either of these terms is heatedly discussed. This discussion has been summarized by Clausen (2000) and I will therefore not repeat the conflicting arguments here. In the study of Naquin (1990) that I am basing myself on, the term "Late Imperial and Early Modern China" is used to refer mostly to the late Qing (1644–1911) and early Republican periods (1912–1949). The material the study is based on stems from Chinese gazetteer accounts from 1870 to 1940 but describes customs with considerably older roots.

different usage (Gamble 1954: 393). Here again, spiritual needs and practical concerns influenced by the local environment and economic factors majorly influenced the future of the grave in question.

Most rituals involving the ancestors took place at home or in a temple. The family visited the grave only a few times out of the year, and they would burn paper money and firecrackers but not disturb the grave itself. The time preceding the actual interment of the dead could thus be very long, but the grave would remain largely undisturbed after final closure.

2.3.2 Orthodox Christian Communities in Rural Greece

In contrast with the onetime earth burial of people from all ranks of society in Late Imperial and Early Modern China, the orthodox Christian communities of present-day rural Greece only very wealthy individuals receive a permanent burial, while families of more limited means always exhume the body after about 5 years (Danforth and Tsiaras 1982). Immediately after death, the family first washes and clothes the deceased in new clothes. They then place the corpse into a coffin, depositing a few coins or a cross on the body but no further objects. Shortly after, priests lower the coffin into an earthen grave in the presence of loudly lamenting women, other family members, and friends. During the following years, part of the family (mostly the women) remains in a state of constant mourning, and priests perform several memorial services. Choosing a time span of several years is likely largely based on the time it takes for the flesh to decompose in the local environment, even if the participants in these burial traditions may quote religious rather than practical reasons. Exhuming the dead in the first place, however, is likely a cultural/religious choice rather than a reaction to environmental factors.

Similar to the interment, during the exhumation, the women of the family and a priest play the most important roles. The wife, mother, or daughter collects the bones in a box, and a priest places them in the village ossuary in another ceremony. This marks the final farewell of the family for the deceased. Later, family members and priests conduct general memorial services for all the dead in the ossuary, but the bones remain undisturbed, except for slight rearranging when new bones are added. The primary grave is refilled, so an archaeologist would only see an empty rectangular hole with decomposed organic material, as well as maybe a coin, a cross, or a few unretrieved human bones. The ossuary, if excavated, would not provide any concrete clues about the burial proceedings or social status of the various deceased, except for what an anthropologist can read from the state and composition of the bones themselves. Thus, burial customs in rural Greece mostly obliterate social differences and personal individuality of both the deceased and the mourners, but the identity of the community is preserved and reinforced through the final placement of the dead in a common ossuary.

2.3.3 The LoDagaa in West Africa

The LoDagaa in West Africa only discriminate by age and circumstance of death in assigning grave forms for their members (Goody 1959, 1962). The LoDagaa construct a separate chambered tomb for each group of brothers and their wives and place the dead on earthen benches with soil heaps as head rests. They orient women to face west and men to face east. The grave remains accessible until the last member of the group dies; only then do the mourners close the opening with an upturned pot never to open it again. These graves are arranged in cemeteries unless the man is very old at the time of death. If the man has seen his grandchildren, he and his wife are buried in the courtyard of their own house.

On the other hand, the LoDagaa do not see infants as full people and therefore do not place them into the earth. Instead, they bury infants at level ground under a pile of earth located at the crossroad nearest the mother's home. The mourners stick thorns into the pile to keep dogs and other scavengers away. Then, they place the cradle on top of the pile and drive a stake through it, likely, in order to prevent the spirit of the child from haunting the mother (Goody 1962: 150). In this case, both practical concerns and questions of belief thus influence the form the grave takes. This also applies to the third category of trench graves; the LoDagaa use these graves for disposing of the people who died of an epidemic and need to be buried quickly as well as for those that committed a sin (e.g., witchcraft, murder, suicide). In such cases, the community usually chooses a location far away from the village and close to a watercourse so that the rain can wash the impurities into the river and prevent them from contaminating the nourishing earth. In all cases, the burial occurs soon after death without burial goods or personal belongings; instead, family members and the community consume or distribute personal effects, based on a complex set of rules (Goody 1962: 284–327). As the choice of location and grave form furthermore varies depending on the circumstances of death, archaeologists would have great difficulty relating the remains from trench burials to any one community with any reliability.

2.3.4 The Mountains of Sichuan in the Early Twentieth Century

David-Néel (1952) described an even more dramatic case in the mountains of Sichuan from 1937. She reported that in Kham, both Chinese and Tibetans usually burned their dead and hardly ever buried the remains (David-Néel 1952: 146). In Kangding, on the other hand people placed the coffins in a shallow grave (20–40 cm deep), arranged a few stones around it, and threw some earth on top (David-Néel 1952: 144–145). The rain eventually washed the earth away and disturbed the stones until the bare bones lay open on the surface. Local women would then collect the bones and dispose of them in deep natural chutes or cliffs, leaving hardly any distinguishable traces for future archaeologists. David-Néel did not make any observations on rituals preceding or surrounding the temporary interment, bone collection, or final disposal, but we can surmise that the minimal time span for the overall procedure is simply the time needed for the elements to break open the grave and the body to decay. Depending on the local climate and weather, such a process may take only a few months or several years. Ritual acts and religious beliefs or proscriptions additionally extend the period that the burying group may wait before retrieving the bones.

Other groups in Southwest China such as the Naxi buried their dead in a very different way (Goullart 1957). They largely adopted the burial customs observed by the Han population that dominated most of Yunnan at that time—customs essentially similar to those described earlier for northern China. Their customs differed only in that women who died in childbirth and people who died violently were always quickly cremated and buried, probably hastened by a fear of ghosts and pollution through bad deeds and evil spirits similar to what the LoDagaa feared. The short procedure followed by a night-long ceremony in which *dtombas* (a traditional kind of Naxi spiritual specialist) and lamas chanted and danced together to expel the evil demons, resulting in the *dtombas* going into trance, sacrificing animals, and using their blood in the rituals (Goullart 1957: 260). Thus, the combined burial practices left weak but noticeable traces in the burial record that would help archaeologists to distinguish at least some of the Naxi burials from those of the Han living in the same area. Similarly, ethnographic studies from Africa suggest that a common set of burial customs may—but do not have to—characterize a particular society. The graves of the Sandawae in east Africa, for example, are clearly distinguishable from those of their neighbors because the Sandawae alone bury their dead deep below the cattle pen instead of exposing them to hyenas (Huntingford 1953: 139).

2.3.5 The Central Plains of China in the Bronze Age

Textual and archaeological evidence from Bronze Age China shows that some societies indeed bury their dead according to a complex rank system. In this case, grave makers indicate status through features such as placement of the tomb within the cemetery; tomb size; presence and number of burial chambers and coffins; horse-and-chariot pits; human or animal offerings; presence and number of ritual bronze vessels; metal weapons; ceramic kitchen vessels; and personal ornaments of nephrite, stone, or bone (Falkenhausen 2006: 89–167). Furthermore, these rules varied by locale, between lineages, and over time, thus adding several dimensions of meaning (space, time, individual, and group identity) to the burial record.

2.3.6 Summary

The ethnographic examples described above show clearly that religious beliefs, social/cultural factors, and environmental surroundings all play a role in forming the burial record and have to be taken into consideration. At the same time, the material remains very likely mirror only a fraction of all the processes taking place in connection with the interment process. In preparation for the funeral, participants may conduct a wide range of rituals that are either untraceable in the archaeological record or difficult to connect with the actual burial. Furthermore, excavators and analysts cannot always reliably distinguish between certain elements such as *Beigaben* and *Mitgaben*. Nevertheless, a comprehensive model needs to include all of these elements to remind us of the range of possibilities. Both the ethnographic examples and the model proposed here make clear that in order to fully understand a burial and its assemblage, we always have to take the cultural, ecological, and situational context into account.

As Kingery (1996: 185) argues, the physical and practical aspects of artifact production, use, and discard are enmeshed with the utilitarian, spiritual, emotional, creative, and esthetic life of objects. This is applicable to the life histories of graves as composite units as well. As the relationships among people, objects, meanings, and places are fluid and change over time, a model trying to depict them all must also necessarily be fluid and flexible. It can become only more concrete when applied to a specific body of material, which I will do in the remainder of this book. As context is so important, however, we have to take into account not only the influence of the local environment on its past inhabitants but also the preconditions of research in the Liangshan Region. The local preconditions of research including preservation conditions and extend and nature of fieldwork strongly influence the picture we develop of prehistoric burial customs—be it in Southwest China or in other parts of the world. Before endeavoring to conduct an analysis of the mortuary remains from the Liangshan Region, it is therefore necessary to set the stage by discussing the nature of the data itself and the environment in which it was found. In a short review of previous archaeological work in this region (both primary through fieldwork and secondary through various types of analysis), I furthermore position myself and this book within the "research landscape," thus establishing the past and present context for this study.

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Chapter 3
Setting the Stage: The Geography and Burial Record of the Liangshan Region

3.1 Particularities of the Data and Parameters of Analysis

3.1.1 Central Issues in Research on Prehistoric Liangshan

Scholars have long been fascinated with the ancient constructions made of huge stones to be found in the Chinese border region, which they saw as the signs of a "Chinese megalithic culture" (*Zhongguo jushi wenhua*) (Heine-Geldern 1996; Zheng 1957: 24–29). As early as 1928, Feng Hanji observed such monuments in northern Liangshan, but the first excavations only took place in 1975.[1] Soon after, the excavators of the graves of Xichang Bahe Baozi coined the term *dashimu*, megalithic grave, which has been used in all publications since (Xichang et al. 1978). The excavators suggested that the graves dated between late Warring States (475–221 BC) and early Western Han (Sichuansheng and Anninghe 1976: 330). These two issues—chronology and ethnic attribution—remain the main point of discussion in the mortuary archaeology of the Liangshan Region until today, although the focus has shifted from megalithic graves to other types of archaeological remains.

3.1.1.1 Ethnic Attribution

In the early 1980s, the first earth-pit graves (*tukengmu*) were excavated.[2] Additionally, archaeologists reported various kinds of graves with stone installations, either termed *shiguanzang* (literally "stone coffin burials" but usually trans-

[1] Feng himself did not publish his finds, but his discovery is mentioned by Xu Zhiliang (1958: 58). The first report on a survey dedicated to these graves was, after some delay, finally published in 1958 (Xu Zhiliang 1958).

[2] These sites are Huili Washitian, Xichang Yangjiashan (Liu Shixu 1981; Tao and Zhaodian 1981), and Puge Wadaluo (Liangshan 1983).

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lated as "stone-cist graves"), *shibanzang* ("stone slate burials"), or *shibanmu* ("stone-slate graves").[3] Some of these graves contain only a few stone slates; others hold full-fledged stone coffins, and a few small graves consist of large boulders, blurring the distinction between megalithic and other stone graves. Similarly, graves labeled as earth-pit graves by their excavators sometimes contain a few stone slabs, making the difference between stone and earth-pit graves less distinct.[4]

The name stone-cist graves was originally coined for graves from the Upper Min River but has come to be applied to a wide range of grave types with stone installations throughout Western China. As grave construction, burial rites, and grave goods vary significantly, several scholars rightfully argued that the term "stone cist grave culture" (*shiguanzang wenhua*) is inadequate (e.g., Shen and Li 1996). Nevertheless, the trend to equate burial tradition, culture, and ethnic group continues until today. In a recent publication, Luo Erhu (2012) avoids the term stone-cist grave culture but still treats all graves as part of a greater whole and associates different subtypes with ethnic groups mentioned in historic texts. Forging a link between the excavated material and transmitted texts in this fashion is very common, but highly problematic. First of all, most of the historical records largely postdate the archaeological finds in question.[5] Furthermore, assigning an ethnic label to a specific body of archaeological material does not add to our understanding of past human behaviors and cultural developments, nor does it shed light on the much-debated prehistoric chronology of the region. I therefore do not attempt to forge any such connections between the later texts and the earlier archaeological material but focus solely on the material evidence.

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[3] So-called stone-slate graves have been discovered at Yanyuan Yanhai Gongshe (Huang 1983) in 1977 and at Yanyuan Jiaodingshan (Sichuan and Sichuan 1984) in the early 1980s, while those reported from Yanbian Yumen Wanxiao (Dukoushi 1986) have been called stone-slate graves.

[4] Addressing this geographic diversity, several scholars have proposed regional subdivisions, but they disagree as to where the borders should be drawn (Chen 1996; Luo Kaiyu 2002). There is also no consensus as to which graves should be included among the so-called stone-cist graves, even though the question is never directly addressed. Ma Jieru and his colleges, for example, do not mention graves with stone construction parts from Yanyuan but include similar graves from Huili among the stone-cist graves (Aba 2009); Luo Erhu (2012) on the other hand, includes the graves from Yanyuan but excludes most graves from Huili; and both publications exclude the megalithic graves of the Anning River Valley but include multiple burials in Yunnan and Zhaojue that were made from large boulders as well. The simple subdivision into earth-pit graves, megalithic graves, and stone-cist graves therefore clearly fails to do justice to the archaeological material in question.

[5] The most important sources are the *Shiji Xinan Yi liechuan (Shiji 1959),* the *Hanshu Xinanzi liangyue chaoxian chuan (Hanshu 1962),* the *Hou Hanshu Nanman xinanyi liechuan (Hou Hanshu 1965),* and to a certain extent also the *Huayang guozhi (Huayang Guozhi 2008).* Though the *Shiji* incorporates earlier sources, it was composed no earlier than 100 BC, while the *Hanshu* and *Hou Hanshu* were compiled in the second half of the first century AD and the *Huayang guozhi* originates from around 350 AD (Loewe 1993). They are therefore of significantly later date than most of the archaeological material in question. Furthermore, the authors all wrote from the perspective of inhabitants from the Central Plains who were mainly of Han origin and knew about other ethnic groups in far-away regions mainly through travel reports provided by other people and hearsay.

3.1.1.2 Chronology

To solve the chronology question, in recent years archaeologists working in the Liangshan Region have come to concentrate on settlement remains, and their discoveries have greatly advanced our understanding of both chronology and cultural sequence.[6] One major obstacle is the nature of the sites themselves. Usually single phased and thin layered, most sites are spatially very small and have been used only for short periods of time; furthermore, the graves rarely cut through each other or superimposing settlement layers. The most important pieces of evidence are thus the few known multiphase sites with thick cultural deposits, augmented by a small number of radiocarbon dates, and typological comparisons made with well-dated sites in other places.[7]

Based on stratigraphic and typological considerations, Jiang Zhanghua (2009) recently proposed a three-phase chronology for the Anning River Valley which has been widely accepted, but the fine chronological divisions are still heavily debated.[8] Furthermore, Jiang Zhanghua's chronology applies only to the Anning River Valley, while other parts of the Liangshan Region are not included. Luo Erhu (2012) developed a chronological framework encompassing all graves with stone installations in southwest China, but he excluded the megalithic graves. Moreover, the characterization of the five phases he proposes remains vague, and the graves from the Liangshan Region do not fit into the scheme. In this book, I therefore concentrate on the long-overlooked Liangshan Region itself and develop a chronological scheme that encompasses all local finds up to the first century AD. Before doing so, I first concentrate on the analysis of burial structure and content.

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[6] For recent summary publications, consult Liangshan and Chengdu (2009), Liangshan et al. (2012), Liangshan and Liangshan (2015), Liu Hong (2009), and Sichuansheng et al. (2006).

[7] The most important sites with thick cultural deposits consisting of several layers are Xichang Dayangdui, Yingpanshan, Ma'anshan, and Mianning Sanfentun. Several cultural phases have also been observed at Xichang Henglanshan, Lizhou, Mimilang, Qimugou, and Yongsheng Duizi.

[8] For the megalithic graves, for instance, a number of different chronological schemes have been suggested, some based solely on grave form, some on ceramic types, others on both. Song Zhimin (1991) suggested a scheme of four construction types: (1) rectangular, covered with large stone; (2) rectangular, large irregular stones, access ramp; (3) made of large stones, door on one long side, access ramp; (4) similar to (1) but with trapezoidal stone construction in front), which he assigned to different chronological periods from Warring States to Han. Tong Enzheng (1978) proposed a similar scheme but with three grave types belonging to different phases as well. The authors of the 2006 summary publication on megalithic graves (Sichuansheng et al. 2006) suggested three phases based on similarities between objects in the graves and sites with well-established dates from northern Sichuan, Yunnan, and the Central Plains. Jiang Zhanghua (2009) distinguished between two types of ceramic objects that might be characteristic of two subsequent periods in the history of megalithic graves, but he admitted that they might be contemporaneous styles or regional traditions rather than chronological phases.

3.1.1.3 Classification

Although the burial record of the Liangshan Region cries out for a systematic classification, so far archaeologists have failed to agree on how to produce one. They continue to treat the main grave types separately, associating them directly with distinct archaeological cultures that they then try to connect with specific ethnic groups mentioned in (later) historical records. In reality, however, there is too much variability for such a simple equation: grave construction, burial rites, and grave goods vary significantly within any of the three main grave types.

Emphasizing the variability of human behavior and approaching the various aspects composing a burial separately instead of treating graves as fixed units, the model and mode of analysis proposed earlier promises to be helpful in providing a much-needed systematic classification of the complete burial record of the Liangshan Region. By focusing on patterns of human behavior and their material correlates, this model is designed to allow me to identify past identity groups, while spatial analysis helps to determine their habitat, range of motion, and interactions. At the same time, the correlation between these various regional, subregional, and local patterns of behavior forms the basis for my discussion of questions of chronology and local cultural development.

3.1.2 Range of Data and Its Reliability

The archaeological material known to date from the Liangshan Region varies widely in its nature and the amount of information publically available. Thanks to the help of colleagues in Sichuan and Yunnan, I was able to collect a considerable amount of previously unpublished data additional to the published sources available at various libraries in China.[9] Overall, the burial material from the Liangshan Region that lies at the core of this study encompasses 1059 graves from 213 sites (Appendix: Tables B.1–B.3, Figs. B.1 and B.2; Online Material: Figs. 1–8). I have collected all available

[9] To obtain as complete a picture as possible, I collected all published information available in the libraries of Peking University and Sichuan University and the National Library in Beijing and spent 9 months and several summers visiting local archives and sites in addition to participating in excavations and surveys. The major published sources include preliminary excavation reports (some of them republished in Aba 2009 and Liangshan et al. 2012), extensive excavation reports on the megalithic graves of the Anning River Valley (Sichuansheng et al. 2006), the graves and metal objects of Yanyuan (Liangshan and Chengdu 2009), lists of sites in various overview publications. These are mainly the *Zhongguo wenwu dituji: Sichuan fence* and *Zhongguo wenwu dituji: Yunnan fence* (Zhongguo Wenwuju 2009; Zhongguo and Yunnansheng 2001) that summarizes the results of the First and Second National Culture Relics Survey, and some smaller surveys conducted up to 2008, as well as lists in Liu Hong (2009) and Sichuansheng et al. (2006). In the summers of 2006, 2008, 2012, and 2013, as well as during a 9-month stay in 2010/2011, I visited a range of sites throughout Sichuan and Yunnan, participated in surveys, and worked in various collections and libraries in Chengdu, Xichang, Huili, Yanyuan, and Beijing. Furthermore, I obtained GPS coordinates of 34 sites and 55 features.

information in a database that connects objects, features, and locations through the common denominator of the find unit (i.e., layer, grave, or other feature). The database details all aspects and attributes featured in my model, including grave form, size, construction parts, contents, and traces of ritual acts connected with the burial process. Furthermore, the database contains geographic coordinates, allowing the information to be incorporated into a geodatabase for GIS analyses.

The kind of information available on each grave varies widely from case to case depending on the extensiveness of previous fieldwork and publications as well as preservation conditions: 443 (42 %) of the reported graves were excavated, but only about half of these have been published in greater detail (Fig. 3.1). While the size of the excavated graves is usually known, the amount of information provided on the internal organization is highly uneven. For the megalithic graves of Dechang Arong, for example, the layers of fill material and the position of the objects are described in minute detail, while for some graves even the exact number of objects is unclear, and for some sites the exact number of graves is unknown as well. Furthermore, cemeteries have only rarely been excavated in full, rendering community-level analysis difficult.

Another problem is the variable, usually less than ideal state of preservation of the sites. Of the excavated graves, only 73 were reported as well preserved, while all others were in various states of decay or have not been reported in sufficient detail to be sure about their state of preservation (Fig. 3.2). Due to natural decay and other disturbances, only about one-third of the graves (138) held human bones, usually in an advanced stage of deterioration. The regional imbalance in research work mentioned earlier skews the picture of past local habitation and cemetery sites even more. This imbalance in the data has to be taken into account when conducting analyses.

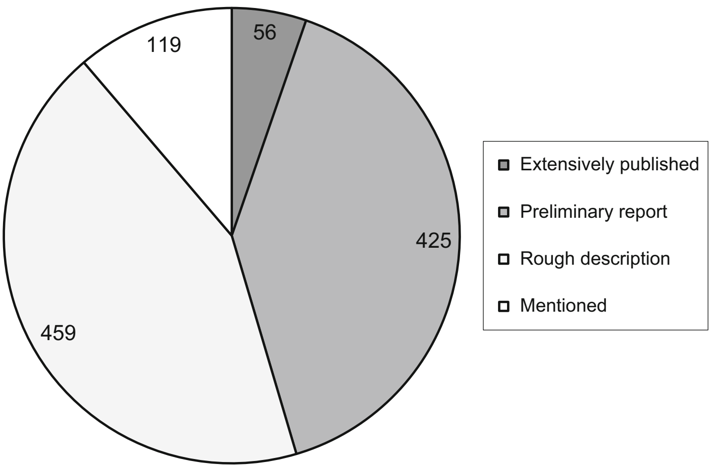

Fig. 3.1 Extensiveness of publication

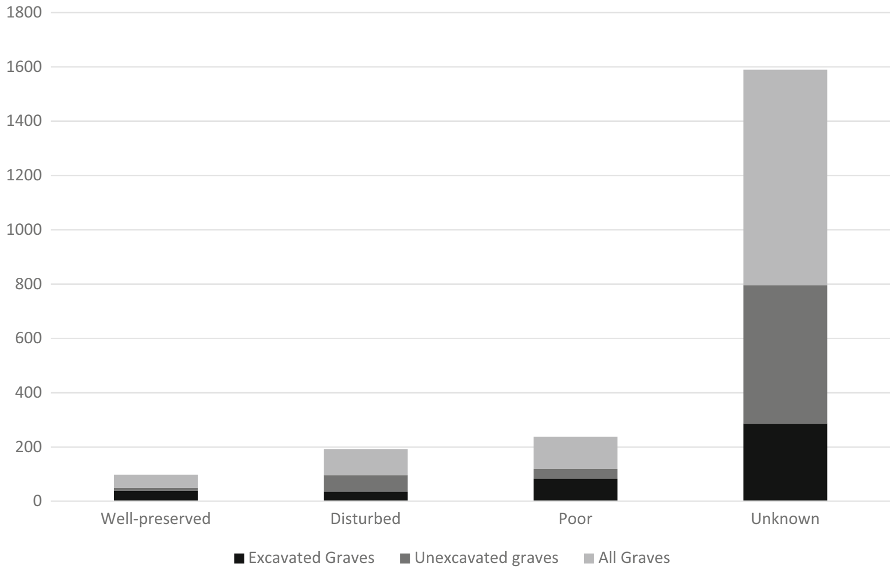

Fig. 3.2 Preservation of excavated and unexcavated graves

3.1.3 The Nature of the Data and its Influence on the Application of Statistical Methods

The heterogeneity in the reliability and detail of information between different sites is highly problematic, especially when conducting quantitative analyses that require a coherent dataset with sufficient information on all variables involved. One solution would be to take into consideration only all excavated, well-reported, and well-preserved graves, but doing so would reduce the amount of information immensely, i.e., from 1059 graves to 212 (20 %) at best. As most of the well-researched graves are located close to the major centers of research, such a small sample would increase the locational bias favoring the area around Xichang and other cities in the Anning River Valley. The opposite approach would be to include all known graves, but this would leave the entries for a large number of categories empty, thus distorting the results of statistical analyses. A third solution would be to limit the range of attributes to those occurring throughout the whole assemblage, but this would mask the tremendous variety that makes this material so special, thus not only forgoing its great potential but at the same time running danger of coming to erroneous conclusions.

For the Attic Greek cemeteries which are likewise unevenly preserved and published, Ian Morris has suggested using componential analysis splitting the data "in a *key diagram* on the basis of the observed dimensions of the cemeteries" (Morris 1987: 111, emphasize by author). Following Brown (1971), Saxe (1970), and

Tainter (1975), who applied the same method, Morris assumes that each definition represents "a distinct social persona in the mortuary population." This approach worked very well for the Attic cemeteries he focused on; however, as Papadopoulos (2005) pointed out, Morris assumed that the traditional chronology was valid and Saxe worked on material with minimal diachronic changes, reducing the interference of changes over time to a minimum. With less homogenous material it can be difficult to discern if the patterns are really due to status differentiation or if they reflect diachronic changes. In the material from the cemetery of Torone whose relative chronology was not as fine grained as that of the sites Morris worked on, both diachronic changes and synchronic differentiation were at work and difficult or even impossible to distinguish in the key diagrams that Papadopoulos compiled. Nevertheless, he was able to show that the clustering of the graves in the key diagram followed the pottery typology and seriation, reflecting diachronic differentiation. A comparison of variability with other contemporary cemeteries and a spatial analysis of the distribution of different kinds of graves at Torone furthermore allowed him to identify grave clusters and point out outliers within each group. Nevertheless, in both studies intermingled synchronic and diachronic changes could not be completely separated, simply because "the archaeological record rarely provides such precision" (Papadopoulos 2005: 399).

As the chronology of Southwest China is still very coarse grained and the present study combines material from various subregions, time periods, and even cultural groups, inferences on social structures as Morris draws them are difficult or even impossible to make. Nevertheless, considering the high variability of the material, cluster analysis and key diagrams are useful heuristic devices for understanding internal structures, be they influenced by diachronic, synchronic, and even spatial differences. I thus combine spatial analysis with componential analysis, creating a number of key diagrams for various subgroups of the material and comparing them with each other.[10]

Considering the high complexity of the material, multivariate statistical techniques such as correlation coefficients, factor analysis, principal component analysis, and correspondence analysis seem a natural choice. In general, they are very useful tools for pattern recognition in large bodies of data with many variables, but they can neither be expected to generate useful typologies automatically, nor can they be considered objective just because they operate with mathematical procedures. The results of complex analyses are necessarily complex in themselves and can be easily misinterpreted, especially if the mechanisms of analysis at work are not well understood.

As Stephen Shennan (1997: 218) has pointed out, the use of multivariate methods "presupposes that we have an appropriate description of the object of interest we are analysing." But the categories and variables are not naturally given categories but chosen by the archaeologist. To overcome this problem of subjectivity, there is a general tendency to use as many variables as possible and enter everything into

[10] The software used to run these analyses and display them visually are Excel for the generation of tables and basic exploratory analyses, while SPSS and Past are used for complex calculations. Spatial analysis was conducted in ArcGIS.

what Feldor McHugh has termed the "black box" (1999: 62) of multivariate analysis, hoping that significant patterns will naturally emerge. Unfortunately, the presence of a large number of irrelevant variables can easily distort the overall picture and thus lead to erroneous results. Furthermore, the great variability of the material record in the case of the material at hand, combined with its uneven reliability and extensiveness, make it impossible simply to conduct cluster analysis on all variables and hope for significant groupings to emerge. Such a procedure would probably result in nearly every grave being defined as a separate type of its own. In general, no method, however sophisticated, can relieve the archaeologist of the final responsibility of making a judgment on the relevance of the different potential variables. This is what Dwight Read calls the "double bind problem" characterizing quantitative methods: they require a dataset already be "dissected by precisely the dimensions our analysis is aimed at delineating" (2007: 304).

The only possible way out of this dilemma seems to be a constant back and forth between analysis and variable selection and definition, combined with clear statements of the questions posed and the variables relevant in their solution. The system of coding the data is therefore vitally important and needs to be revisited over and over again throughout the analysis, and "the importance of the hard *archaeological* work of thinking through our description cannot be over-emphasized" (Shennan 1997: 218). This naturally applies not only to the material retrieved from graves but to all archaeological data and observations, which have to be considered first separately by category and then jointly, exploring their spatial, temporal, and cultural relationships.

As K.C. Chang (1967: 76–85) argued when discussing the cultural salience of object typologies, there a large number of possible and equally valid ways of classifying any given assemblage. Depending on the aim of the analysis, the material can be arranged in different ways, each highlighting the aspects relevant to a given study. Based on this idea, in a first step, I analyze the various aspects of the burial record (i.e., basic grave construction, external features, internal additions, and so on) separately, arriving at provisional categories. Then I combine them to arrive at full-fledged types. Depending on the specific research question addressed to them, the categories and types will have to be regrouped and even redefined, resulting in a number of different classifications, appropriate for answering various kinds of questions about social structures, cultural contacts, or chronological developments.

When trying to identify beliefs shared between burying communities at various sites, for example, commonalities in burial posture and signs of ritual acts, e.g., burning objects or applying cinnabar can be significant indicators. In graves, the most important source of information on individual but also various kinds of group identity are personal ornaments and clothing items (*Mitgaben*, after Hachmann and Penner 1999), while objects placed in the grave to be used in the afterlife by the deceased (*Beigaben*) and objects discarded in the course of the burial ritual (*Nachgaben*) more readily reflect group identities. In Chap. 6, I test for the reoccurrence of specific combinations of objects to identify artifact groups or assemblages indicative of particular "reference groups" or identities.[11] To find out what kind of

[11] I use the term "reference groups" in the sense established by Blom (1969: 84) who pointed out that "ethnic boundaries do not depend on cultural differences on the level of form, but rather on

identity these elements might signify, their interconnectivity with other elements such as age, sex, and body treatment has to be examined. Patterns of object placement and other aspects of burial ritual can be informative as well. The spatial distribution of specific object types or object groups throughout all sites, which can again be identified through spatial analysis, is important for the identification of regional groups, their "habitat," and signs of contact between them.

For spatial analyses, I take into consideration all graves known by location. To adjust for the uneven amount of information available for different sites, questions of burial ritual have to be answered relying on a much smaller corpus of material of excavated and reasonably well-preserved graves with adequately detailed information. As long as these preconditions are made clear and the results are understood as tentative, the unevenness of the material basis is not a hindrance to conducting a wide range of statistical and spatial analyses. Through a comparative analysis of different subgroups of the material, it is furthermore possible to use the well-reported and well-preserved examples to make inferences on less well-understood cases. Such inferences, however, have to be made with great caution, and during subsequent analyses inferred attributes cannot be treated as equivalent to observed attributes.

Another problem in quantitative as well as qualitative analyses is the large number of aspects needed to outline the great variability of the overall body of material. I meet this challenge by using a reduced set of variables to address specific questions. Nevertheless, to avoid information reduction at an early stage, all observable aspects have been entered into a database specifically designed for this purpose at the point of recording. The chosen categories and associated variables are based on the model developed earlier, relating to the building blocks of grave, objects, and body, and also integrating two categories cross-cutting all other elements, i.e., location and evidence for rituals observed in, on or around grave, objects, and/or body (Table 3.1).

In the case of the grave structures themselves, the location component correlates strongly with the natural environment in which the graves were built and discovered. Before embarking on the analysis of the burial record of the Liangshan Region according to my mode, it is therefore important to introduce the geographic background, highlighting not only the aspects that may have influenced past mortuary customs and human behavior in general, but also the archaeological record itself and the history and preconditions of its recovery.

3.2 The Geographic Background

This study concentrates on the geographic entity circumscribed by the high mountains of Muli County in the Northwest, the Greater Liangshan in the Northeast, and the U-shaped bend of the Jinsha River flowing along its western, southern, and eastern border. Surrounded by mountains and rivers, this space of land thus forms a geographically bounded unit fitting for regional analysis. Covering about 81,434 km^2

culture at a more fundamental level, i.e. specific codification of these differences into complimentary statuses which differentiate a population into reference groups."

Table 3.1 Categories recorded in the database and associated variables

<table>
<tr><th>Grave</th><th>Objects</th><th>Body</th></tr>
<tr><td>• Construction details: linear measurements (length, depth, width), percentage above ground, percentage of stone installations, grave-chamber form (rectangular, long-rectangular, rectangular with rounded corners, square, trapezoidal, irregular, unclear), presence/absence and number of stone slates for bottom, walls, floor; measurements and nature of stones used</td><td rowspan="3">• Objects: category (ceramic vessels, metal and other vessels, weapons/tools, personal ornaments and clothing applications, ritual objects, armor and horse-ridding equipment), type, subtype, number</td><td rowspan="3">• Body treatment and physical characteristics: presence/absence of human bones, number skeletons, interment type (primary, secondary, cremation, unclear), orientation, position (flexed, supine extended, disarticulate), sex, body height</td></tr>
<tr><td>• External features: presence/absence and measurements of earthen tumulus, stone mound, “tail,” ramp, other installations (i.e., stones erected at one end, stone frame with objects inside, pile of stones outside grave, stone slabs framing entrance)</td></tr>
<tr><td>• Inside installations: floor material (i.e., soil, sand–gravel mixture, pebble layer, stones + yellowish sandy soil, leveled virgin soil + layer of pebbles + layer of yellow sandy clay, stone slabs), head compartment, foot compartment, second-level ledge, wooden coffin, other installations (i.e., further inside partitioning, stairs, additional coffins, additional stone slates)</td></tr>
<tr><td colspan="3">Cross-cutting categories</td></tr>
<tr><td colspan="3">• Location: geographic coordinates, elevation, orientation (N (0°–22.5° and 337.6°–360°), NE (22.6°–67.5°), E (67.6°–112.5°), SE (112.6°–157.5°), S (157.6°–202.5°), SW (202.6°–247.5°), W (247.6°–292.5°), NW (292.6°–337.5°) or unclear), grave location in cemetery, spatial relationship to other graves, location objects, location of body</td></tr>
<tr><td colspan="3">• Evidence for rituals: location bones, indications for body modification, presence / absence of cinnabar, charcoal, horse and other animal bones, other indications for food offerings, condition of objects (evidence for intentional breaking, burning, food content)</td></tr>
</table>

(i.e., an area a little smaller than Austria, 83,855 km^2), this area is characterized by a complex geomorphology and great diversity in climate, soils, and surface cover. The area encompasses the following administrative units: the Liangshan Yi Autonomous Prefecture, the prefecture-level city of Panzhihua, and the adjacent counties in northwest Yunnan lying north of the Jinsha River (i.e., Luquan, Ninglang, and Yongsheng Counties) (Figs. 1.1 and 1.2). In the following, this whole area summarily is referred to as “Liangshan Region.”

3.2.1 Geomorphology and Hydrology

The region is dominated by the Hengduan Mountain Range with its high north–south-oriented ridges that dissect the area into many small subregions with individual microclimates. These mountain ranges were and are formed by an ongoing movement of the Indian into the Eurasian Plate since the early Tertiary (He and Ikeda 2007). Due to its relatively recent geological history, the region has always been prone to earthquakes, most significantly in the middle and upper Anning River Valley and in southernmost Huili and Panzhihua as well as along the faults between Yanyuan and Huili (Wang 1993: 2–41). Landslides and other types of movement of sediment caused by these earthquakes have distorted the archaeological record in some places.

Aside from generating earthquakes, continuous tectonic movements also significantly influence the overall geography of the area, leading to the emergence of long parallel gorges with high mountains and deep river valleys. Today, the mountains consist of three major north–south-oriented chains that are separated by the deep valleys of Salween (Nujiang), Mekong (Lancangjiang), and Jinsha Rivers, the latter two running through the Liangshan Region. All three rivers originate from the Qinghai–Tibet plateau and flow in strong currents through extremely narrow river gorges which are also largely north–south oriented (Chaplin 2005). These rivers together with their major and minor tributaries—most importantly the Yalong and Dadu Rivers in the West and the Anning River running through the center of the Liangshan Region—connect the various subregions to each other and with the outside world.

Lying at the intersection of the Qinghai–Tibet and Yunnan–Guizhou Plateaus and bordering on the Sichuan Plain, the Liangshan Region is a crossroad of several cultural–geographic regions and has been a meeting point for routes of long-distance interaction from the third millennium BC onward (Hein 2014). These interactions are partially facilitated and partially hindered by the particular local environment. The high mountains and largely unnavigable rivers are a hindrance, but people may have travelled along the streams, especially when these were dried out in winter.

The Jinsha River, for example, which constitutes the upper reaches of the Yangtze (Changjiang), is a major artery that connects northwest China not only with southwest but also with central China and eventually with the coast (Fig. 3.3). Nevertheless, in its western reaches, the Jinsha River is not navigable as it flows through narrow gorges that can be over 1000 m deep, making it cumbersome or even impossible to use as them a waterway. Furthermore, its tempestuous currents can only be crossed at very few points. This river therefore constitutes a considerable barrier toward the south and west, a border that circumscribes the southern part of the region discussed in this book.

The Yalong River, although not as wild as the Jinsha River, likewise is largely not navigable and therefore a dividing as well as connecting factor in the local geography. Originating is southern Qinghai, the Yalong River runs parallel with the Anning River through Muli, Mianning, and along the border between Yanyuan and Xichang into Yanbian, where it flows into the Jinsha River. At a length of 1323 km, it covers a sizeable drainage area of about 144,000 km^2 and divides the territory into two geographically and culturally fairly different areas east and west of it (Chengdu Ditu 2010).

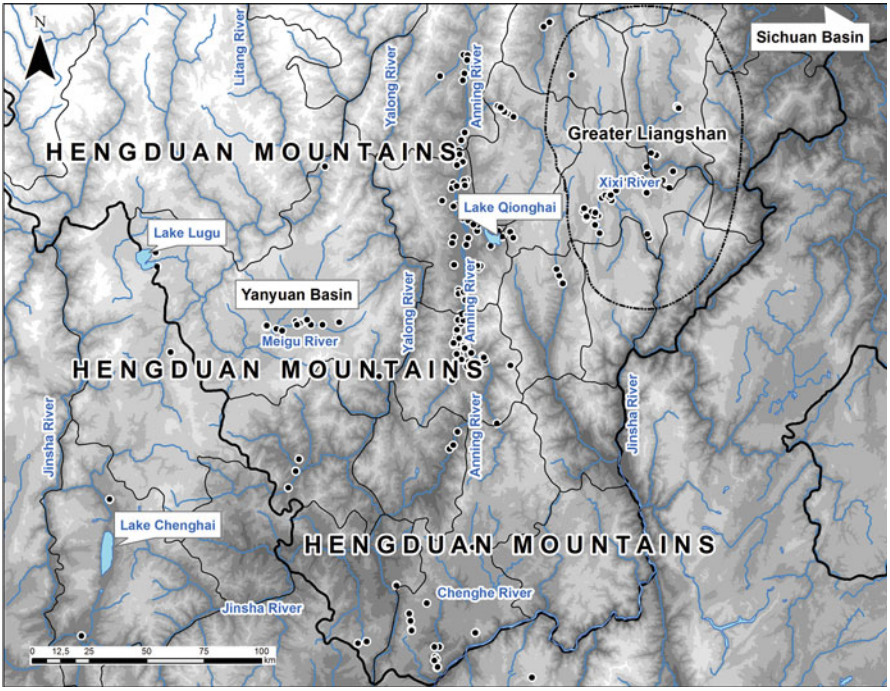

Fig. 3.3 Major rivers, bodies of water, and mountain ranges in the Liangshan Region

The Litang River belongs to the Yalong River system and connects Yanyuan toward the north and south. Its currents are rapid, flowing through a narrow river-bed, and are likewise largely not navigable. Of much greater importance for transportation purposes is the Anning River, the main artery running in a north–south direction through the center of Liangshan Prefecture, from the northernmost part of Mianning all the way to Yanbian where it connects with the Yalong and Jinsha Rivers. With a length of 320 km and a drainage area of 11,000 km^2, it drains 18 % of Liangshan Prefecture, and the region's most fertile agriculture soils are distributed on its banks (Sichuansheng Cehuiju 1981). Its tributaries are numerous but largely very narrow and highly seasonal, sometimes completely dry in winter and rather violent after the summer rains.

Overall, the rivers in the Liangshan Region thus are abundant but they are no actual waterways as they are for the most part hardly navigable and a dangerous source of flooding during summer rains (Fig. 3.4). Not surprisingly, most prehistoric settlement sites have been observed on somewhat elevated first- or second-level terraces at about 1–3 km distance to the rivers (Hein 2015), i.e., far enough away to escape flooding but close enough to take advantage of the water source and access to potential routes of communication (Hein 2015). After all, the smaller water courses falling dry during the winter may have become traffic routes during those periods.

Fig. 3.4 Narrow river valley by Xichang Maliucun

Other sources of water are provided by over 30 larger and smaller lakes distributed throughout the Liangshan Region. The major lakes—most importantly Lake Qionghai in the central Anning River Valley, Lake Mahu in Leibo, Lake Lugu at the border between Yanyuan and Ninglang, and Lake Chenghai in Yongsheng—were formed by tectonic movements as well, mainly through geological faultage and landslide damming due to earthquakes (Liangshan Yizu 2002). In addition to tectonic movements, climatic changes also played a part in the formation of the landscape. Warming during the last interglacial period, with its increased rainfalls and vegetation, led to higher river levels and sediment volume, resulting in the deep-cut narrow river valleys of today (Cheng 2011: 134).

Water resources in the form of rivers or lakes are thus abundant with the sole exception of the Yanyuan Basin and its surroundings where rain water is scarce. In modern times also the northeast is suffering from dryness, as the annual precipitation cannot compensate the strong, deforestation-induced water runoff eroding the mountains.[12] At present, deforestation and subsequent landslides are a significant problem throughout the Liangshan Region, especially in the heavily eroded northeastern

[12] The annual runoff depth is for the most part between 600 and 800 mm, with especially high values along the Jinshajiang, while further south and in the utmost West the runoff ranges between

mountains. Although the northwest is characterized by the same karst landforms, this sparsely populated area is still densely forested and therefore not prone to erosion while the northeastern mountains are bare and heavily disturbed. Parts of the Anning River Valley experience similar problems of deforestation and landslides that influence not only local economic development and infrastructure but also distort the archaeological record significantly (Wang 1993: 2–41).

3.2.2 Climate, Soil, and Surface Cover

The Liangshan Region is a transition zone between the temperate flora of north China, the subtropical lowland flora of south China, and the subalpine highland flora of the Qinghai–Tibet Plateau (Sichuan Zhibei 1980: 341). The large landmasses of the plateau prevent the cold air from Siberia from proceeding further west, and the cooling effect of the Tibetan High keeps the monsoon from entering Southwest China until the plateau has warmed in early summer (Jarvis 1993). Therefore, southwestern China experiences mild winters and is significantly drier in the spring and early summer than southeastern or central China.

The climate has marked dry and wet seasons with 90 % of the rain falling between July and October, carried by the Southwest Asian monsoon. The annual variation in temperature is relatively low, but fluctuation throughout the day is high, with cold nights and warm days. On average, the region has 1600–2400 sunshine hours per year and an annual thermal radiation of 110–140 kcal/cm^2, but both sunshine intensity and hours diminish from southwest to northeast, with especially high values for Yanyuan (Chengdu Ditu 2010: 18 ff.; Sichuansheng Cehuiju 1981: 19–24). The average temperatures for most areas lie between 14 and 18 °C, but they are significantly lower in the northern part (8 and 12 °C) and increase significantly toward the South, reaching 20 °C in Panzhihua (Chengdu Ditu 2010). These are only averages, however, and there are considerable micro-climatic differences, with temperatures decreasing from low to high elevation by about 0.57 °C per 100 m elevation (Fan 2009: 15; Zhang 1997: 4–5).

Latitude and elevation also affect precipitation (Aldenderfer and Zhang 2004: 11). Precipitation is generally ample with an annual rainfall of 600–1400 mm, but unevenly distributed throughout the region, with the upper Anning River valley receiving the highest amount of rainfall and Yanyuan the lowest. The western mountains are particularly dry in spring while in the Northeast precipitation is more evenly distributed throughout the year.[13]

500 and 600 mm, and even further south between 400 and 500 mm per annum (Wang 1993: 4–64; Wang and Zuo 2010: 38).

[13] These differences are mainly due to geomorphological reasons. The deeply incised gorges of the Hengduan Mountains create passages for the monsoonal air to pass through, slowly diminishing its power along the way and leading to sharp differences in moisture gradient from southeast to northwest (Fan 2009: 15).

What I have described so far are present-day conditions; the details of the paleoecology of the Liangshan Region are not yet well understood. Judging from work done in neighboring areas of the Tibetan Plateau, Yunnan, and Guizhou, the region reached the Holocene optimum already around 11,000 cal. BP, i.e., somewhat earlier than other parts of China (An et al. 2000; Shen et al. 2006; Yu et al. 2006). Monsoonal intensity declined around 3350 BP and there were cooling events around 4100–4000 BP as well as 3200 BP (Dearing et al. 2008; Dykoski et al. 2005; Shen et al. 2006).

Considering the diversity of ecological niches and microclimates throughout the Hengduan Mountain Range, it is not possible to use the paleoclimatic developments of Yunnan or Guizhou as a proxy for the Liangshan Region. It is very likely, however, that the relative attractiveness for human settlement of the various subregions of the research area remained largely the same throughout time; a description of the present-day environment can therefore at least provide a general impression.

Additional to climate changes which influence soil formation and vegetation, the landscape also has been significantly altered by human influence, particularly since the Han Dynasty (Dearing et al. 2008; Elvin et al. 2002) and even more so during modern times, through deforestation and intensification of agriculture followed by erosion, and finally modern-day development of roads and cities. What has not changed, however, is the complex underlying geology that provides a vast range of different parent materials for soil formation. The soil types vary not only by geographical area but also by elevation or even between different sides of the same mountain (Zhang 1997: Fig. 8.4) (Fig. 3.5). The same applies to the vegetation: throughout the entire Hengduan Mountains, there is a peculiar vertical ecological zonation that places very different environments in immediate proximity (Ren et al. 1985: Fig. 27), requiring different forms of human adaptation and leading to the emergence of different life ways in close proximity to each other. At the mountain tops alpine meadows prevail, providing grazing land best used in a pastoral form of subsistence (Ren et al. 1985); in the valleys the climate can be temperate or even tropical, in some cases providing wide fertile expanses ideal for agriculture (Table 3.2). The ecological preconditions for human occupation and subsistence just differ greatly between the various macro-regions of the area and would have done so in the past as well.

The mountains of Southwest China have been designated as one of the 34 biodiversity hotspots in the world (Frenzel et al. 2003; Xu and Wilkes 2004). By definition, the area is thus rich in plant diversity and has a high degree of endemism.[14] The complex topography and wide range of climatic conditions lead to a wide variety of vegetation types. Furthermore, the physical barriers of the mountain ranges have created a large number of distinctive mini hotspots with very distinct flora and fauna.

[14] To be designated as a hotspot, an area must have at least 1500 species of endemic plants, i.e., plants occurring only in this area, but many places have much more. The mountains of Southwest China, encompassing an area of 262,446 km^2 with 20,996 km^2 of remaining vegetation, hold 12,000 plant species, 3500 of them endemic, making up 1.2 % of the world total of endemic species. Another important indicator is the percentage of endemic plants compared to the total plant diversity of a place, which with about 29 % is in a medium region (Madagascar and the Indian Ocean Islands, e.g., have 89 % endemics). Endemic threatened fauna, on the other hand, is much more limited, with only two species of endemic threatened birds, and 3 types of each endemic threatened mammals and amphibians (Conservation International 2011).

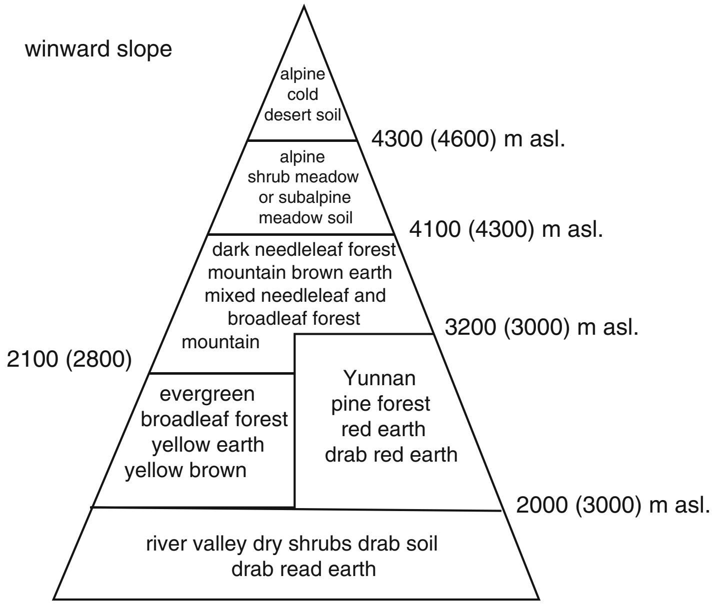

Fig. 3.5 Model of mountain vertical spectrum in Western Sichuan and Northern Yunnan (after Ren et al. 1985: Fig. 27)

In spite of all micro-regional variability, geographically the Liangshan Region can be separated into five main subregions that also differ markedly in archaeological remains as we will see throughout this book. I therefore introduce details of soil cover, vegetation, climate, and natural resources separately for each of these subregions which can then be correlated with the archaeological material during spatial analyses in Chap. 7.

3.2.3 Geoclimatic Subregions[15]

The five geoclimatic zones or subregions comprise the alpine steppes of the Northwest, the moderate mountains of the Northeast with their continental climate, the temperate Anning river valley, the low mountains of the temperate–subtropical Southeast, and the subtropical low-altitude areas of the Southwest (Fig. 3.6). The Northeast comprises Ganluo, Leibo, Meigu, Yuexi, and Zhaojue Counties; the Northwest is constituted by Muli, Ninglang, and Yanyuan Counties and

[15] Unless otherwise indicated, the information on the local geography and climate was taken from Chengdu Ditu (2010), Compilation Committee (2002), Cui (2004), Liangshan Yizu (2002), Sichuansheng Cehuiju (1981), Sichuan Zhibei (1980), Sichuansheng Difangzhi (1992), Wang and Zuo (2010), Zhongguo Dizhi (1993), and Zhongguo Kexueyuan (1999).

Table 3.2 Mountain altitudinal belts and their distribution in the Hengduan Mountains (after Yao et al. 2010)

Altitudinal belt	East flank	West flank	Altitudinal belt	East flank	West flank
Monsoon evergreen broad-leaved forest	Windward flank, south of 25° N, 1300–1900 m	–	Subalpine/alpine frigid temperate krummholz belt	4000–4200 m	–
Evergreen broad-leaved forest	1600–3100 m	1400–3200 m	Montane evergreen sclerophyllous shrub belt	3700–4000 m	3700–4000 m
Semievergreen broad-leaved forest	1900–2800 m	–	Subalpine/alpine evergreen shrub belt	2800–3300 m	2800–3300 m
Evergreen sclerophyllous and broad-leaved forest	2500–3100 m	2800–4300 m	Subalpine/alpine deciduous shrub belt	–	3680–4280 m
Evergreen and deciduous broad-leaved forest	1600–2400 m	–	Subalpine/alpine bush and meadow belt	3800–4600 m	3800–4200 m
Evergreen and deciduous broad-leaved and coniferous mixed forest	2700–3000 m	2700–3000 m	Alpine evergreen leather-leaved shrub	3500–4800 m	3500–4700 m
Deciduous broad-leaved forest	–	2300–2500 m	Alpine deciduous shrub belt	3500–4100 m	3500–4700 m
Broad-leaved and coniferous mixed forest	1600–3300 m	2000–3500 m	Alpine shrub and meadow belt	3500–4500 m	3800–4800 m
Warm evergreen coniferous forest	2200–3200 m	2400–3450 m	Alpine meadow	3700–4600 m	3500–4900 m
Temperate coniferous forest	2500–36,000 m	2500–3700 m	Alpine desert	4200–5000 m	–
Bright coniferous forest	3000–3800 m	2700–3600 m	Alpine desert steppe	3800–4500 m	–
Dark coniferous forest	2500–4500 m	3000–4500 m	Subnival belt	4000–5000 m	4200–5100 m
Subalpine/alpine krummholz belt	2800–2900 m	2800–2900 m	Nival belt	Above 4500 m	Above 4600 m

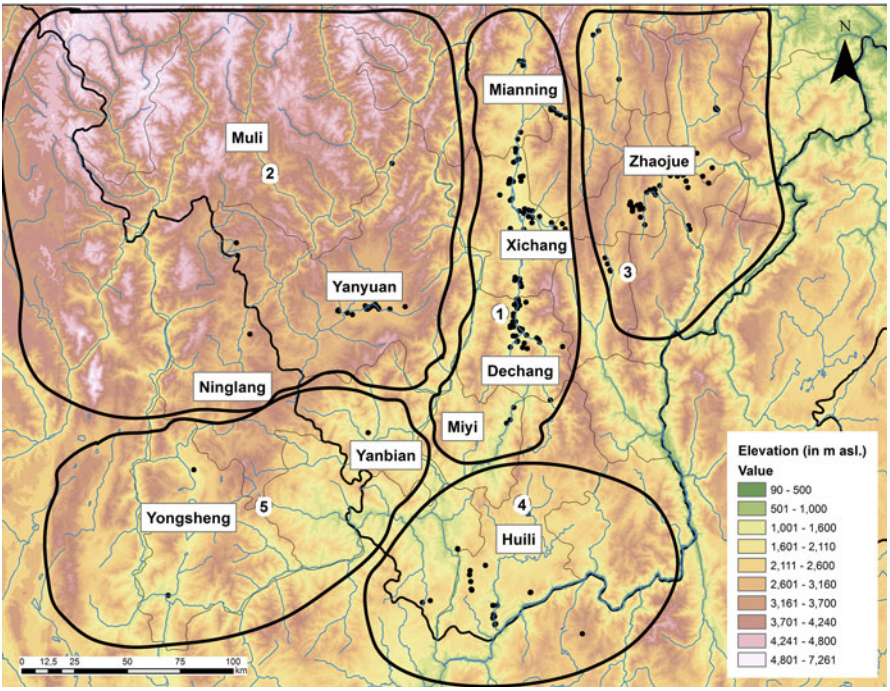

Fig. 3.6 Climato-geographic zones of the Liangshan Region with archaeological sites for reference: *1* Anning River Valley; *2* Northwest; *3* Southeast; *4* Southwest

northwestern Mianning; the Southwest consists of southern Panzhihua, and Huaping and Yongsheng Counties; the Southeast encompasses Huili, Huidong, and Ningnan Counties as well as the southern part of Panzhihua City (Renhe, and the Eastern and Western District), and the center is defined by the Anning River Valley and its tributaries, an area administratively split into Xichang City, Dechang, Mianning, Puge, and Xide Counties, and the northern part of Panzhihua (Yanbian and Miyi Districts).

3.2.3.1 The Northeast

The Northeast is characterized by high mountain ranges averaging around 2000–2500 m dissected by narrow river valleys. The whole area used to be thickly forested but at present Yunnan pine and oak remain only at high elevations and in low number. Due to large-scale logging, especially the hillsides around the Zhaojue plain are largely deforested and heavily eroded; the acidic yellow-reddish soils have lost most of their fertility and can only support hardy coarse crops like barley and potato. In the southern river valleys with an elevation below 1000 m, fertile patches of reddish-purple soil allow for cultivating wheat, maize, and vegetables, but flat arable land is very limited. In premodern times, the Northeast used to be an important source of timber and until today, the area is very rich in mineral resources, especially copper, iron, zinc, limestone, dolomite, and silver.

Given the wide range of elevation between around 1000 m in the southern river valleys and 4300 m at the highest peaks, the climate varies highly within a fairly small space. The mountains experience long periods of heavy frost and temperatures that hardly ever reach 20 °C even in the summer, but the southern river valleys have a mild temperate climate.

The Northeast has the lowest amount and intensity of sunshine in the whole Liangshan Region, a medium amount of precipitation (on average 800–1000 mm), and less well-marked dry and rain seasons than they are common further south. The only exception is the westernmost part of the eastern mountains (i.e., Puge and Xide) which experiences over 2000 h of sunshine per year, a wide range of temperatures between 1 °C and over 30 °C, and a higher than average amount of precipitation. This area is thus similar to the Anning River Valley and is furthermore directly connected to it through its river valleys linking up with the large plain in the center of the Liangshan Region. I therefore consider the foothills of the eastern mountains as part of the central subregion.

3.2.3.2 The Center

The flat area surrounding the Anning River and its tributaries is the second largest mountain plain in Sichuan after the Sichuan Basin. At its northernmost extension in Mianning, the river flows in a narrow delta at high elevations of over 2000 m, reaching 1500 m at its widest point around Xichang (ca. 11 km width), and flowing down to below 800 m in its southernmost part in Panzhihua (Fig. 3.7). Over time, the riverbed has moved gradually west, altering the geography and the archaeological record significantly.

As the main agricultural strip of the Liangshan Region, this subregion has been transformed significantly by human hands and only secondary and tertiary vegetation of agricultural crops, low scrubs, and some deciduous trees remains. The fertile alluvial soil around the rivers combined with the warm winters, mild summers, high sunshine intensity, and abundant rain allow for a large variety of produce and up to two crops of rice a year. The area is less rich in mineral resources than the surrounding mountains, but a few sources of iron, copper, and limestone exist in the southernmost reaches of the Anning River Valley.

3.2.3.3 The Southeast

The Southeast is even more fertile with its temperate–subtropical climate, mild summers, and short winters without frost. The amount and intensity of sunshine and rain are similar to the Center if averaged out over the year, but the Southeast has more well-marked dry and wet seasons. The ground is very fertile as well and the

Fig. 3.7 Landscape around Dechang Hongmiaocun

warm climate allows for three crops of rice a year. Additionally, the area is particularly rich in mineral resources, especially bronze and tin. Its connection with other parts of the Liangshan Region, however, is unevenly strong. Toward the north, mountains of up to 300 m in elevation prevail, separating the Southeast from areas further north including the Anning River Valley. Toward the south, the ground slopes down to below 900 m but the wild currents of the Jinsha River hinder traffic toward Yunnan in the south. The easiest path of exit or entry for the Southeast therefore lies on its western side, mostly Panzhihua and Yongsheng.

3.2.3.4 The Southwest

The Southwest covers a wide variety of elevations from 600 m asl. in Panzhihua to over 3000 m asl. in the western parts of Yongsheng, but on average, the altitude mainly lies between 800 and 1200 m asl. The climate is subtropical with warm, frost-free winters, and marked dry and wet seasons with an annual rainfall of 800–1000 mm. The average annual temperature reaches 13 °C with a temperature range between 6 °C in the higher elevation areas and over 30 °C in Panzhihua. The number of sunshine hours and sunlight intensity is high throughout the whole area (over 2000 h of sunshine per year). In its lower parts, especially in Panzhihua and around Lake Cheng in Yongsheng, the Southwest is marked by fertile purple and reddish soils that allow for a wide range of crops. Due to the high sunshine intensity and warm climate, wetland rice can be grown here at altitudes of up to 2700 m, i.e., 500 m higher than in other regions (Yu 1984). Additionally, the Southwest is rich in natural resources including zinc, iron, silver, marble, limestone, and gold, and the area also is home to a wide variety of rare plant and animal species. The same applies to the Northwest.

3.2.3.5 The Northwest

In the Northwest, the north–south-oriented ridges of the Hengduan Mountain Range rise to 3500–5959 m asl. and are intersected by a multitude of narrow river valleys cutting deep ridges into the landscape. With its steep slopes, the area is very prone to landslides and difficult to traverse. Until the present day, the Northwest is therefore only sparsely populated and not easy to reach as proper roads are lacking. Toward the south, the land slopes slightly downward to as low as 1350 m asl. in the Jinsha River Valley, and Ninglang and Yanyuan in the south are considerably less forbidding than Muli in the north.

Flat land makes up only 2 % of the surface area of Muli, and most of the mountain slopes are densely forested. The few cleared areas show a weathered and acidic reddish podzolic soil and yellow mountain soil not very suitable for agriculture. There are four clearly distinct seasons and rainfall is abundant. The temperate climate brings snow-covered mountain peaks and at lower elevations cool, rainy summers, and 6 months of heavy frost and snow. Nevertheless, Muli is a valuable source of timber and medical plans and harbors many rare species. Small deposits of iron, copper, lead, gold, silver, limestone, dolomite, and marble have also been reported. Whether they have been exploited in prehistoric periods is currently unknown.

The rich salt sources of Yanyuan, on the other hand, have clearly been exploited at least since Han times and possibly even earlier (Zhou and Jiang 2011).[16] The high-altitude depression of Yanyuan is located at an elevation of around 2500 m asl. and is considerably warmer than the surrounding mountains with cool summers, mild winters, and the largest amount of sunshine hours and sun intensity in the whole Liangshan Region. The Yanyuan Basin has marked dry and wet seasons with average annual temperatures of around 12 °C and a temperature range from −11 to 30 °C, but most of the year the temperatures are above freezing. The Yanyuan Basin is considerably drier than other parts of the Liangshan Region, but the river running through its center provides enough water for planting wheat, buckwheat, millet, various types of nuts and most famously apples, but rice cannot be grown here.

3.2.3.6 Reconsidering the Western Regions

While the eastern reaches of the research area quite naturally fall into a high-elevation northern part dominated by high mountain ridges interspersed by narrow river valleys, the western mountains are much less easy to subdivide. They belong

[16] Yanyuan literally means “salt well.”

to the north–south ranging Hengduan Mountain Range with its narrow and deeply incised river valleys. The mountain peaks are particularly high in the north and somewhat lower in the south but interspersed by expanses of flat land such as the valleys of Yongsheng in the utmost southwest and the Yanyuan Basin further north. Nevertheless, even the mountains around Yongsheng are still fairly high, going down to as low as 600 m asl. only further east in the vicinity of the Anning River Valley at Panzhihua. There is thus no clear split between a low-elevation southern and a high-elevation northern part with clearly distinct archaeological assemblages. For the purposes of this overview of geoclimatic subregions, it is useful to distinguish between the higher elevation mountains of the Northwest and the highly varied combination of mountains and valleys in the Southwest, but throughout the remainder of this study, we have to keep in mind that there is no clear border between the two. The Yanyuan Basin, for instance, is located at the southern border of what may be defined as Northwest, but its wide expanses of flat land make bear some resemblance to the valleys of Yongsheng; nevertheless, in the Yanyuan Basin the soil is considerably less fertile and the climate harsher than it is common in the valleys of the Southwest. At the same time, the mountains surrounding the valleys of Yongsheng are just as cold and forbidding as those of Ninglang and Yanyuan further north, albeit not as cold and steep as those of Muli in the utmost Northwest. This split between Northwest and Southwest thus has to be reconsidered throughout the remainder of this study.

3.2.4 The Liangshan Region as Living Space for Past and Present Populations

As has become clear from the detailed discussion of the natural environment, arable land is very unevenly distributed throughout the research area and climate and vegetation vary greatly between and within the subregions identified earlier. Past climate changes would likewise have had different effects in each area. In general, the warmer and wetter climate during the Holocene optimum combined with a still largely intact natural vegetation and the large variety in edible plants and fauna would have provided favorable preconditions for a hunting and gathering life style at higher altitudes than today. The fertile soils in the river valleys would have provided good ground for agricultural fields, especially after the reduction in forest cover during the late Holocene.

It is reasonable to assume that the main centers of early agriculture and settlement would have been the fertile Anning River Valley, possibly the Yanyuan Basin, the flat parts of Southeast and Southwest, and to a lesser extent the river valleys in the Northeast. Rice agriculture was presumably restricted mainly to the middle and southern parts of the Anning River Valley as well as other flat expanses of land in the South and the East. Medium-level forested mountain slopes throughout the area would have provided good ground for hunting and foraging strategies, especially considering the great species richness characterizing the area, which also includes different kinds of edible nuts. Pastoralism would have been an option, for example, in the mountainous Northwest, but mixed forms of economy with potentially semi-permanent settlements or seasonal migration would have been possible as well.

Until fairly recently, faunal data and paleobotanical remains have not been collected systematically from archaeological sites in the Liangshan Region and our understanding of prehistoric subsistence practices is still limited. Pollen data indicate the exploitation of locally naturally occurring nuts and fruit as well as buckwheat and hemp at least from 1000 B.P. onward (Li and Liu 1988). Grave M1 at Xichang Bahe Baozi furnished charred rice remains dating to around the fourth century BC, and carbonized rice grains were also found at the settlement site of Dadunzi in Yuanmou County (ca. 3200 BP) located only slightly south of the Liangshan Region in Yunnan (Yunnansheng 1977).

An analysis of growing-degree days and risk of failure has shown that during the Holocene Optimum only the middle reaches of the Anning River Valley would have been suitable for growing the varieties of rice that were available at the time, i.e., the temperate or tropical varieties of O. *japonica* (D'Alpoim Guedes 2013: 274–275).[17] Foxtail millet, buckwheat, and barley, on the other hand, have a high tolerance for frost and dry climate and presently are grown throughout the mountains of the Liangshan Region (Gardner et al. 1985). At the site of Haimenkou in northern Yunnan, foxtail and broomcorn millet, buckwheat, barley, wheat, and other crops were grown together with wetland rice (Yunnansheng et al. 2009a, b). As D'Alpoim Guedes (2013) convincingly argues, in this environment that was not actually suited for this crop, wetland rice was but a short-lived experiment. This reliance on a wide range of different crops and the experimenting with various kinds of food sources would have helped to minimize the risk of living in the marginal environment of the Hengduan Mountains.

In spite of this risk, being a biodiversity hotspot the Hengduan Mountains provide a considerable range of food resources that may be exploited by hunting or gathering, especially the large number of edible and high-caloric nuts. Relying on a variety of different resources instead of one or two major crops would have minimized the risk of crop failure that the highly varied and in some areas relatively harsh environment would have presented. Even today, a large variety of different crops is grown side by side in small fields especially in the mountainous areas of Southwest Sichuan and northern Yunnan.[18]

As my previous analysis of settlement material from the Liangshan Region has shown, its prehistoric inhabitants adapted to the various ecological niches in a variety of ways (Hein 2015). The warm and humid south with its rich fauna and flora was inhabited by hunter-gatherers early on; the development of settled agricultural living in the river valleys soon followed while semipermanent hunter-gatherers seem to have continued roaming the mountain areas. The rich metal resources in the Southwest furthermore led to the emergence of special purpose sites for metal

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[17] The types of rice grown today at up to 2700 m in Yongsheng and Huaping are modern-day cultivars (O. indica, temperate varieties of O. japonica, and Champa rice).

[18] Personal observation throughout the Liangshan area, especially in Muli and northwest Yunnan.

production during the first century AD at the latest. The Anning River Valley was mainly occupied by settled agriculturalists already since the mid-third millennium BC, but there were a few special purpose fishing sites, and the inhabitants of the Anning River Valley seem to have been in contact with the hunter-gatherer groups of the nearby mountains of Puge and Xide. The Northeastern mountains were occupied by groups practicing a mixed subsistence combining small-scale agriculture with livestock rearing, hunting, and gathering, as befits the forbidding local environment. The same applies to the western mountains. The evidence from Yanyuan and Ninglang indicates a mixed or pastoral economy, in the case of Yanyuan with a strong emphasis on horse riding and combative activities as the burial material shows (Hein 2014).

The great variability of the local environment left the past inhabitants of the Liangshan Region with the choice to relocate frequently, pursue mixed forms of economy, or to enter into exchange relationships with neighboring groups. The archaeological evidence indicates that all three solutions were combined. The uneven distribution of resources induced the past inhabitants of various microclimates within the Liangshan Region to venture into neighboring areas and even be in contact with people and places outside the Liangshan Region to gain access to raw materials they may have been lacking (Hein 2014, 2015). This applies in particular to metal ores but also to raw material for stone tools.

Copper deposits are distributed throughout most of the Liangshan Region but the deposits in Huili in the Southeast are most numerous, holding nearly 70 % of the overall copper reserves of Sichuan (Sichuansheng Difangzhi 1992). The tin deposits in the Liangshan region are likewise the richest within Sichuan, centering mainly in the south around Huili and Mianning, with a few more occurrences in Puge, Dechang, and Xide. Precious metals distributed across the research area include gold and silver, as well as platinum group metals and silver, which can mainly be found in Huili in particular abundance. Gold is a very common precious metal as well, appearing as placer deposits in the Dadu, Yalong, and Jinsha rivers. Gold mines exist in greater number in the Northwest, but also in the Southeast, and in Mianning, Xichang, and Yanyuan.

The complex geological pattern of the Liangshan Region provides abundant resources for grinding-stone production (sandstone, coarse igneous rock, limestone, and volcanic rock), but material for flaked-stone production (flint, obsidian) is extremely rare (Sichuansheng Difangzhi 1992; Ma et al. 2002) (Fig. 3.8). Interestingly, flint or obsidian seem to not have been traded into the Liangshan Region and the quality of the resultant stone tools is therefore remarkably poor (Hein 2015). Material used in grave construction, on the other hand, in some cases seems to have been transported over considerable distances, especially in the case of megalithic graves. The abundant igneous rock is also serviceable as a construction material for graves, but the shale and slate seen in some grave constructions can only be found along the southern rim of the Yanyuan Basin and in a few places along the Anning River (Ma et al. 2002: 278). The construction of many of the stone graves observed throughout the Liangshan Region therefore required the movement of materials and interaction between the various subregions defined earlier. The challenging local environment

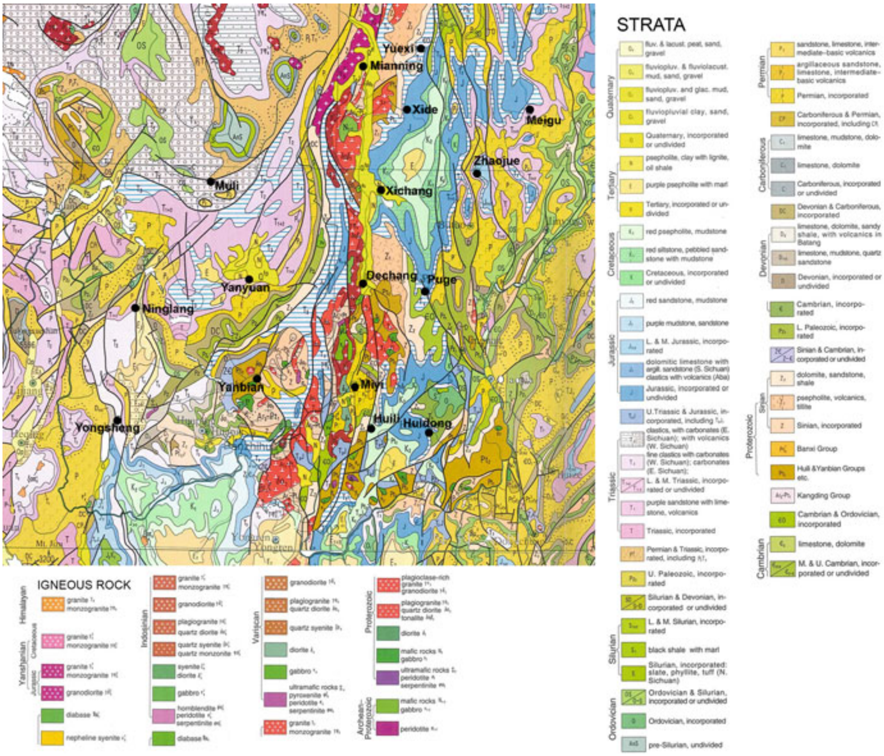

Fig. 3.8 Geology of southern Sichuan and northern Yunnan (after Ma et al. 2002: 278–12)

thus required a considerable amount of adaptation by its early inhabitants, sometimes separating them from each other, sometimes connecting them through the need to exchange resources (Hein 2014).

3.3 The Liangshan Region as a Research Environment

It is not only past and present inhabitants but also archaeologists who are significantly influenced by the local geographic preconditions. Not surprisingly, there is therefore a significant imbalance in the amount of prehistoric material known from different parts of the research area (Table 3.3, Fig. 3.9). While for some regions the lack of known archaeological sites might be a reflection of actual scarcity of early human activity due to high elevations or unfavorable climate (e.g., the cold mountains of Muli County), for other regions this is likely not the case (e.g., the fertile valleys of Huidong and Ningnan Counties). Further factors to keep in mind are the vast erosion problems especially in the northeastern mountains, and the shifting river courses, which might have destroyed sites or at least give a faulty impression as to the original distance between settlements and rivers.

Table 3.3 Number of known sites by county and site type

Counties	Grave sites	Graves	Settlement sites	Known sites
Butuo	0	0	0	0
Dechang	41	105	47	88
Gange	0	0	0	0
Huidong	0	0	2	2
Huili	25	659	41	66
Jinyang	0	0	1	1
Leibo	0	0	0	0
Meigu	7	22	8	15
Mianning	8	31	15	23
Miyi	3	10	7	10
Muli	0	0	0	0
Ningnan	0	0	2	2
Panzhihua	2	13	8	10
Puge	5	49	9	14
Xichang	54	198	73	127
Xide	9	39	11	20
Yanbian	5	8	6	11
Yanyuan	20	51	26	46
Yuexi	6	17	6	12
Zhaojue	29	330	31	60
Yongsheng	3	3	9	12
Huaping	0	0	0	0
Ninglang	1	11	5	6
Sum	**218**	**1546**	**307**	**525**

Where archaeological evidence is lacking even though the natural environment is particularly suited for human occupation and erosion or flooding are not a significant problem, the reason for the scarcity of known finds often lies in the lack of modern infrastructure: local archaeologists and the funds that enable their work are notoriously scarce in the hinterlands. Excavation work therefore centers on the prefecture capital of Xichang and other affluent centers such as Dechang or Mianning which house the most important research institutions and are connected to the main highways and train routes crossing the country. This unevenness in research has to be kept in mind when conducting cross-regional spatial analyses. The Anning River Valley is indeed well researched and the known material abundant and well published and forms a great basis for the analysis of the megalithic graves. Similar sites found in Puge and Xide, on the other hand, are poorly understood.

To meet this challenge, I developed two indices, a reliability index and an accuracy index. The reliability index assigns every site and features a specific value that indicates the reliability of the available information in that case. This index is composed of the four factors of amount of field research, preservation, state of publication, and access to original material, with a maximum number of 2 or 2.5 points per

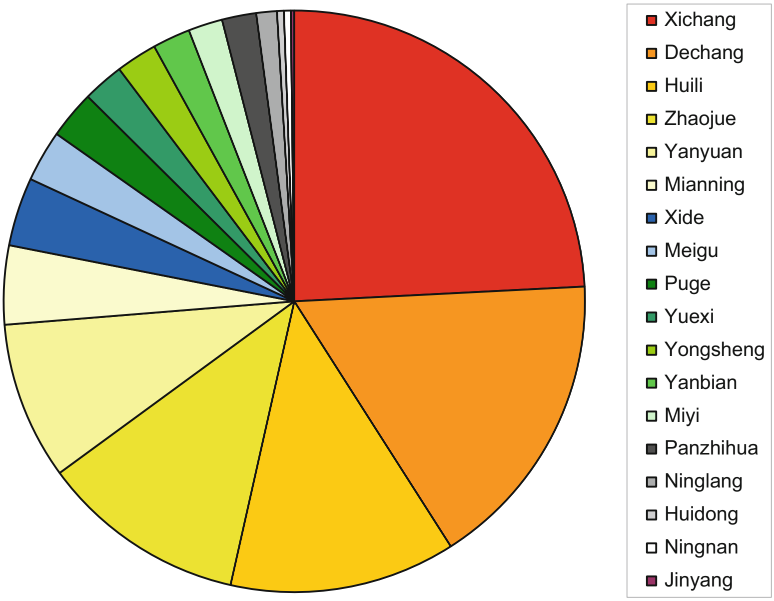

Fig. 3.9 Known sites in the research area by county (counties without known sites are Butuo, Gange, Huaping, Leibo, and Muli)

category, resulting in a maximum of 8 points altogether and a minimum of 1 point, as unknown and unreported sites can naturally not be listed (Table 3.4; Online Material: Location). Similarly, the accuracy index allows for the inclusion or exclusion of specific sites in spatial analysis depending on how clear their spatial location is. The values range from 0 for unknown location (which can naturally not be included in any spatial analysis) to 5 for coordinates that I took myself.

These calculated values allow me to conduct all statistical and other forms of analysis including and excluding data of varying reliability and comparing the results to gain a more accurate picture than a simple analysis of all available material or only all fully published evidence would. For spatial analysis, I first consider all graves known by location and then compare the results of burials whose location is well or less well known. The spatial aspects I explore include the relative position of various graves and grave types to each other and their location in relation to various geomorphological and geographic factors (e.g., elevation, slope, aspect, distance to water). Considering the coarseness of the soil maps available for the Liangshan Region and our limited knowledge of past conditions of climate and flora, I do not include these factors into my spatial analyses but refer to them only where detailed site descriptions with references to the local environment are available.

While the amount of data that can be used for spatial analysis is relatively ample, for questions of burial ritual or body treatment, I have to rely on a much smaller corpus of material. Here, I depend on material from well-published excavated graves

Table 3.4 Evaluation scale for reliability of site information

Parameter	Specification	Points
Fieldwork (0–2 points)	Several excavations	2
	One excavation	1.5
	Trial excavation	1
	Extensive survey	0.5
	Survey	0
State of publication (0–2.5 points)	Fully published	2.5
	Extensive preliminary report	2
	Preliminary report	1.5
	Mentioned with some details	1
	Mentioned	0.5
	Unpublished	0
Preservation (0–2 points)	Well preserved	2
	Slightly disturbed	1.5
	Disturbed	1
	Badly disturbed	0.5
	Destroyed	0
Access to material (0–1.5 points)	Access to all original material	1.5
	Access to most original material	1
	Access to some original material	0.5
	No access to original material	0
Maximum number of points		**8**

that were well preserved. This is where the reliability index aids me in deciding which graves to include; the index also enables me to compare various bodies of data to reach more reliable conclusions. The unevenness of the material thus does not have to be a hindrance to conducting a wide range of statistical and spatial analyses, as long as the state of material preservation, and the conditions of data collection and evaluation are made clear in all cases, and the existence of regional biases in research and preservation are kept in mind.

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Part II
Applying the Model

Chapter 4
Constructing the Grave: The Main Parts and Their Combination

The layout and construction of the graves in the Liangshan Region varies widely from small earth-pit graves with no internal subdivision or external markers to huge above-ground constructions made of large boulders covered with an earth mound and marked by an access ramp or entranceway of large standing stones. The number of quantitative and qualitative variables that need to be considered is therefore considerable, including linear measurements, basic construction, elements of external features, internal features, and raw material used. In the following, I discuss each of these elements in turn and then test for regular associations between them. Based on these associations, I then define grave types that help to bring order to and understand the immense variability in grave forms that characterize the Liangshan Region.

4.1 Linear Measurements

The measurements defining a grave chamber are length, width, and depth/height, i.e., depth for graves below and height for graves above ground.[1] The majority of graves are completely above or completely below ground and the height/depth measurement can therefore be expressed in one category with positive and negative values, respectively. Only two graves (Dechang Wangsuo M3 and Zhaojue Jinzi Niaobu M1) were reported as half sunken into the ground, and it is unclear if they were above-ground monuments whose tumuli had been destroyed or if they originally were located below but became exposed through erosion. As this question cannot be answered with any degree of certainty, in the analysis of depth/height measurements, I exclude these two graves.

Processes of erosion and various forms of human disturbance—mostly the removal or addition of soil on top of the former surface level in connection with

[1] Full measurements of the grave chamber are available for 464 graves; the length is known for 610 graves, the width for 663 graves, and the depth/height for 526 graves.

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Table 4.1 Descriptive statistics of basic and inferred measurements for all graves

All	Length	Width	Height/depth	Proportions	Area	Volume
Mean	4.96	1.62	1.10	3.72	14.75	27.70
Median	3.08	0.80	1.00	3.33	2.50	4.08
Mode	2.00	0.60	0.50	5.00	0.60	0.63
Standard deviation	4.34	1.82	0.72	1.90	30.82	71.37
Range	40.55	15.80	3.90	14.94	319.91	671.96
Minimum	0.45	0.20	0.10	0.83	0.09	0.04
Maximum	41.00	16.00	4.00	15.77	320.00	672.00
Count	*610.00*	*663.00*	*526.00*	*583.00*	*600.00*	*464.00*

agricultural activities or building projects—pose a significant problem as they distort the depth measurements for graves below ground. Reliable estimates of vertical extension and thus volume are therefore only possible for graves above ground built of solid stone and not easily removable earth. For graves below ground, the vertical extension is only significant for exceptionally deep graves reflecting considerable labor investment.

Descriptive statistics for all grave measurements show a wide range of values, the majority concentrating on the lower end (Table 4.1, Fig. 4.1). Most graves are thus relatively small with measurements around 2 × 1 m, but some graves can be as long as 41 m. The combined measurement (area and volume) highlight this contrast between a large number of small graves, a few medium-sized graves, and some particularly large graves that range widely in size. For all measurements, there are several peaks in the distribution, indicating the existence of several subgroups and thus different grave form types. This chapter is mainly concerned with the differentiation between different grave types.

One major split for depth/height measurement naturally is the contrast between graves above and below ground. When recalculating all descriptive statistics separately for these two major groups (Table 4.2; Fig. 4.2) it becomes clear that the graves above ground are on average larger than those below ground, and all particularly large graves are located above ground as well. Overall, the graves above ground range widely in length and width; in contrast, the graves below ground are mostly of small to medium size (1.5–6 m length and 0.5–1 m width on average); only a few graves are overly long but rather narrow.

When calculated with Pearson's Correlation Coefficient, the correlation between length and width is equally strong for graves above (0.451) and below ground (0.451), indicating a limited range of length-to-width ratios but with varying overall measurements.[2] Nevertheless, scattergrams plotting length against width and height/depth show that the distribution of values is very irregular, especially for graves below ground (Figs. 4.3, 4.4, and 4.5). In graves located above ground, the values for height show a limited range but are combined with a wide variety of different lengths and to a lesser extend in width; they are thus square or long rectangular

[2] As the depth measurements are notoriously unreliable due to erosion and other disturbances, similar correlations with depth/height, area, or volume are not very useful and can be omitted here.

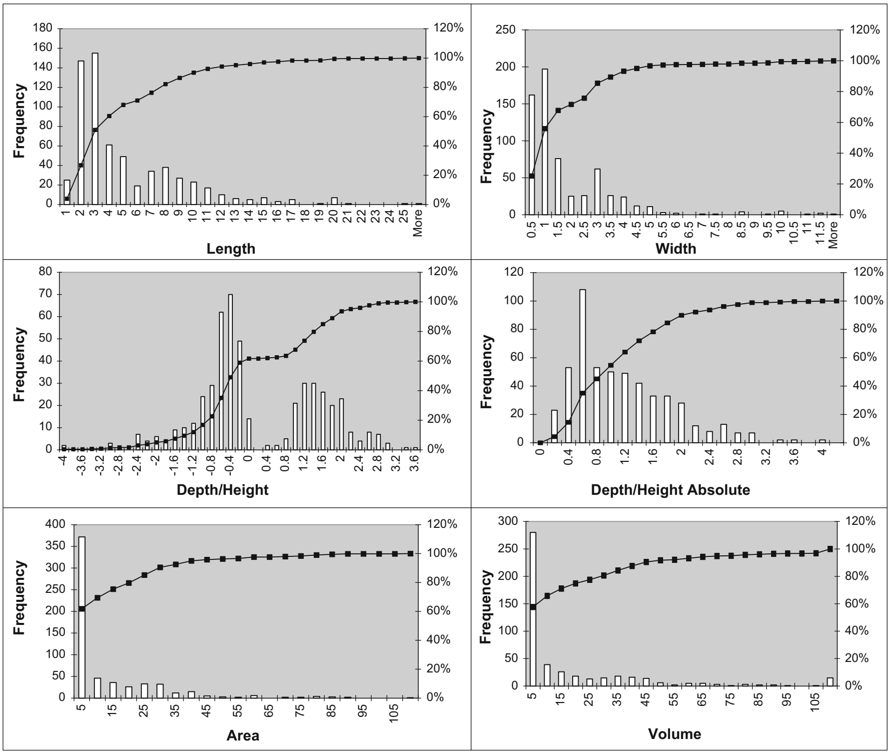

Fig. 4.1 Histograms and cumulative frequencies for basic and inferred grave measurements (grave length, width, depth/height, and depth/height absolute, area, volume)

Table 4.2 Descriptive statistics of basic and inferred measurements for graves below and above ground

Graves above ground	*Length*	*Width*	*Height/depth*	*Proportions*	*Area*	*Volume*
Mean	8.73	3.25	1.58	3.18	34.24	62.89
Median	8.00	2.90	1.50	2.90	23.10	32.00
Mode	11.00	3.00	2.00	3.00	2.49	3.19
Standard deviation	4.73	2.20	0.58	1.76	42.66	101.25
Range	39.98	15.65	3.15	14.73	319.64	671.30
Minimum	1.02	0.35	0.35	1.04	0.36	0.70
Maximum	41.00	16.00	3.50	15.77	320.00	672.00
Count	235.00	233.00	194.00	232.00	232.00	191.00
Graves below ground	*Length*	*Width*	*Height/depth*	*Proportions*	*Area*	*Volume*
Mean	2.60	0.74	0.82	4.09	2.47	3.08
Median	2.10	0.59	0.60	4.00	1.37	1.04
Mode	2.00	0.60	0.50	5.00	0.60	0.40
Standard deviation	1.47	0.54	0.65	1.91	3.71	5.65
Range	11.55	3.60	3.90	8.82	35.63	41.14
Minimum	0.45	0.20	0.10	0.83	0.09	0.04
Maximum	12.00	3.80	4.00	9.65	35.72	41.18
Count	375.00	430.00	332.00	351.00	368.00	273.00

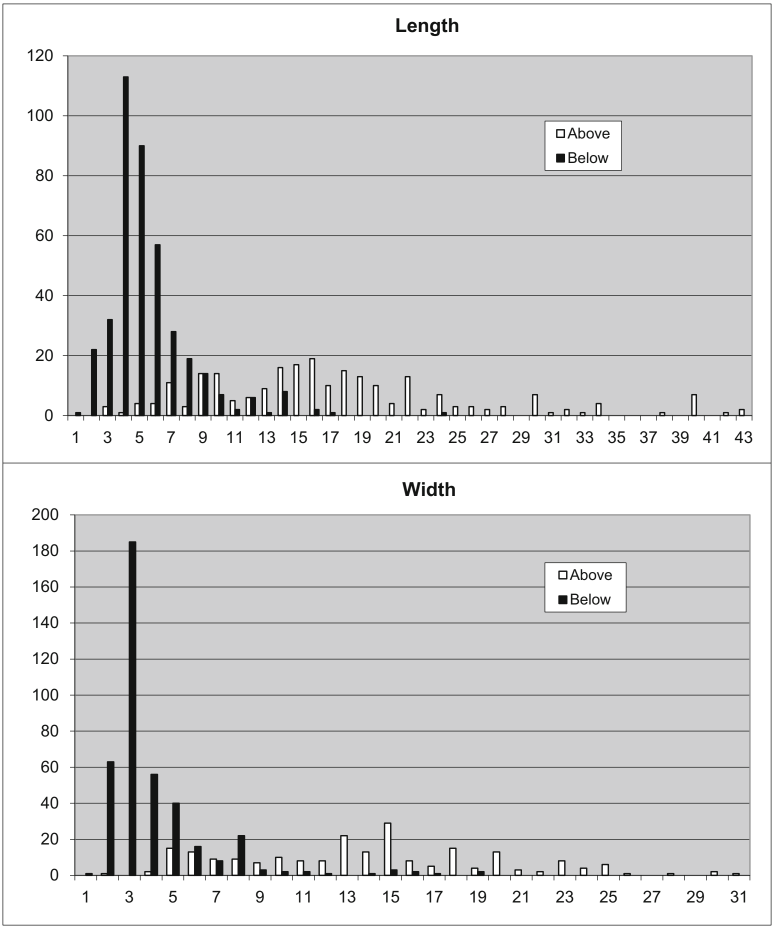

Fig. 4.2 Histograms for grave length and width juxtaposing graves above and below ground

in shape with an average height of 1.5–2 m. Most values for graves above ground are located within an elongated cloud along the regression line, reflecting a gradual increase of width with increasing length. The scattergrams furthermore highlight a few graves that fall outside the norm; I earmarked them for further special analysis later in this volume.[3]

For graves below ground, all measurements show low numbers and are limited in variation. Most of these graves are rather shallow, probably due to erosion and other natural and human-induced disturbances. The overall size expressed in area and volume measurements is relatively similar between different graves, but width varies widely

[3] These are the unusually wide grave Dechang Ganhai M1; the unusually long grave Xide Wuhe M4, both of them located above ground; and the particularly deep graves Yanyuan Yingpanshan M1 and M4.

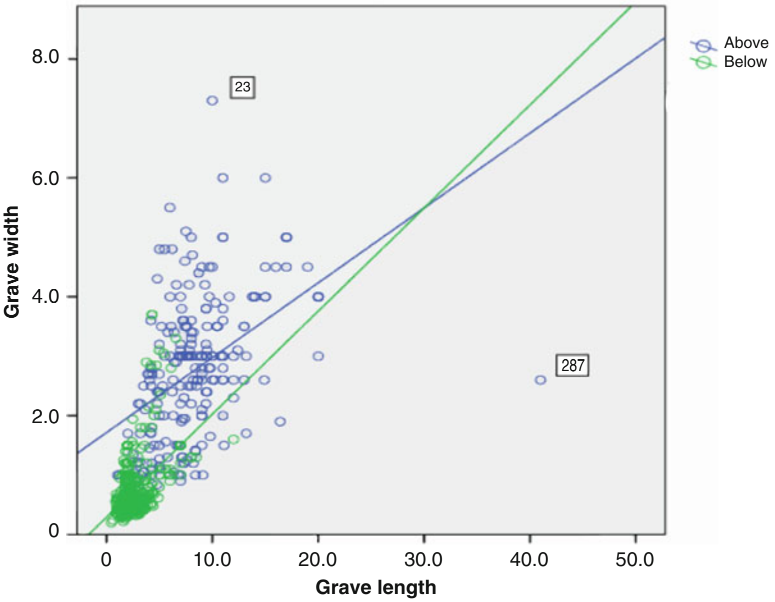

Fig. 4.3 Scattergram plotting length against width

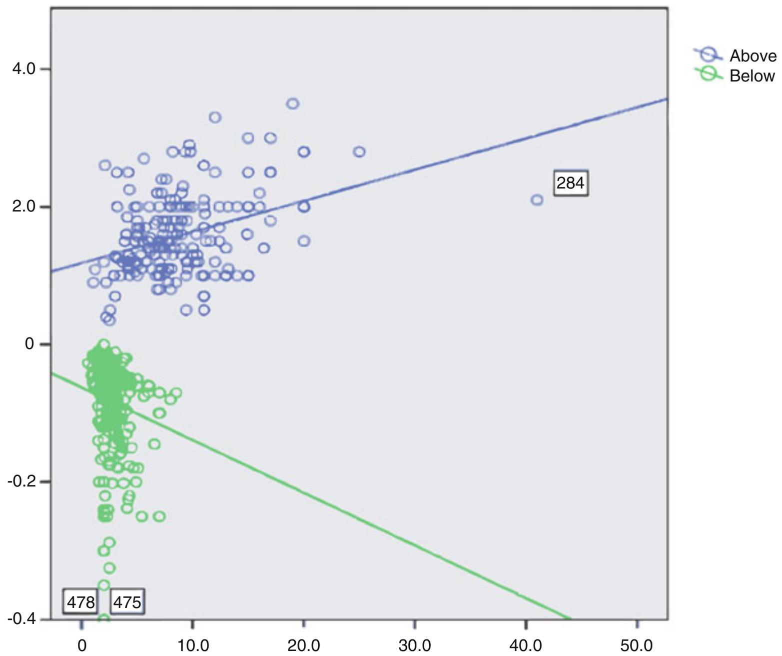

Fig. 4.4 Scattergram plotting length against height/depth

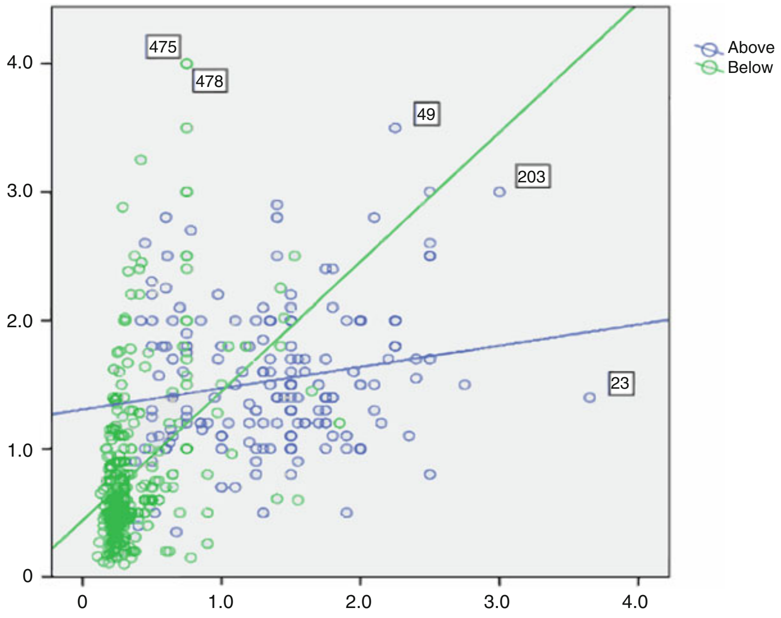

Fig. 4.5 Scattergram plotting width against height/depth (absolute values)

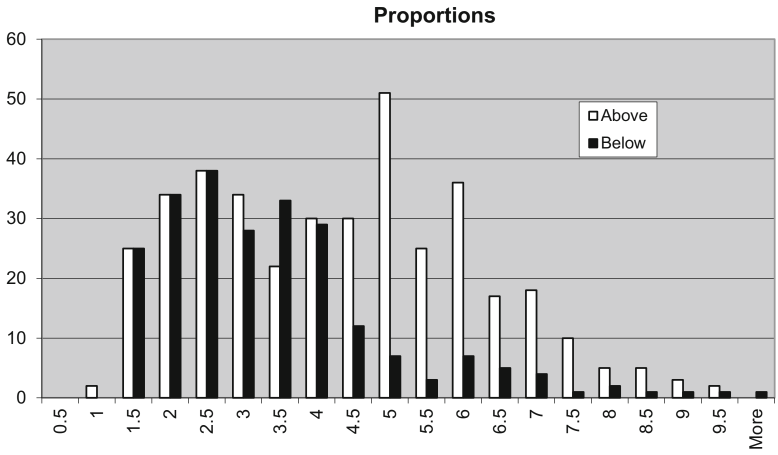

Fig. 4.6 Histogram for grave proportions separated for graves above and below ground

for similar length measurements indicating differences in form. A histogram displaying grave proportions (length/width; Fig. 4.6) helps in identifying basic forms and size categories. As the graph shows, graves above and below ground alike most commonly have a rectangular floor plan with ratios of 2:1 to 3:1. Square floor plan occurs only seldom, and high values indicating long-narrow graves are rare, too; they are

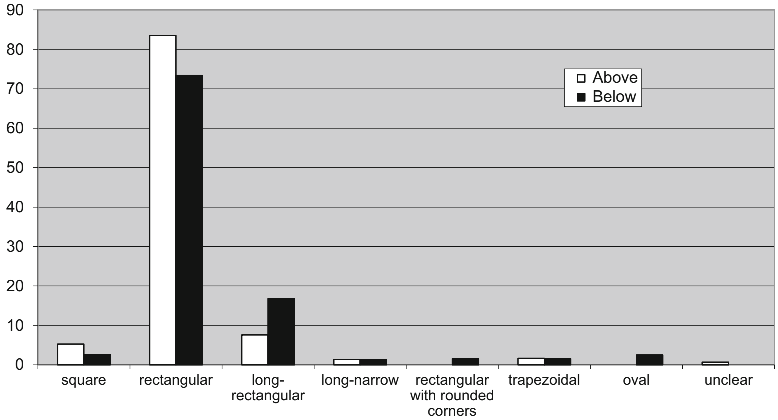

Fig. 4.7 Histogram for different types of grave chamber forms expressed in percentage separate by graves above and below ground

more common with above-ground constructions. Overall, based on the graph we can clearly distinguish between four main form categories (square, rectangular, long rectangular, long narrow); additionally, oval graves and rectangular graves with rounded corners have been reported, both of them occurring only with graves below ground and overall very rarely (Fig. 4.7).

4.2 Basic Construction

4.2.1 Construction Elements

Nearly 70 % of all known 691 graves have some form of stone installations such as stone walls, cover, and/or floor. A special case is graves containing single stone slabs next to or on specific objects or body parts. Although made of stone, these installations are not part of the grave construction itself but internal additions, presumably with a ritual function. Graves with such installations thus have to be reclassified as earth-pit graves, leaving 678 reported graves with stone-construction parts, 165 of them excavated and well preserved.

As certain construction details such as the presence/absence of stone floors is only known for excavated graves, excavated and unexcavated graves have to be analyzed separately and the results compared (Tables 4.3, 4.4, and 4.5). Among excavated graves, whole stone cists consisting of stone floor, bottom, and cover are nearly as common as a combination of stone cover and walls only. The combination of stone walls and cover was also observed in the majority of unexcavated graves with stone-installation parts, but some of them may have stone floors, too. The lack of a stone cover may in some cases be the result of poor preservation conditions and

Table 4.3 Frequency of different stone-construction parts

	Stone cover	Percentage	Stone walls	Percentage	Stone floor	Percentage
Yes	445	64.59 %	623	90.42 %	91	13.21 %
No	114	16.55 %	35	5.08 %	97	14.08 %
Unknown	130	18.87 %	31	4.50 %	501	72.71 %
SUM	*689*	*100.00 %*	*689*	*100.00 %*	*689*	*100.00 %*

Table 4.4 Two-way combination table of basic stone-construction elements

	Stone cover	*Stone walls*	*Stone floor*
Stone cover		435	46
Stone walls	435		79
Stone floor	46	79	

Table 4.5 Frequency of occurrence of the combinations of the three basic stone-construction elements (cover, walls, bottom) for excavated and unexcavated graves

Construction	Count	Percentage I	Percentage II
Excavated graves			
Stone cover, walls, and floor	46	26.14 %	6.68 %
Stone cover and walls	60	34.09 %	8.71 %
Stone cover and floor	1	0.57 %	0.15 %
Stone cover only	5	2.84 %	0.73 %
Stone walls and floor	31	17.61 %	4.50 %
Stone walls only	11	6.25 %	1.60 %
Stone floor only	11	6.25 %	1.60 %
Partial floor covering only	11	6.25 %	1.60 %
SUM 1	*176*	*100.00 %*	*25.54 %*
Unexcavated graves			
Stone cover and walls, floor unsure	340	66.28 %	49.35 %
Stone cover, no stone walls, floor unsure	3	0.58 %	0.44 %
Stone walls, no stone cover, floor unsure	50	9.75 %	7.26 %
Stone walls and bottom, cover unsure	2	0.39 %	0.29 %
Stone cover, others unsure	1	0.19 %	0.15 %
Stone walls, no stone floor, cover unsure	10	1.95 %	1.45 %
Stone walls, bottom and cover unsure	84	16.37 %	12.19 %
All unsure	23	4.48 %	3.34 %
SUM 2	*513*	*100.00 %*	
TOTAL	*689*		*100.00 %*

not an accurate reflection of the original grave construction. Even at the current state of preservation, stone covers are the most commonly reported form of stone installation, possibly because they are most easily observed in unexcavated graves, but also because they also frequently were laced on graves that had no other form of stone installations (Table 4.6).

Besides difference in presence/absence of stone walls, floors, and cover, there is some variation in the form of the stone-construction parts themselves. The floor, for

Table 4.6 Types of floor cover

Floor material	Count	Percentage
Stone slabs	65	36.52 %
Stone slabs on rammed earth	1	0.56 %
Stone slabs on soil layer	1	0.56 %
Stone slabs with soil layer on top	21	11.80 %
Bedrock	1	0.56 %
Leveled soil	58	31.46 %
Pebble layer	10	5.62 %
Pebble layer on rammed earth	1	0.56 %
Pebble layer with soil layer on top	1	0.56 %
Pebble layer on leveled soil with soil layer on top	1	0.56 %
Soil–gravel layer	17	9.55 %
Soil on bedrock	1	0.56 %
SUM	*178*	*100.00 %*

Table 4.7 Floor cover elements and their combination

Floor construction element	All	On soil layer	With soil layer on top	Both
Stone slabs	88	2	21	0
Bedrock	2	0	1	0
Pebble layer or soil–gravel layer	30	2	2	1
Leveled soil	58	0	1	0
SUM	*178*	*3*	*25*	*1*

instance, can be covered with stone slabs similar to those used for walls and cover, or it is covered by a pebble or soil–gravel layer, or the grave rests on leveled soil or more rarely bedrock (the latter only in Zhaojue in the Northeast). In some cases, additional soil layers were added above or below the pebble, gravel, or stone-slab floor, resulting in sometimes rather complex constructions (Table 4.7). From the behavioral point of view, three different actions can thus be distinguished:

- Leveling of the ground if necessary;
- Application of the main floor cover (stone slabs, pebble–, or soil–gravel layer); and
- Addition of another soil layer before and/or after.

All three steps belong to the "preparatory phase" as defined in the model, during which the site is chosen and prepared and the foundation for the grave laid. Unless the grave is built on bedrock, the first step of leveling the ground is necessary while the other steps are optional. There are thus three different floor types—natural ground, stone slabs, and a pebble/soil–gravel layer—which are sometimes combined with additional soil layers. These details are important for distinguishing construction stages and grave types later in the analysis.

Stone walls and cover come in different forms as well. For covers, large stone boulders and medium-sized stone slabs are the main building material; most commonly,

Table 4.8 Number of cover stones

Cover stone number	Count	Percentage I	Percentage II
1	19	20.21 %	7.28 %
2	9	9.57 %	3.45 %
3	16	17.02 %	6.13 %
4	24	25.53 %	9.20 %
5	11	11.70 %	4.21 %
6	8	8.51 %	3.07 %
7	3	3.19 %	1.15 %
9	2	2.13 %	0.77 %
11	1	1.06 %	0.38 %
13	1	1.06 %	0.38 %
Sum 1	*94*	*100.00 %*	*36.02 %*
Several	167		63.98 %
Sum 2	*261*		*100.00 %*

Table 4.9 Cover stone size categories

Cover stone size categories	Count	Summary categories	Count
Large boulder	284	Boulder	287
Boulder	3	Slabs	149
Few large and many small stones	2	Large and small stones	2
Large slab(s)	18	*SUM*	*438*
Stone slab(s)	103		
Thin slab(s)	28		
SUM	*438*		

2–5 stones are combined to cover a single grave (Table 4.8). Only two graves (Yanyuan Laolongtou M7 and M9 in the Western part of the research area) show a combination of a few large and many small stones as cover (Table 4.9). For large, above-ground constructions, the cover stones can measure as much as $3.5 \times 2 \times 1$ m, but measurements of around $2 \times 1 \times 0.5$ m are most common. Even the smaller stones thus weigh around 800 kg each and the largest comes to about 5 tons, making the construction of these above-ground graves rather challenging. For graves below ground, considerably smaller and more regular stone slabs measuring around 1×0.5 m were used, making them considerably easier to handle. With a varying thickness of 4–44 cm, we can distinguish thin, medium, and large stone slabs.

Stone floors in both above- and below-ground graves are mostly thin and smooth rather than large and irregular like some of the stone covers. The stones used in construction of the walls, on the other hand, range widely in measurements from cobble size and thin slabs to large boulders, but even these boulders are smaller than those used as covers. There are three different wall-construction types:

- Several large upright stone slabs or boulders (4–20 stones, depending on the grave size) (93 %);
- A large number of cobbles or roughly rectangular stones piled up in layers (4 %);
- A combination of a few larger boulders/slabs and many small stones (3 %).

Overall, the most common wall compositions are as follows:

1. Varying numbers of large boulders (40 %);
2. Stone slabs (53 %), falling into the general categories of large and coarse, medium sized, and thin stone slabs;
3. Varying combinations of large boulders/slabs and smaller stones (3 %);
   (a) A combination of large boulders below and cobbles above; or
   (b) A small number of boulders or slates with a larger number of cobbles and small stones filling the space in between;
4. Several layers of irregular cobbles or smoothed rectangular stones forming a brick-wall-like structure (4 %); and
5. A wall-like construction made of irregular cobbles and Han tiles (Zhaojue Qianjinshe M6 only).

The percentages listed earlier were calculated over all 641 reported graves; when recalculating only with the 168 excavated and properly reported graves, the percentage of graves consisting of large boulders drops dramatically (Table 4.10). This perplexing phenomenon is a function of practical calculations on the archaeologists' part: they consider these large graves as too cumbersome to excavate, considering that they often contain very few objects but require much work to disassemble and record. Because their construction parts are so large, these graves are mostly undisturbed; only their earthen tumuli are largely eroded away or removed by human hands so that the construction of walls and cover can be observed clearly without excavation. The above-ground stone graves are thus one of the rare cases where the survey reports provide a more accurate account of the actual grave population than the small

Table 4.10 Types of wall constructions

	All	Percentage I (of all)	Excavated	Percentage II (of excavated)
Large boulders	256	39.94 %	24	14.29 %
Large boulders below, small stones above	9	1.40 %	6	3.57 %
Large boulders with small stones filling gaps	3	0.47 %	3	1.79 %
Large boulders at a distance, many cobbles in gaps	3	0.47 %	3	1.79 %
Large slabs with small stones filling gaps	3	0.47 %	3	1.79 %
Large slabs erected at a distance, many cobbles in gaps	4	0.62 %	3	1.79 %
Large slab(s)	11	1.72 %	7	4.17 %
Stone slab(s)	254	39.63 %	42	25.00 %
Thin slab(s)	72	11.23 %	62	36.90 %
Several layers of cobbles	13	2.03 %	6	3.57 %
Several layers of rectangular brick-like stones	12	1.87 %	8	4.76 %
Irregular cobbles and Han tiles	1	0.16 %	1	0.60 %
Sum	*641*	*100.00 %*	*168*	*100.00 %*

Table 4.11 Types of wall constructions by state of research and location above/below ground in numbers

	All	Above excavated	Below excavated	Above unexcavated	Below unexcavated
Large boulders	256	25	0	231	0
Boulders below, small stones above	9	6	0	3	0
Large boulders, small stones filling gaps	3	3	0	0	0
Large boulders at a distance, cobbles in gap	3	3	0	0	0
Large slabs with small stones filling gaps	3	3	0	0	0
Large slabs at a distance, cobbles in gap	4	0	0	4	0
Large slab(s)	11	1	6	4	0
Stone slab(s)	254	6	36	6	206
Thin slab(s)	72	0	62	0	10
Several layers of cobbles	13	2	4	7	0
Several layers of rectangular brick-like stones	12	2	6	0	0
Irregular cobbles and Han tiles	1	1	0	0	0
Sum	*641*	*52*	*114*	*251*	*216*

sample of excavated graves, showing that—among above-ground constructions—graves made from large boulders are indeed more common that those made of smaller stone slabs.

Identifiable doors occur with excavated and unexcavated graves alike but only with above-ground constructions, in 104 cases from the short sides and in five from the middle of one long side. Where described in detail, the doors most often consist of a large number of irregular cobbles (26 graves) but some are made of a single large slab (14 graves), and in a few cases 2–4 large slabs were used (10 graves).

When correlating the different wall-construction types with the location of the graves relative to the surface, it becomes immediately apparent that large boulders were used exclusively for graves above ground (Table 4.11). Complex wall constructions combining larger boulders and smaller stones are likewise reserved for graves above ground. Thin slate slabs are the most common construction material for stone graves below ground but were never employed for graves above ground, possibly because of the brittleness of the material that cannot carry large structures on its own but needs the support of the surrounding soil. Medium-sized stone slabs and thick but small slabs occur above as well as below ground. The reason may lie in the somewhat arbitrary split between boulders, large slabs, and regular-sized slabs rather than in actual similarities between graves above and below ground. These categories therefore need to be revisited.

A boulder is a rock with a coarse grain size that is too large to be lifted. While boulders are irregular, slabs have a flat, roughly rectangular form, are relatively

Table 4.12 Relative frequency of different types of wall constructions with reduced categories

	All	Percentage	Above	Percentage ($n=295$)	Below	Percentage ($n=332$)
Large boulders	256	39.94 %	256	86.79 %	0	0.00 %
Large and small stones	22	3.43 %	25	8.47 %	0	0.00 %
Stone slab(s)	337	52.57 %	5	1.69 %	320	96.39 %
Several layers of stone bricks	26	4.06 %	9	3.05 %	12	3.61 %
Sum	*641*	*100.00 %*	*295*	*100.00 %*	*332*	*100.00 %*

Table 4.13 Frequency of different kinds of stone material used in grave construction

Stone material	Count	Percentage
Slate (metamorphic)	112	43.92 %
Sedimentary rock	3	1.18 %
Sandstone (sedimentary)	26	10.20 %
Limestone (sedimentary)	4	1.57 %
Igneous rock	85	33.33 %
Granite (igneous)	25	9.80 %
Sum	*255*	*100 %*

smooth, and much less unwieldy. I am using the term “large slabs” for slabs of regular form (as opposed to the irregular-shaped boulders) but with a thickness exceeding the average 10–15 cm of regular slabs. As many reports do not detail the thickness of the slabs, this split in sizes is problematic. Where the exact number, size, and coarseness of the stones used is unknown, I describe cover and walls as made of “stone slab(s)” as opposed to “large slabs” or “thin slabs.” When recalculating the percentages without differentiating between large and small sizes, it becomes clear that nearly all of the stone slabs used in grave construction were employed below ground; large boulders and a combination of large boulders and small stones occur only above ground; and graves made of several layers of brick-like stones are very rare but appear both above and below ground (Table 4.12).

4.2.2 *Raw Material Choice*

In both grave form and construction details, graves above and below ground such differ considerably from each other; the same applies to the choice of raw material. Systematic sourcing studies are still lacking, but some excavation reports and summary publications provide some general remarks on stone quality. Additionally, I personally visited 15 sites with extant stone graves observing details of raw material choice for 29 graves.

Based on these reports and observations, above-ground structures mostly consist of large pieces of granite or other types of igneous rock and more rarely sandstone or other kinds of sedimentary rock (Tables 4.13, 4.14, and 4.15). For graves below ground, slate (a metamorphic rock) is the most commonly used raw material;

Table 4.14 Stone material by grave location relative to the surface by grave count

Material/ grave type	Granite	Igneous rock	Sandstone	Sedimentary rock	Limestone	Slate	Unknown
Graves above ground	25	76	5	2	0	1	165
Graves below ground	0	9	20	2	4	111	247
SUM	*25*	*85*	*25*	*4*	*4*	*112*	*412*

Table 4.15 Stone material by grave location relative to the surface, count, and percentage (reduced categories)

Stone material	Igneous rock		Sedimentary rock		Slate		SUM
Graves above ground	101	92.66 %	7	6.42 %	1	0.92 %	109
Graves below ground	9	6.16 %	26	17.81 %	111	76.03 %	146
SUM	*110*	*41.51 %*	*33*	*12.45 %*	*112*	*42.26 %*	*255*

sedimentary rock is only rarely employed and igneous rack hardly ever occurs. This trend can be explained by practical considerations: slate splits naturally into thin slabs that can easily be used for coffin-like constructions. By contrast, igneous rock mostly occurs in large formations and boulders that are not easily worked into thin slabs; they are, however, well suited for large constructions meant to be seen from a distance and withstand the elements.

Sandstone and other sedimentary rock are easier to work than igneous rock, but they are more prone to weathering and have dull, uneven colors potentially making them visually less attractive. In a few cases, specific stones seem to have been chosen for their remarkable color. Grave M1 at Yanyuan Laolongtou in the Northwest, for instance, was covered with sandstone slabs of a very homogenous dark color. All graves at Zhaojue Jike Jijie in the Northeast were constructed of purple-gray sandstone slabs while for most other graves in this region coarse slate of homogenous dark gray color was employed. The purple-gray sandstone may have been chosen because it resembles the slate in appearance although it has none of the slate's favorable construction qualities.

When considering raw material choice, geographic differences and the local geology have to be taken into account (Tables 4.14 and 4.15). The fine dark-gray slate preferably employed for small stone-construction graves in the Southeast is fairly limited in natural occurrence, appearing only in narrow bands along the Anning River and on the southern rim of the Yanyuan Basin. The raw material for these stone graves was thus transported over some distance and consciously chosen over locally available stones, be it for the structural advantages of slate, its attractive dark color, or a special meaning attached to the material. Interestingly, the same type of slate was also used in the production of smoothly ground knives found in all parts of the Liangshan Region (Hein 2015), but for grave constructions it was employed only in the Southeast. Smaller batches of slate thus exchanged and transported fairly widely but larger pieces suitable as construction material seem to have been more limited in circulation.

Various types of sedimentary rock (especially sandstone and limestone), on the other hand, are widely distributed throughout the research area, both geologically and in archaeological assemblages. Among igneous rocks, various types of granite are most common, occurring both in the utmost North and in the Southeast. The northern mountains are particularly rich in sandstone, in some places combined with limestone, and both materials were employed in local grave constructions. Surprisingly, sedimentary rock was also used in graves in the western part of the research area in spite of the local availability of fine slate. The excavation reports address the material employed in graves in both Northeast, Southwest, and Northwest as "limestone" but describe the material as dark gray and smooth, i.e., similar to slate at least in outer appearance. As no geologist was present to identify the material, the so-called limestone may actually be slate used in thick slabs instead of the thin slabs transported to the Southeast. If it was limestone, however, then the choice of hard-to-work foreign material over the readily available and easy-to-use slate indicates a deeper cultural/religious meaning of this choice of raw material.

Based on geological analyses, the coarse stone slabs employed in grave construction in the Northeast are of local origin and might have come from the same mountain slope on which the graves were built (Liangshan et al. 2009, 2010, 2011). The large boulders used in the construction of above-ground graves in the Anning River Valley likewise consist of locally available types of igneous or sedimentary rock; nevertheless, adequately large boulders with one naturally flattened side as they were employed as cover stones and sometimes for walls are not as easy to find. Several excavation reports remark the lack of adequate material in the immediate vicinity of the megalithic graves (e.g., Liangshan et al. 2012; Liu 2009; Sichuansheng et al. 2006). The large boulders could have been retrieved from rivers and mountain creeks where they had been smoothed by running water. The irregular cobbles used to fill in the cracks or to build doors and sometimes walls, on the other hand, may have come from the nearby mountains (Liu 2009: 70). Such cobbles would have been easy to transport, but large cover stones weighing up to 10 tons each would have been difficult to move even a few meter, let alone over long distances. Based on the results of archaeological and ethnoarchaeological research on the construction of megaliths in Europe and Africa (e.g., Midgley 2008: 43–107), it is reasonable to assume that such boulders were mostly transported on waterways, with animal power, over tree logs, or with other devices.

Throughout the research area, practical concerns and ease of access thus were not primary concerns in the choice of raw material for grave construction. Stone was not simply used because it was available at close quarter; on the contrary, the choice of stone material—and in some cases stone material of a very specific kind—must have had a deeper meaning. Which material was chosen varies significantly both geographically and by grave type; religious beliefs or cultural preferences for specific stone material types in grave construction are thus subregional specific and do not apply to the Liangshan Region as a whole. The exact nature of the beliefs underlying this choice of raw material will likely never be known, and suggestions

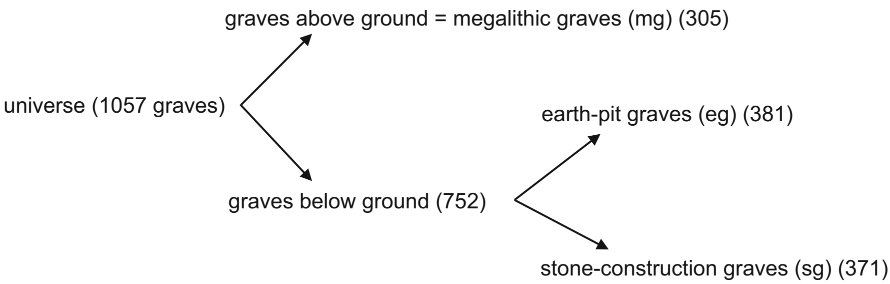

Fig. 4.8 Basic key diagram for the overall grave population

on the custom of "revering of stones" in western China are bound to be highly speculative (Jing 1986; Shen 1982; Yang 1996). What the proceeding discussion shows, however, is that careful contextual analysis can help in distinguishing between grave features dictated by practical concerns and aspects determined by cultural or religious factors.

4.2.3 Connecting the Parts: Toward a Grave Typology

The major elements of grave construction identified so far can now serve as a basis for suggesting basic grave-construction types. There are two main groups: the graves below and above ground; the former fall into two subgroups: graves with and without stone walls, floors, or covers (Fig. 4.8). As many construction elements are exclusive to either of the two main categories, they have to be analyzed separately.

4.2.3.1 Graves Below Ground

Most scholars see graves with and without stone-construction parts as completely separate phenomena; considering their similarity in form and measurements, however, such a strict separation is problematic. In excavation reports and research papers alike, graves with stone installations are mostly addressed as stone-cist graves even if they do not consist of complete graves but are missing one or two of the main elements stone cover, sides, and floor. The term "stone-cist grave" (*shiguanmu*) was coined in connection with burials from the Upper Min River in Northwest Sichuan that indeed mostly feature complete stone cists, usually of trapezoidal shape and made of several thin slates.[4] As the graves in the Liangshan Region are rather different

[4] All excavation reports of so-called stone-cist graves up to the year 2008 were republished in Aba and Chengdu (2009). For discussions on the graves of the Upper Min River consult, e.g., Feng (1973), He Kunyu (2009), Li and Li (1986), Luo (2005), and Xu (1998). For a reassessment of the Upper Min River stone-cist graves in the light of newly excavated material from Luhuo Prefecture, Sichuan Province, consult Miyamoto and Gao (2013) and Sichuansheng et al. (2013).

in form and often lack one of the three stone-construction elements, the use of the term “stone-cist graves” in this context would be confusing rather than helpful. Instead, I address graves below ground with stone-construction parts as “stone-construction graves” and graves without such installations as “earth-pit graves.”

The measurements of earth-pit and stone-construction graves are very similar, but some earth-pit graves are a little longer and therefore larger in area and volume than the largest stone-construction graves (Fig. 4.9). Rectangular graves with rounded corners and oval graves usually do not feature stone elements; trapezoidal graves, on the other hand, are usually made of stone slabs. Earth-pit graves provide the vast majority of long-rectangular and long-narrow graves, but there is a significant overlap in proportions as well as absolute measurements between graves with and without stone-construction parts. During further analysis, I therefore constantly compare these two groups to test if they should be treated as separate groups or as varieties of the same type.

Earth-Pit Graves

The main distinguishing attributes of earth-pit graves are chamber forms and measurements. For lack of detailed information, survey reports describe unexcavated graves usually as rectangular in form. Among excavated graves, rectangular and long-rectangular graves occur about equally often, at least according to the published reports (Table 4.16). As each report is written by a different team, however, the split between “long rectangular” and “rectangular” differs by site. The grave measurements are thus the only reliable source for defining grave forms; the histograms show a clear split in proportions of length to width around 4:1 (Fig. 4.9). Therefore, I reclassify graves with length-to-width ratios of below 4:1 as rectangular and those above as long rectangular (Tables 4.17, 4.18, and 4.19).

All of the reclassified graves were found at the site of Huili Fenjiwan, i.e., in the Southeast where also all of the long-narrow and most of the long-rectangular graves are located. The longest earth-pit graves were reported from Huili Fenjiwan and from Xichang Lizhou in the Anning River Valley, the two largest cemeteries with earth-pit graves in the region. As Fenjiwan holds 150 graves and Lizhou 26 while all other cemeteries are represented only by 1–10 graves each, these two sites may distort all statistical analyses on earth-pit graves. I therefore analyze them separately and then compare the results (Tables 4.20 and 4.21).

Descriptive statistics, confidence intervals, and *t*-tests show that the graves from Lizhou are fairly similar in all measurements to those at other sites but Fenjiwan is clearly different. The graves at Fenjiwan are shorter and narrower and thus smaller than earth-pit graves at other sites. The Lizhou graves, on the other hand, tend to be longer and wider than the average and thus larger. These differences between the cemeteries could have a locational component: Fenjiwan is located in the Southeast while most other earth-pit graves including Lizhou were reported from the Anning River Valley. This may also explain why Lizhou is more similar to the other sites than to Fenjiwan. Nevertheless, Lizhou still stands out among the earth-pit graves in

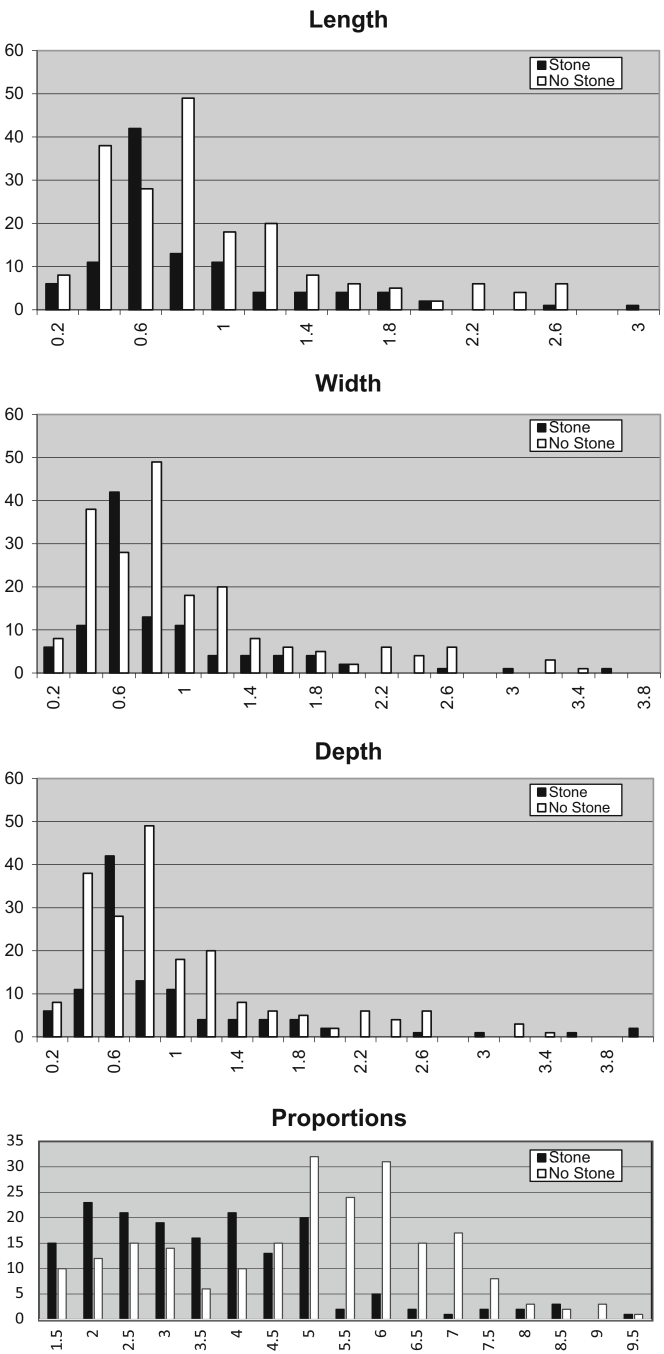

Fig. 4.9 Simple measurements for graves below ground split by presence/absence of stone-construction elements

Table 4.16 Stone material used for grave constructions by region and grave count

Material/ location	Granite	Igneous rock	Sandstone	Sedimentary rock	Limestone	Slate	Unknown	SUM
Dechang	3	46	0	0	0	0	49	98
Huili	0	0	1	0	0	66	24	91
Luquan	0	0	0	0	0	7	1	8
Meigu	0	0	0	0	0	12	10	22
Mianning	0	8	0	0	0	0	14	22
Panzhihua	0	0	0	0	0	26	14	40
Puge	0	5	0	0	0	0	6	11
Xichang	22	4	0	0	0	0	99	126
Xide	0	9	0	0	0	0	34	43
Yanyuan	0	0	2	0	4	0	20	26
Yongsheng	0	2	0	1	0	0	13	16
Yuexi	0	7	0	0	0	0	2	9
Zhaojue	0	4	23	2	0	0	156	185
SUM	*25*	*85*	*26*	*3*	*4*	*111*	*442*	*697*

Table 4.17 Stone material used for grave constructions by region, grave count, and percentage (reduced categories)

Material	Igneous rock		Sedimentary rock		Slate	
Dechang	49	100.00 %	0	0.00 %	0	0.00 %
Huili	0	0.00 %	1	1.49 %	66	98.51 %
Luquan	0	0.00 %	0	0.00 %	7	100.00 %
Meigu	0	0.00 %	0	0.00 %	12	100.00 %
Mianning	8	100.00 %	0	0.00 %	0	0.00 %
Panzhihua	0	0.00 %	0	0.00 %	26	100.00 %
Puge	5	100.00 %	0	0.00 %	0	0.00 %
Xichang	26	96.30 %	0	0.00 %	1	3.70 %
Xide	9	100.00 %	0	0.00 %	0	0.00 %
Yanyuan	0	0.00 %	6	100.00 %	0	0.00 %
Yongsheng	2	66.67 %	1	33.33 %	0	0.00 %
Yuexi	7	100.00 %	0	0.00 %	0	0.00 %
Zhaojue	4	13.79 %	25	86.21 %	0	0.00 %
SUM	*110*	*43.14 %*	*33*	*12.94 %*	*112*	*43.92 %*

Xichang, indicating a potential difference in date or cultural/social group. I test these hypotheses by comparing object assemblages later in this study (Chaps. 6 and 7).

For calculations of labor investment in grave construction, volume would be the most useful measurement, but as the original grave depth is uncertain, I am comparing differences in ground-plan measurements (length x width) instead. The graves at Fenjiwan are overall fairly homogenous in measurements (1–3.5 m^2) while all other graves fall into three distinct groups of small (<1 m^2), medium (1–3 m^2), large (3.01–7 m^2), and very large (7.01–16.5 m^2). In terms of labor investment, a few

Table 4.18 Distribution of chamber-form types for graves below ground according to the terminology used in excavation and survey reports

Chamber-form type	Excavated	Percentage	Unexcavated	Percentage	All	Percentage
Graves without stone-construction parts						
Trapezoidal	3	1.19 %	0	0.00 %	3	0.79 %
Oval	17	6.72 %	0	0.00 %	17	4.46 %
Square	4	1.58 %	5	3.91 %	9	2.36 %
Rectangular	106	41.90 %	114	89.06 %	220	57.74 %
Rectangular with rounded corners	12	4.74 %	0	0.00 %	12	3.15 %
Long rectangular	103	40.71 %	0	0.00 %	103	27.03 %
Long narrow	8	3.16 %	9	7.03 %	17	4.46 %
Sum	*253*	*100.00 %*	*128*	*100.00 %*	*381*	*100.00 %*
Stone-construction graves						
Trapezoidal	9	9.28 %	0	0.00 %	9	5.42 %
Oval	2	2.06 %	0	0.00 %	2	1.20 %
Square	4	4.12 %	6	10.00 %	19	11.45 %
Rectangular	74	76.29 %	45	75.00 %	119	71.69 %
Long rectangular	6	6.19 %	9	15.00 %	15	9.04 %
Long narrow	2	2.06 %	0	0.00 %	2	1.20 %
Sum	*97*	*100.00 %*	*60*	*100.00 %*	*166*	*100.00 %*

Table 4.19 Distribution of chamber-form types for excavated graves using new category breaks

Chamber-form type	Excavated	Percentage	Unexcavated	Percentage	All graves	Percentage
Trapezoidal	3	1.19 %	0	0.00 %	3	0.79 %
Oval	17	6.72 %	0	0.00 %	17	4.46 %
Square	4	1.58 %	5	3.91 %	9	2.36 %
Rectangular	63	24.90 %	114	89.06 %	220	57.74 %
Rectangular with rounded corners	12	4.74 %	0	0.00 %	12	3.15 %
Long rectangular	151	59.68 %	0	0.00 %	103	27.03 %
Long narrow	8	3.16 %	9	7.03 %	17	4.46 %
Sum	*253*	*100.00 %*	*128*	*100.00 %*	*381*	*100.00 %*

particularly long and/or particularly deep graves at various site throughout the research area have to be marked for detailed analysis when testing for correlations with interment types, signs of rituals, and object assemblages in Chap. 7.[5]

[5] Particularly deep graves are Lizhou AM1, AM3, AM4, AM5, Ninglang Daxingzhen M3, M4, M5, M6, M9, M10, Huili Fenjiwan M14, M137, M143, Xichang Ma'anshan M1. Particularly voluminous graves are Xichang Lizhou AM1, AM2, AM4, AM5, AM7, AM8, BM4, Xichang Ma'anshan M1, Xichang Qimugou M3, Ninglang Daxingzhen M5, Huili Fenjiwan M137 and M 143. Exceptionally long graves of over 7 m include Xichang Lizhou AM1, AM3, AM7, AM8, and BM4.

Table 4.20 Descriptive statistics for local segments of the earth-pit graves

All	*Length*	*Width*	*Height/depth*	*Proportions*	*Area*	*Volume*
Mean	2.94	0.74	0.87	4.67	2.65	3.20
Median	2.50	0.58	0.60	5.00	1.51	1.16
Mode	2.00	0.60	0.50	1.33	3.00	9.00
Standard deviation	1.33	0.55	0.71	1.99	3.17	5.36
Range	7.50	3.40	3.85	8.49	16.48	41.06
Minimum	1.00	0.30	0.15	1.16	0.60	0.11
Maximum	8.50	3.70	4.00	9.65	17.08	41.18
Count	211.00	267.00	241.00	205.00	210.00	185.00
Fenjiwan only	*Length*	*Width*	*Height/depth*	*Proportions*	*Area*	*Volume*
Mean	2.80	0.50	0.75	5.69	1.43	1.27
Median	2.70	0.48	0.61	5.51	1.27	0.95
Mode	2.50	0.40	0.60	4.17	1.98	0.22
Standard Deviation	0.76	0.09	0.47	1.44	0.61	1.19
Range	3.42	0.38	2.73	7.15	2.54	6.47
Minimum	1.48	0.32	0.15	2.50	0.63	0.15
Maximum	4.90	0.70	2.88	9.65	3.17	6.62
Count	115.00	150.00	150.00	115.00	115.00	115.00
All without Fenjiwan	*Length*	*Width*	*Height/depth*	*Proportions*	*Area*	*Volume*
Mean	3.12	1.04	1.07	3.37	4.13	6.38
Median	2.17	0.80	0.60	2.65	2.10	4.02
Mode	2.00	0.60	0.50	1.33	3.00	9.00
Standard deviation	1.77	0.71	0.96	1.85	4.22	7.60
Range	7.50	3.40	3.85	6.34	16.48	41.06
Minimum	1.00	0.30	0.15	1.16	0.60	0.11
Maximum	8.50	3.70	4.00	7.50	17.08	41.18
Count	96.00	117.00	91.00	90.00	95.00	70.00
Lizhou only	*Length*	*Width*	*Height/depth*	*Proportions*	*Area*	*Volume*
Mean	5.29	1.39	0.91	4.48	7.25	8.28
Median	5.05	1.07	0.70	5.03	6.10	4.20
Mode	6.00	1.00	0.60	5.00	10.40	8.32
Standard deviation	1.60	0.68	0.57	1.91	3.66	9.89
Range	7.25	2.25	2.00	5.68	15.28	40.46
Minimum	1.25	0.80	0.50	1.32	1.19	0.71
Maximum	8.50	3.05	2.50	7.00	16.47	41.18
Count	26.00	26.00	25.00	26.00	26.00	25.00
Without Fenjiwan or Lizhou	*Length*	*Width*	*Height/depth*	*Proportions*	*Area*	*Volume*
Mean	2.31	0.95	1.14	2.92	2.96	5.32
Median	2.00	0.70	0.50	2.49	1.73	3.79
Mode	2.00	0.60	0.50	1.33	3.00	9.00
Standard deviation	0.98	0.69	1.06	1.63	3.82	5.83
Range	5.10	3.40	3.85	6.34	16.48	21.91
Minimum	1.00	0.30	0.15	1.16	0.60	0.11
Maximum	6.10	3.70	4.00	7.50	17.08	22.03
Count	70.00	91.00	66.00	64.00	69.00	45.00

Table 4.21 Confidence intervals for local groups among the earth-pit graves

Variable	Obs	Mean	Std. err.	95 % Confidence interval]
All graves				
Length	230	2.87	0.08	2.71–3.03
Width	242	0.71	0.03	0.64–0.78
Depth	222	0.80	0.04	0.72–0.88
Proportions	228	4.78	0.12	4.54–5.02
Area	228	2.34	0.19	1.97–2.71
Volume	207	2.48	0.34	1.81–3.14
Fenjiwan only				
Length	147	2.68	0.05	2.57–2.79
Width	147	0.50	0.01	0.48–0.52
Depth	147	0.71	0.04	0.64–0.79
Proportions	146	5.48	0.12	5.25–5.71
Area	146	1.36	0.04	1.28–1.45
Volume	145	1.06	0.08	0.89–1.22
All graves without Fenjiwan				
Length	83	3.21	0.20	2.82–3.60
Width	95	1.04	0.07	0.89–1.18
Depth	75	0.98	0.10	0.79–1.17
Proportions	82	3.53	0.20	3.13–3.94
Area	82	4.09	0.46	3.17–5.00
Volume	62	5.80	0.99	3.81–7.79
Lizhou only				
Length	26	5.29	0.31	4.64–5.94
Width	26	1.39	0.13	1.11–1.67
Depth	25	0.91	0.11	0.67–1.14
Proportions	26	4.48	0.37	3.71–5.25
Area	26	7.25	0.72	5.78–8.73
Volume	25	8.28	1.98	4.20–12.36
All Graves without Fenjiwan or Lizhou				
Length	57	2.26	0.10	2.06–2.47
Width	69	0.90	0.08	0.74–1.07
Depth	50	1.01	0.13	0.75–1.28
Proportions	56	3.09	0.22	2.65–3.54
Area	56	2.62	0.47	1.67–3.56
Volume	37	4.12	0.93	2.24–6.00

The combination of a large number of small graves, some medium-sized graves, and a small number of large graves seen at most sites readily lends itself to a social explanation. The greater homogeneity in grave size and form at Fenjiwan suggests the presence of a group less differentiated in rank—at least after death. Lizhou shows the widest spread of values for grave measurements, indicating some form of social differentiation that came to be reflected in grave dimensions. These tentative inferences are tested in Chap. 8 when connecting information on construction details, objects, and associated rituals.

Table 4.22 Construction parts in stone graves below ground

	All graves (392)		Excavated graves (113)	
	Count	*Percentage*	*Count*	*Percentage*
Stone cover	172	43.88 %	64	56.6 %
Stone walls	349	89.03 %	95	84.07 %
Stone floor	90	22.96 %	76	67.26 %

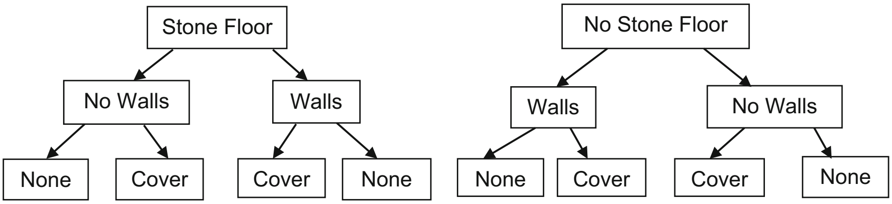

Fig. 4.10 Chaîne opératoire for stone-construction graves

Stone-Construction Graves

Construction Parts

The most common feature of stone-construction graves below ground in both excavated and unexcavated graves are stone walls; less common are stone covers and floors (Table 4.22). For unexcavated graves, the nature of the floor is usually unknown unless the grave is heavily disturbed. As many graves were protruding on the surface at the time of discovery, the lack of stone covers might be a function of later disturbances, even if the grave chamber itself is well preserved. Nevertheless, the overall numbers indicate that there were complete stone cists as well as graves with only stone cover, walls, floor, or a combination of any of the two.

In behavioral terms, we can envision a chaîne opératoire of actions starting from the laying of a specific kind of floor, then moving to stone walls, and lastly placing a cover (Fig. 4.10); however, the actual decision for building any of these elements may have occurred in a different sequence. From the analytical point of view, the combination of construction elements is most interesting. Among excavated graves, the combination of stone cover and walls is most common, often in combination with a stone floor building a complete stone cist, so the lack of any of these elements in many unexcavated and some excavated graves may be a function of unfavorable preservation conditions (Table 4.23). Nevertheless, some perfectly preserved graves did lack one or two of the stone elements, so there is an actual difference in grave types and not merely preservation conditions.

Besides mere presence/absence, the form and quality of the construction elements varies as well. In most cases, wall, floor, and cover are made of one or several stone slabs, but there are exceptions. Of the 76 graves with stone floors, 23 have an additional soil layer on top. In two other graves, the floor cover consists of a pebble layer instead of stone slabs. Among stone walls, there is even more variety between thin or thick stone slabs, several layers of cobbles or rectangular stones (Table 4.24).

Table 4.23 Various combinations of stone-construction parts and the frequency of their occurrence

Description	Count	Percentage
Complete stone-cist	37	32.74 %
Stone cover and walls	20	17.70 %
Stone walls and floor	27	23.89 %
Stone cover and floor	1	0.88 %
Stone cover	6	5.31 %
Stone walls	11	9.73 %
Stone floor	11	9.73 %
SUM	*113*	*100.00 %*

Table 4.24 Frequency of different wall-construction types for graves below ground

Wall-construction type	Count	Percentage
Thin slabs	72	21.82 %
Large slabs	6	1.82 %
Several layers of cobbles	4	1.21 %
Several layers of rectangular stones	6	1.82 %
Stone slabs	242	73.33 %
Sum	*330*	*100.00 %*

The thin slabs mostly consist of slate or more rarely sandstone, the thick slabs were made of igneous or more rarely sedimentary rock. The slabs are unworked; the rectangular stones arranged in layers can be either rough cobbles (four cases) or carefully smoothed brick-sized stones (six cases) that were sometimes secured in place by filling the cracks with clay (Fig. 4.14—1). Where stone slabs are employed, the walls usually are built of several slabs, but some graves consist of one stone for each wall, all of them thin or medium sized (Fig. 4.11).[6]

In four graves from Zhaojue in the Northeast, one or both of the short sides of the graves was clamped in between the long sides, building a small foot- and/or head compartment (Fig. 4.12—7–11).[7] The four graves of Yanbian Yumen Wanxiao were trapezoidal in form, wider at the head than at the bottom, and made of nearly square very thin natural slates placed in a slightly overlapping manner, a construction common along the Upper Min River in Northwest Sichuan. The majority of stone-construction graves in the Liangshan Region consist of stone slabs that meet at right angles; some exceptions were observed in the Northeast, such as Zhaojue Eba Buji which held a grave of oval form made of several layers of irregular cobbles and covered by a large boulder (Fig. 4.14—3). For most stone-construction graves throughout the research area, the cover consists of one or several medium-sized stone slabs; large boulders are mostly reserved for above-ground constructions (Table 4.25).[8]

[6] Eighteen graves from Zhaojue (Zhaojue Eba Buji, Erba Keku, Jike Jijie, Pusu Bohuang, and Wazhaishan), two from Huili (Huili Guojiabaou and Xiaoyingpan), and two from Yongsheng Duizi.

[7] These are graves from Zhaojue Erba Keku, Wazhaishan, Pusu Bohuang, and Jike Jijie.

[8] Yanyuan Laolongtou M7 and M9 are the only known graves whose covers are made of a combination of small and large stones, but as the graves are poorly preserved the cover might originally have consisted of a single large thin stone slab that broke at some point in time.

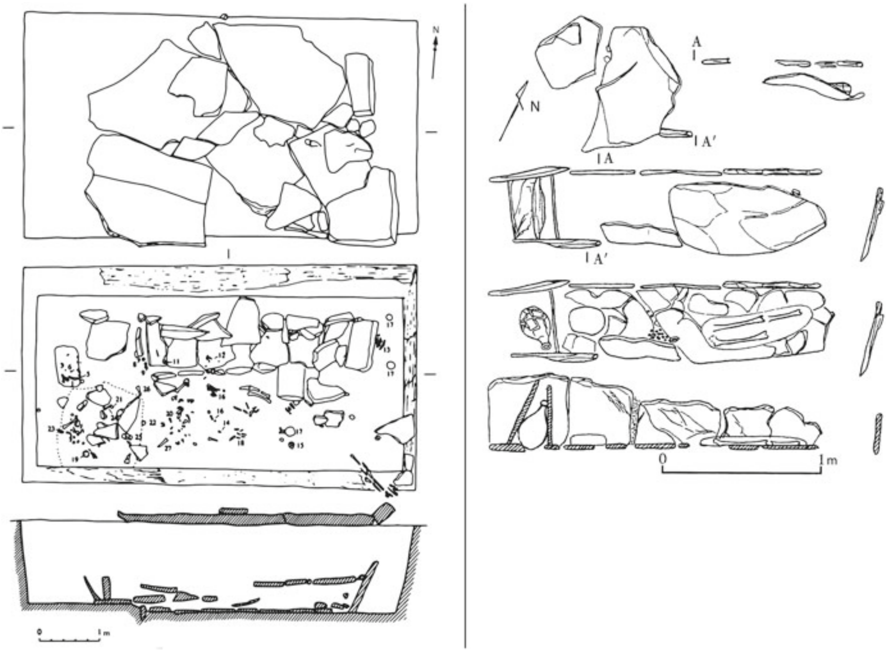

Fig. 4.11 Type 1 stone-construction graves: *left*: Yanyuan Laolongtou M9 (Type 1.2.1.2) (after Liangshan and Chengdu 2009: Fig. 17); *right*: Huili Xiaoyingpan M21 (Type 1.3.1.1) (after Sichuansheng et al. 2009: Fig. 6)

Measurements

There is a clear split in length between the majority of medium-sized graves (1–3 m), and a few very short or extremely long graves (Fig. 4.9; Table 4.26). The same applies to width but the range of values is more limited. The proportions and area values range widely, though, showing that there is much variety in grave form and size. Most graves are rectangular, but a wide range of other forms occur as well, albeit in small number (Table 4.27). The majority of graves are small or medium sized with some large graves ranging widely in size (Table 4.28). Most graves have a very shallow depth, at least at the current state of preservation, but a small number reach depths of up to 4 m and are marked for further inspection below.[9]

When considering the measurements separate by site , it becomes clear that there are regional differences. The graves in Yanyuan in the Northwest are the largest, especially those at the site of Laolongtou. The Southeast, on the other hand, is characterized by small and mid-sized graves with not much overall variation in measurements. The smallest graves were found in the Northeast but next to some particularly large specimens; this is not surprising as the material from this subregion is overall very heterogeneous.

[9] These graves are Yanyuan Laolongtou M7 and M9, and Xide Wadegu M4.

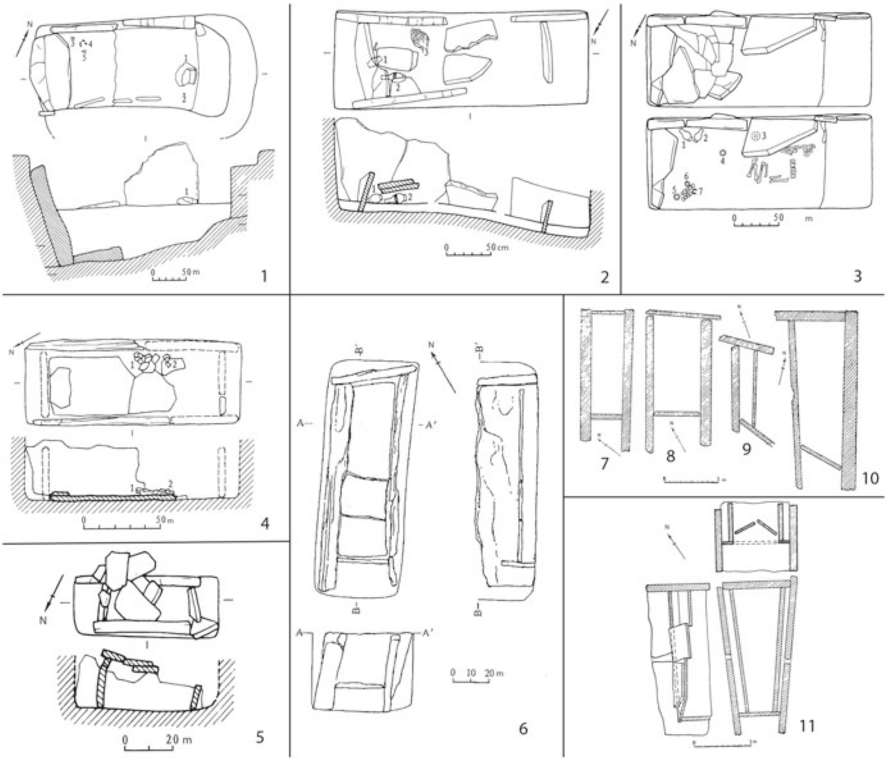

Fig. 4.12 Type 2 stone-construction graves: (*1*) Zhaojue Eba Buji M1 (Type 2.1.1), (*2*) Zhaojue Pusu Bohuang M3 (Type 2.3.2.2), (*3*) M4 (Type 2.4.1.3), (*4*) M9 (Type 2.4.1.2.2), (*5*) M6 (Type 2.4.1.1.1), (*6*) Zhaojue Jike Jijie M1 (Type 2.4.4.2), (*7*) Zhaojue Erba Keku M9 (Type 2.4.1.2.2), (*8*) M11 (Type 2.4.2.1), (*9*) M10 (Type 2.4.4.1), (*10*) Zhaojue Wazhaishan M5 (Type 2.4.4.2) (after Liangshan et al. 2009: Figs. 5, 8, 4, 9, 7, and 11), and (*11*) Zhaojue Fuchengqu M3 (Type 2.4.3) (after Liangshan 1981: Fig. 2–3)

Table 4.25 Frequency of different cover stone types for graves below ground

Cover stone size category	Count	Percentage
Large boulder	1	0.59 %
Large slab(s)	21	12.35 %
Few large and many smaller stones	2	1.18 %
Stone slab(s)	113	66.47 %
Thin slab(s)	33	19.41 %
Sum	*170*	*100.00 %*

Grave Typology

As has become clear from the preceding descriptions, the main variables that can be used in establishing grave types are presence/absence and nature of the main structural elements (cover, wall, floor), overall grave form, size, and presence/absence of

Table 4.26 Descriptive statistics for stone-construction graves

	Length	Width	Depth	Proportions	Area	Volume
Mean	2.23	0.79	0.85	3.26	2.28	3.08
Median	1.90	0.60	0.60	3.04	1.35	0.92
Mode	2.00	0.60	0.50	5.00	3.00	0.40
Standard deviation	1.43	0.47	0.72	1.50	3.16	5.20
Range	11.55	3.10	3.84	7.12	21.53	31.30
Minimum	0.45	0.20	0.16	1.28	0.09	0.04
Maximum	12.00	3.30	4.00	8.40	21.62	31.34
Count	174.00	166.00	106.00	156.00	156.00	98.00

Table 4.27 Grave chamber forms for stone-construction graves

Chamber-form	Excavated	Percentage	Unexcavated	Percentage	All	Percentage
Trapezoidal	9	9.28 %	0	0.00 %	9	5.42 %
Oval	2	2.06 %	0	0.00 %	2	1.20 %
Square	4	4.12 %	6	10.00 %	19	11.45 %
Rectangular	74	76.29 %	45	75.00 %	119	71.69 %
Long rectangular	6	6.19 %	9	15.00 %	15	9.04 %
Long narrow	2	2.06 %	0	0.00 %	2	1.20 %
Sum	*97*	*100.00 %*	*60*	*100.00 %*	*166*	*100.00 %*

Table 4.28 Grave size for stone-construction graves calculated by length and width

	Count	Percentage
Very small (<0.4 m²)	5	3.21 %
Small (0.4–1.49 m²)	91	58.33 %
Medium (1.5–3 m²)	39	25.00 %
Large (3.01–5.5 m²)	12	7.69 %
Very large (8.6–21.6 m²)	9	5.77 %
	156	100 %

additional soil layers. To structure the material in a meaningful way, I developed a set of codes for the dimensions of variation in grave construction separate by main grave category, earth-pit grave, stone-construction grave, and megalithic grave (Table 4.29). Following the example of similar analyses conducted by Papdopoulos (2005) for the cemetery at Torone, I start from the "universe" of all graves and then draft separate key diagrams for the three grave categories showing the construction of the grave as a decision tree or chaîne opératoire (Appendix Fig. B.3). Put in words, the five main grave types and subtypes are the following:

- Type 1. Graves with stone-slab cover and walls (sg1; Fig. 4.11);

  Type 1.1 medium-sized graves with large stone-slab cover and walls (8 + 14)[10];
  Type 1.2 medium to very large graves built of medium-sized slabs (14 + 81);

[10] The first number indicates the number of excavated graves of this type, the second the unexcavated graves.

Table 4.29 Main dimensions of variation in grave construction for stone-construction graves

u	*Universe (of all graves)*		*Bottom*
mg	Megalithic grave	b1	Stone slabs
eg	Earth-pit grave	b2	Natural ground
sg	*Stone-construction grave*	b3	Pebble floor
sg0	Unclear	b4	Bedrock floor
sg1	Grave with stone-slab cover and walls		*Form*
sg2	Stone-wall grave	f1	Rectangular
sg3	Stone-cover grave	f2	Long rectangular
sg4	Stone-slab floor grave	f3	Long narrow
sg5	Layered-wall grave	f4	Square
	Cover	f5	Trapezoidal
c0	None	f6	Oval
c1	Coarse large slabs	f7	Irregular
c2	Medium-sized slabs		*Size*
c3	Thin slabs	s1	Very small
c4	Few big, many small	s2	Small
	Walls	s3	Medium sized
w0	None	s4	Large
w1	Large coarse stones	s5	Very large
w2	Medium-sized slabs		*Additional soil layer on floor*
w3	Thin slabs	so0	No
w4	One stone slab for each side	so1	Yes
w5	Worked rectangular stones		
w6	Unworked cobbles		
w7	Cut into mountain slope		

Type 1.3 very small to large graves in a variety of forms built of thin slabs (25 + 4);

- Type 2. Stone-wall graves (without stone cover) sg2; Fig. 4.12);

Type 2.1 small to medium-sized, rectangular graves cut into mountain slope (2 + 0);
Type 2.2 medium-sized, rectangular graves built of medium-sized slabs (11 + 49);
Type 2.3 graves in various forms and sizes made of several thin slabs (8 + 1);
Type 2.4 rectangular or trapezoidal graves with one stone slab for each side (23 + 0);

- Type 3. Stone-cover graves (large; without stone walls) (sg3; Fig. 4.13);

Type 3.1 coarse large slabs as cover; with leveled soil as floor (2 + 0);
Type 3.2 medium-sized slabs as cover; natural soil or stone slabs as floor (2 + 0);
Type 3.3 thin slabs as cover; with leveled soil as floor (1 + 0)
Type 3.4 few big and many small stones as cover; with leveled soil as floor (2 + 0)

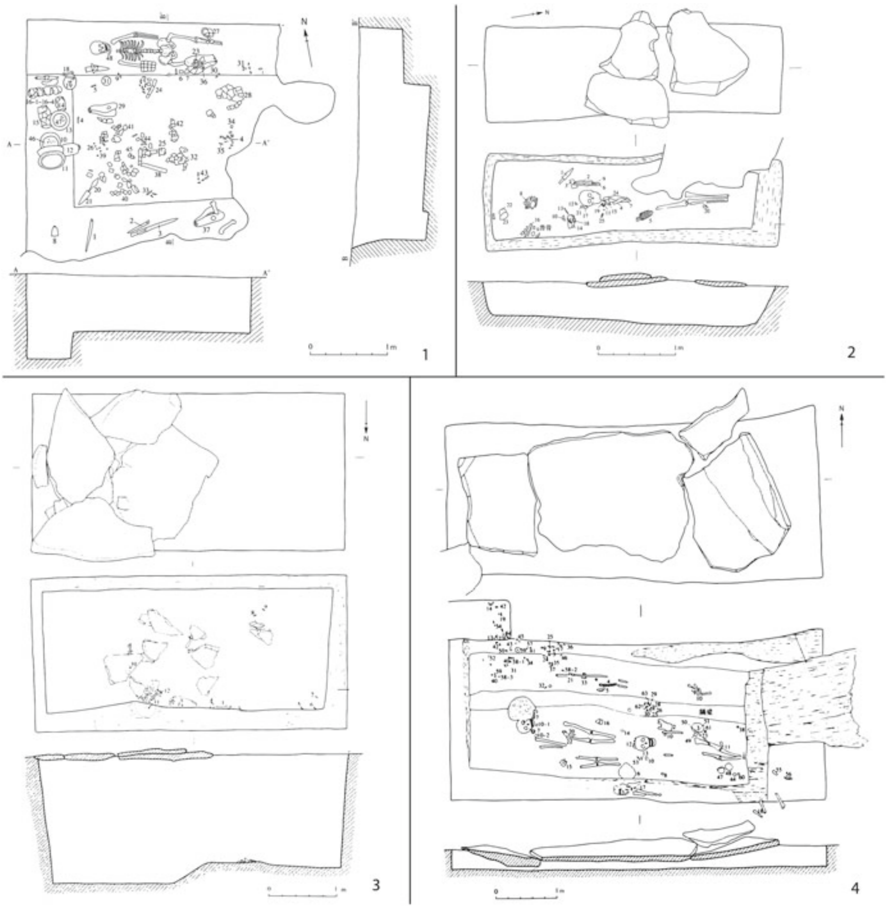

Fig. 4.13 Type 3 stone-construction graves: (*1*) Yanyuan Laolongtou M4 (Type 3.1.1), (*2*) M11 (Type 3.1.1), (*3*) M7 (Type 3.1.2), (*4*) M6 (Type 3.1.3) (after Liangshan and Chengdu 2009: Fig. 3, 22, 26, 9)

- Type 4. Stone-slab floor graves (large; without stone cover or walls) (sg4);

  Type 4.1 rectangular graves (9+0);
  Type 4.2 long-rectangular grave (1+0);
  Type 4.3 long-narrow grave (1+0); and

- Type 5. Layered-wall graves (sg5; Fig. 4.14);

Type 5.1 rectangular graves with stone-slab floor (9+0);
Type 5.2 oval grave on bedrock floor, cut into mountain slope (1+0).

The majority of graves where types could be assigned belong to Types 1 and 2 or subtypes 1.2 and 2.2, i.e., medium-sized rectangular graves built of medium-sized

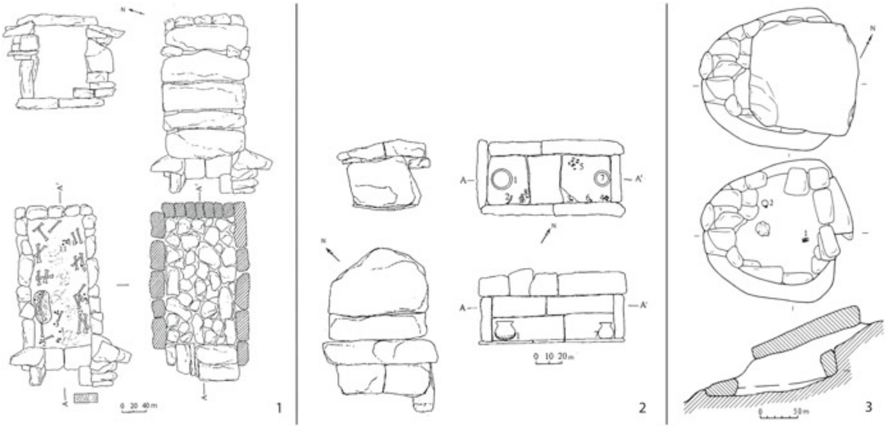

Fig. 4.14 Type 5 stone-construction graves: (*1*) Zhaojue Chike Boxixian M3 (Type 5.1.1.1), (*2*) Zhaojue Chike Boxixian M1 (Type 5.1.1.2) (after Liangshan et al. 2009: Figs. 6 and 7), (*3*) Zhaojue Eba Buji M3 (Type 5.2) (after Liangshan et al. 2009: Fig. 9)

stone slabs with or without stone cover or floor (Fig. 4.15). Type 1 and 2 follow similar construction principles forming rectangular graves with varying amount of stone-construction parts, the subtypes varying by overall grave size and size and coarseness of stone-construction material to match. Subtype 2.4 is remarkable for its many subtypes, some with the stone slabs for one or both short sides clamped between the long sides, some with stone slabs placed at irregular angles, and one with a double-tier wall and floor construction. Type 2.4 is rather common in the Northeast, so it might reflect a local tradition.

The stone-cover graves (Type 3) are all rather similar to each other, but some of them contain wooden coffins and other special internal features, so this preliminary typology has to be revised when taking into account internal features (Chap. 4.4). All graves of this type occur in Yanyuan and Yongsheng, i.e., in the Southwest and the southern expanses of the Northwest, indicating a regional type.

The same applies to the layered-wall graves (Type 5) which are relatively rare and mainly occur in the Northeast; nevertheless, the Type 5 graves differ greatly from the majority of local stone-construction graves (Types 1 and 2), so they may have been built during a different time period or by a different group of people. Surprisingly, layered-wall graves were also reported from Yongsheng in the Southwest, i.e., from the opposite end of the research area. To ascertain if this is a case of incidental similarity or actual cultural connection, other aspects such as burial ritual and grave goods have to be considered; this is done in Chap. 8.

Stone-Construction and Earth-Pit Graves: A Comparison

When comparing stone-construction graves with earth-pit graves, it becomes clear that there are some similarities in measurements and form, especially for Type 4 stone-construction graves that differ from earth-pit graves merely in the addition of

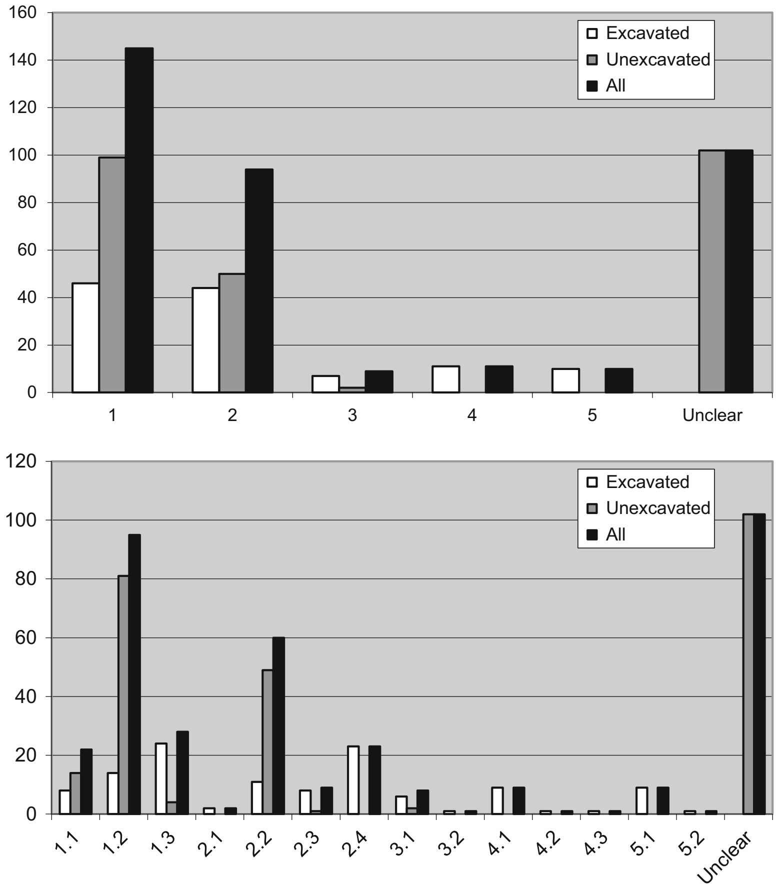

Fig. 4.15 Relative frequency of stone-construction grave types (*above*) and of subtypes of stone-construction graves (*below*)

stone slabs on the floor (Fig. 4.9). In the Southeast in particular, graves below ground with and without stone-construction parts are very similar in overall measurements but the proportions differ somewhat. Long-rectangular graves are rare among stone-construction graves but very common with earth-pit graves, especially at Xichang Lizhou (Fig. 4.7). Rounded corners are likewise a particularity of earth-pit graves, most of them located at Xichang Lizhou. While Lizhou stands alone, the earth-pit and stone-construction graves in the Southeast are very similar to each other, especially at the cemetery of Huili Fenjiwan where eight stone-construction graves—two of them stone-slab floor graves of Types 4.2 and 4.3 and medium to large rectangular graves with stone-slab cover and walls (Type 1.3.2.1)—occur next to 142 earth-pit graves. Compared to the earth-pit graves, the stone graves at Fenjiwan are relatively long, especially the stone-slab floor graves; they thus require special attention during further analysis (esp. Chap. 8).

Table 4.30 Descriptive statistics for megalithic graves separate by state of excavation

Excavated	*Length*	*Width*	*Height*	*Proportions*	*Area*	*Volume*
Mean	6.09	1.70	1.67	4.06	11.57	21.49
Median	6.20	1.30	1.73	3.75	8.76	12.92
Mode	8.40	1.00	2.00	6.08	8.76	#N/A
Standard deviation	2.82	0.94	0.58	1.99	12.53	31.26
Range	15.95	4.24	2.40	8.05	83.95	211.80
Minimum	1.05	0.76	0.40	1.05	1.05	0.70
Maximum	17.00	5.00	2.80	9.10	85.00	212.50
Count	*55.00*	*54.00*	*52.00*	*54.00*	*54.00*	*51.00*
Unexcavated	*Length*	*Width*	*Height*	*Proportions*	*Area*	*Volume*
Mean	9.47	3.00	1.54	3.06	28.33	49.17
Median	8.60	3.00	1.40	2.90	24.30	35.53
Mode	11.00	3.00	2.00	3.33	24.00	160.00
Standard deviation	4.92	0.99	0.58	1.62	19.01	50.05
Range	39.98	4.65	3.15	15.77	106.24	298.07
Minimum	1.02	0.35	0.35	0.00	0.36	1.18
Maximum	41.00	5.00	3.50	15.77	106.60	299.25
Count	*182.00*	*160.00*	*144.00*	*160.00*	*159.00*	*126.00*

Table 4.31 Frequency of occurrence of various chamber-form types of megalithic graves

Chamber form type	Count	Percentage
Trapezoidal	5	1.64 %
Square	12	3.93 %
Rectangular	247	80.98 %
Long rectangular	37	12.13 %
Long narrow	4	1.32 %
Sum	*305*	*100.00 %*

4.2.3.2 Graves Above Ground: Megalithic Graves

Measurements

Graves located above ground—quite naturally—all have stone-construction elements and are usually very large, much larger than any of the other grave categories discussed so far (Tables 4.2 and 4.30). The average dimensions of the grave chamber are 9 × 2.7 × 1.6 m, but many graves are much larger, reaching length of up to 40 m. The vast majority of graves is rectangular in form, a few are long rectangular or square, and only a small minority is long narrow or trapezoidal in form (Table 4.31). Oval graves do not occur above ground.

Construction

The graves above ground—fittingly referred to as “megalithic graves”—mostly consist of large boulders. All of them have stone walls; as the only graves without stone covers come from severely disturbed sites, it is reasonable to assume that all of them had stone covers, too. Each grave is covered with one or several large boulders and the floor consists of leveled soil, sometimes with a pebble layer or more rarely stone slabs on top. The walls consist of:

- Larger boulders;
- Large slabs;
- Large boulders or large slabs with small stones filling the gaps;
- A combination of large boulders below and small stones above;
- Several large boulders placed at some distance with many cobbles in between; or
- Small cobbles arranged in layers (brick-wall-like construction).

Where large boulders/slabs were used, in most cases a foundation ditch was dug around the main grave chamber to secure the stones in place.[11] Only the large boulders of Xichang Wanao M1 and M2 were placed directly on the ground and then stabilized by piling up stones and earth on both sides. As these are the only two examples, they may reflect a singular local experiment with a new construction technique.

With both large and small graves, the smoother side of the boulders and stone slabs faces inward (Sichuansheng et al. 2006: 138; Liu 2009: 71). In seven cases, the inward-facing side of large boulders/slabs was artificially smoothed,[12] but most of the time the grave builders probably choose stones with one side naturally flattened from lying on the ground. The small rectangular stones used in lieu of bricks to build regular walls were often substantially worked, but in a few cases unworked rough cobbles were employed. For Zhaojue Qianjinshe M7, one carefully smoothed large whitish slab of igneous rock was placed in the center of each side; the rest of the walls consist of smaller irregular gray cobbles. These central slabs were thus carefully chosen, but their meaning remains elusive.

About 36 % of all graves above ground had a clearly identifiable door made of a number of irregular cobbles or several stone slabs. In many cases, however, it is unclear if a door was present or not. Where identified, the door is usually located at one of the short sides; when added to one of the long sides, it is flanked by stone slabs forming a doorway and giving the grave a T-shape with an elongated crossbar (Fig. 4.24).

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[11] For Dechang Arong M1, M3, and M4, the excavation reports mention that the boulders were placed in a foundation ditch dug around the main grave chamber to secure the stones in place. Although the preliminary excavation reports for other graves do not mention such a ditch, the summary publication for the megalithic graves of the Anning River Valley remarks that—with the exception of Xichang Wanao M1 and M2—all of these large graves were made by first digging a trench that would fit the large boulders neatly (Sichuansheng et al. 2006: 138). As the authors of this publication consulted all of the original excavation reports and/or took part in the excavations themselves, it is reasonable to assume that constructions above ground using large boulders usually have a foundation trench.

[12] The clear cases are Xide Lake Sihe M8, Puge Xiaoxingchang AM1 and BM4 (both igneous rock), Echang Fanjiacun M1-2 (igneous rock), Xichang Tuanbao M5 (granite), and Xide Lake Sihe M1 and M7 (igneous rock). The unclear cases are Dechang Arong M4 (igneous rock), Puge Xiaoxingchang BM1 and Xichang Tianwangshan M10, and Xichang Hexi Gaongshe M1 and M2.

Table 4.32 Main dimensions of variation in grave construction for megalithic graves

	Megalithic grave types		*Bottom*
mg1	Grave with large boulders/slabs for walls and cover	b1	Stone slabs
mg2	Grave with walls made of combination of large boulders/slabs and smaller stones	b2	Natural ground
mg3	Grave with brick-wall-like stone walls	b3	Pebble floor
mg4	Grave with stone-slab walls		*Door*
	Cover	d0	None
c0	None	d1	On short side
c1	Coarse large boulders	d2	In middle of long side
c2	Medium-sized slabs	d3	Unknown
	Walls		*Size*
w1	Large coarse boulders/slabs	s1	Very small
w2	Medium-sized slabs	s2	Small
w5	Worked rectangular stones	s3	Medium sized
w6	Unworked cobbles	s4	Large
w7	Cut into mountain slope	s5	Very large
w8	Large boulders/slabs and smaller stones		*Additional soil layer on floor*
w8a	Large boulders/slabs with small gaps in between, cobbles filling gaps	so0	No
w8b	Large boulders below, small stones above	so1	Yes
w8c	Large boulders/slabs erected at a distance, cobbles in between		
w9	Irregular cobbles and Han bricks		

Grave Typology

The main variables that can be used in establishing grave types for above-ground structures are the primary features of cover, walls, and floor, as well as the secondary features of door, door location, and additional soil layers (Table 4.32). The key diagram shows a grouping into four main types with several subtypes each (Appendix Fig. B.4):

- Type 1. Graves with large boulders/slabs for walls and cover (mg1; Figs. 4.16, 4.17, 4.18, and 4.19);

  Type 1.1 with door (9 + 62);
  Type 1.2 unknown if door or not (9 + 175);
  Type 1.3 no door (0 + 6)

- Type 2. Grave with walls made of combination of large boulders/slabs and smaller stones (with boulders as cover) (mg2; Figs. 4.18, 4.19, 4.20, 4.21, 4.22, and 4.23);

  Type 2.1 door on one short side (13 + 3);
  Type 2.2 door in the middle of one long side (4 + 1);
  Type 2.3 no door (1 + 0); (Figs. 4.24 and 4.25)

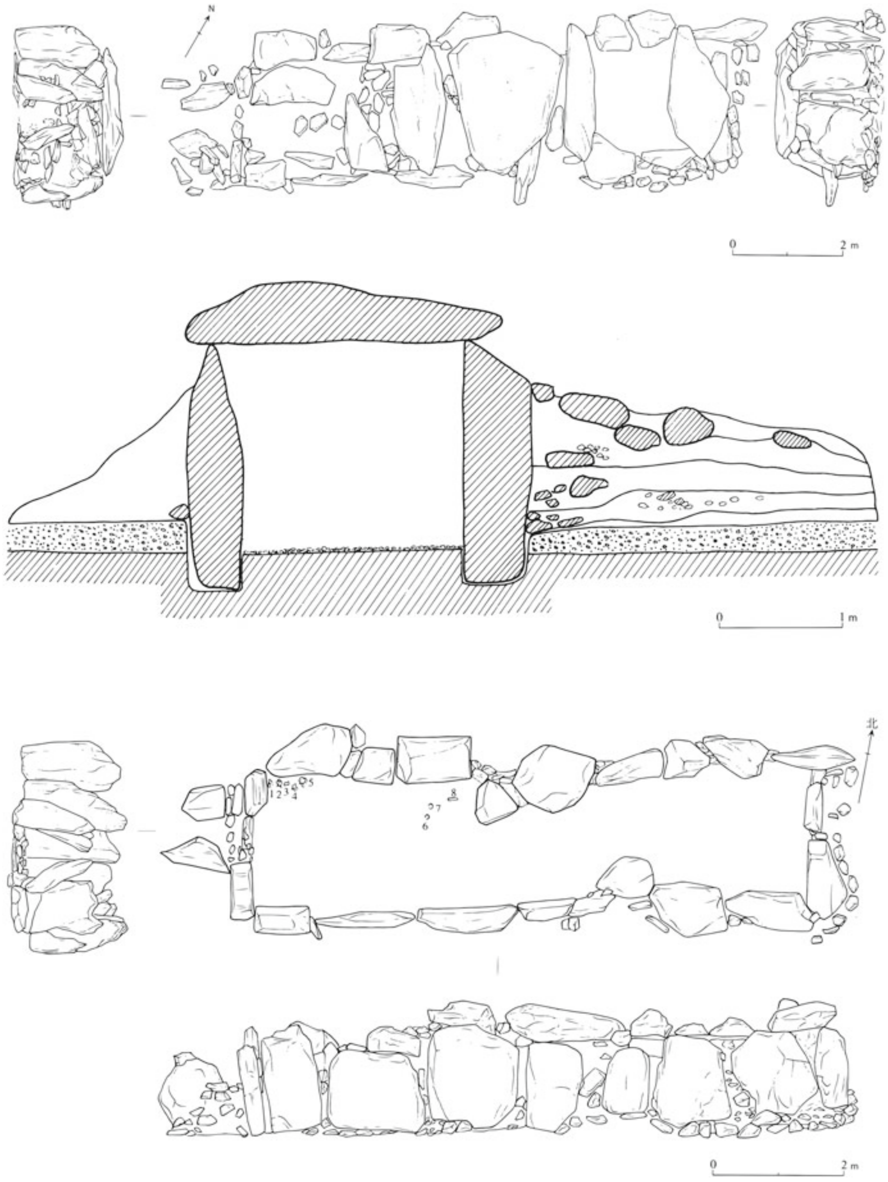

Fig. 4.16 Type 1.1.1 megalithic grave: Dechang Arong M4 (after Sichuansheng et al. 2006: Fig. 12–14)

- Type 3. Grave with brick-wall-like stone walls (with boulders as cover) (mg3; Fig. 4.26);

  Type 3.1 smoothed rectangular brick-sized stones for wall, soil floor (2 + 0);
  Type 3.2 irregular cobbles for walls, pebble floor (2 + 7);
  Type 3.3 irregular cobbles and Han bricks for walls, soil floor (1 + 0); and

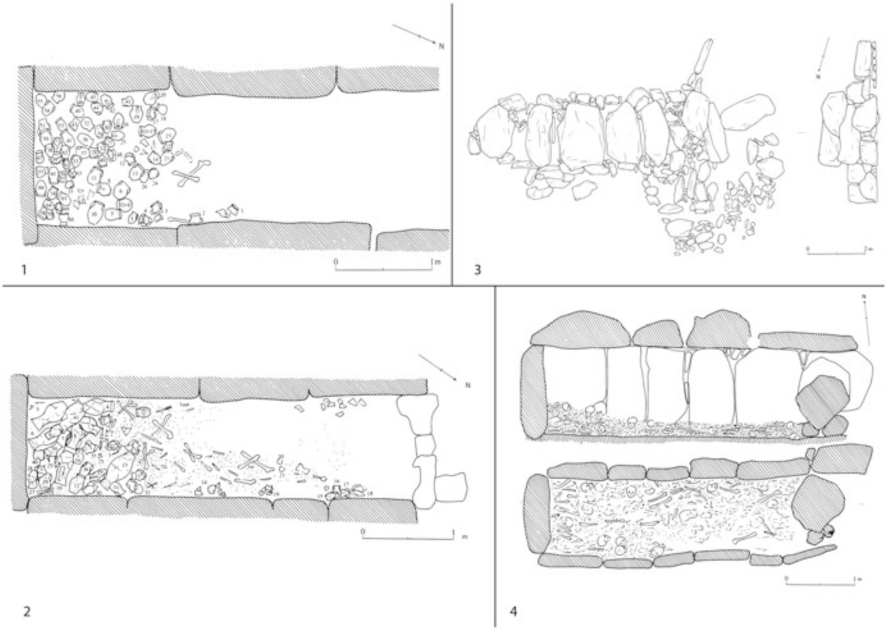

Fig. 4.17 Type 1.2.1 megalithic graves: 1. and 3. Miyi Wanqiu M2, 2. Miyi Wanqiu M1, 4. Xichang Bahe Baozi M6 (after Sichuansheng et al. 2006: Fig. 7, 16, 19, 6)

Fig. 4.18 Type 1.2.1 megalithic grave at Dechang Yongxing (photograph taken by author)

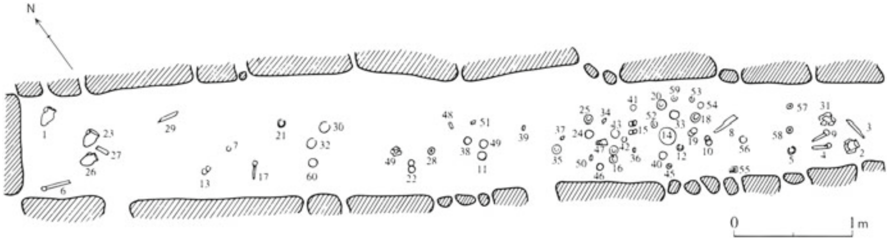

Fig. 4.19 Type 1.2.1 megalithic grave: Xide Guluqiao M1 (after Sichuansheng et al. 2006: Fig. 17)

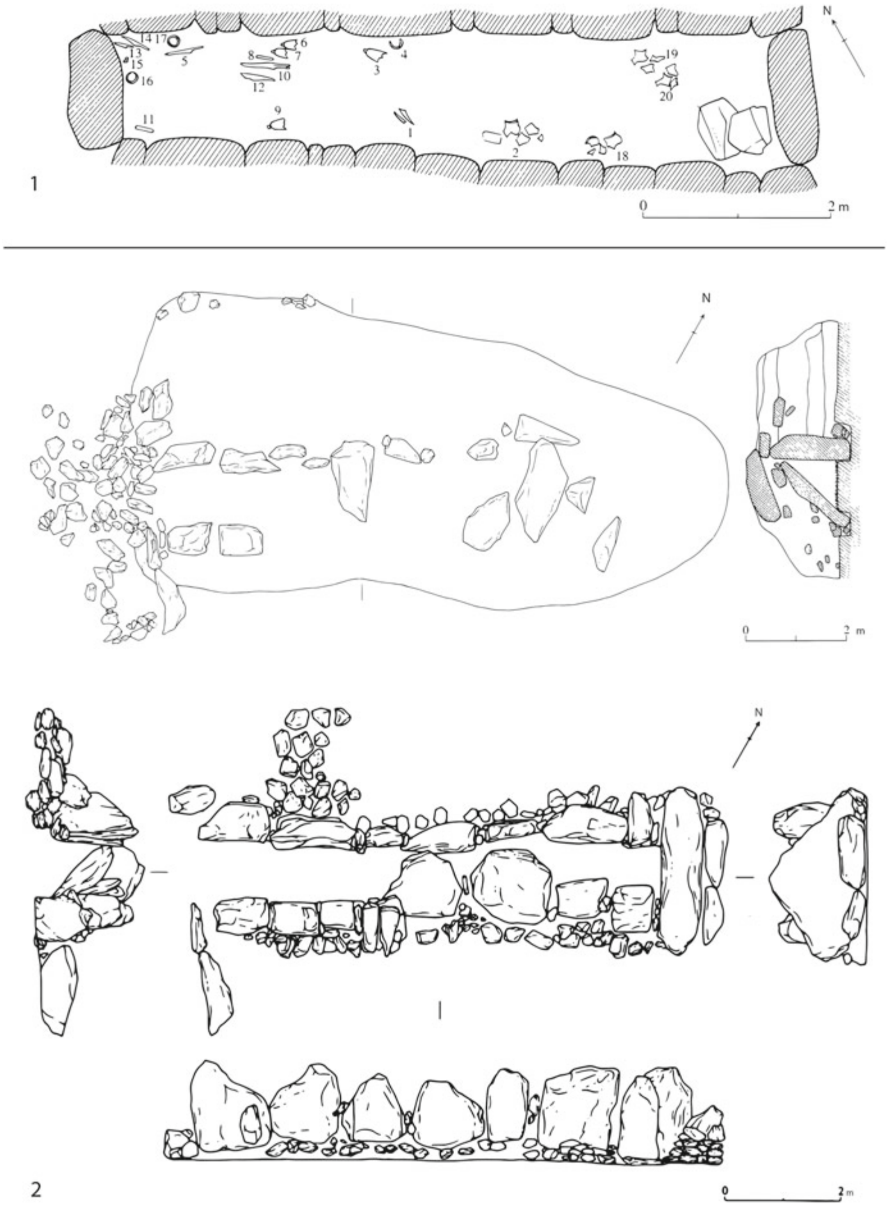

Fig. 4.20 Type 2.1 megalithic graves: (*1*) Hexi Gongshe M2 (Type 2.1.1.1), (*2*) Dechang Arong M1 (Type 2.1.1.1) (after Sichuansheng et al. 2006: Fig. 5, 9, 10)

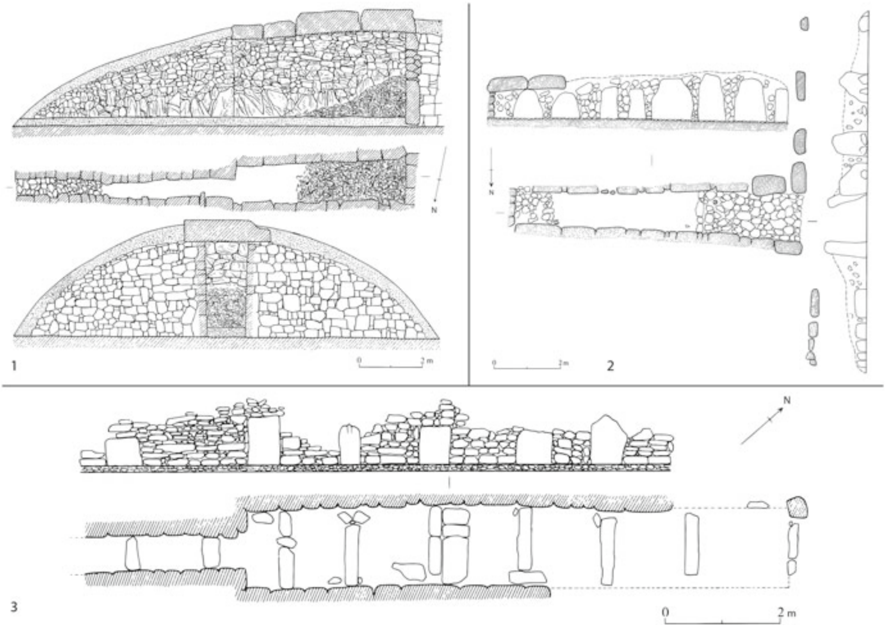

Fig. 4.21 Type 2.1 megalithic graves: (*1*) Xichang Bahe Baozi M1 (Type 2.1.2), (*2*) Xichang Hexi Gongshe M3 (Type 2.1.3.1), (*3*) Xichang Xijiao Gongshe M1 (Type 2.1.3.2.1) (Type 2.1.3.2) (after Sichuansheng et al. 2006: Fig. 25, 15, 26)

- Type 4. Small grave with stone-slab walls and cover (mg4; Figs. 4.27, 4.28, and 4.29);

  Type 4.1 large boulders as cover; pebble floor (4 + 2);
  Type 4.2 stone slabs as cover and floor, very small (2 + 2).

Type 1 with large boulders or slabs for both wall and cover is by far the most common followed at a considerable distance by Type 2, whereas Types 3 and 4 are positively rare (Tables 4.33 and 4.34, Fig. 4.30). Type 4 graves are very small and made of stone slabs instead of boulders; they thus strongly resemble stone-construction graves of Type 1.1 but are located above ground and not below. Most graves of Type 4 are located in the mountains east of the Anning River Valley, as are the smaller varieties of Type 2; the Anning River Valley is dominated by large rectangular structures, but a few smaller square or trapezoidal shapes occur as well, suggesting potential differences in date, a hypothesis to be tested in Chap. 7.

4.3 External Features

For a number of megalithic graves, external features were added to the main grave chamber, some of them remnants of the construction process ("tails"), others essential parts established during the initial construction process (ramps), or features

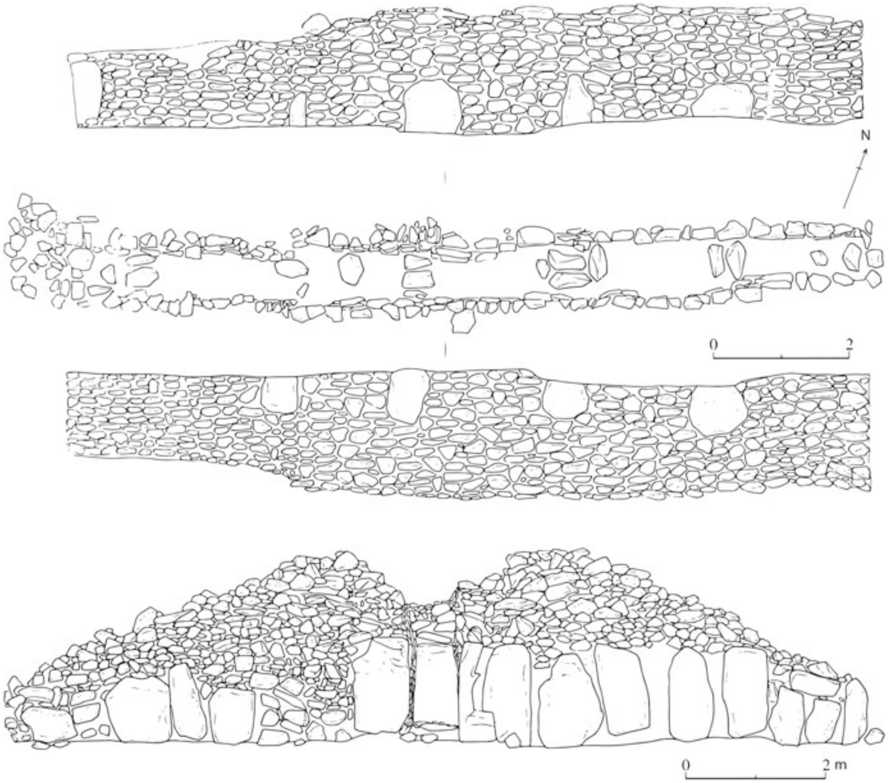

Fig. 4.22 Type 2.1.3 megalithic graves: Xichang Wanao M1 (Type 2.1.3.2) (after Sichuansheng et al. 2006: Fig. 22–23)

added after the final closure (tumuli, mounds) or during later rituals (other external installations) (Table 4.35). These features are thus connected with different phases of the burial process outlined in the model. One major difficulty in the analysis of these features is that lack of observation does not prove lack of absence at the time of grave construction. Following, I therefore differentiate between "present" and "none observed" (instead of present/absent or yes/no) to mark that fact.

4.3.1 Tumuli

Traces of earthen tumuli were observed over 30 % of all megalithic graves, all of them heavily disturbed, so there may have been significantly more (Tables 4.36 and 4.37). The tumuli are round or oval in form and consist of several layers of more or less firmly compressed earth. In most cases the soil layers are irregular and only slightly compacted, but Xichang Tianwangshan M10 consisted of 22 layers of

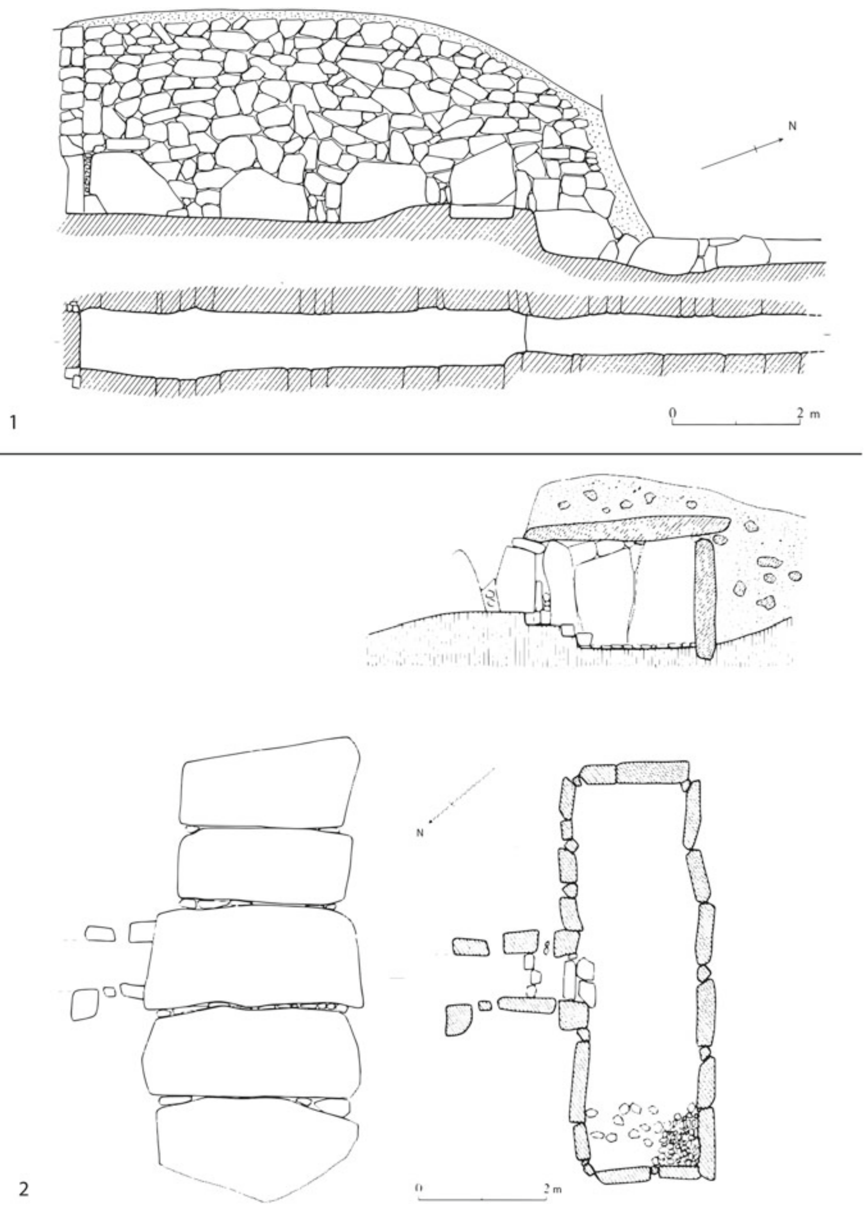

Fig. 4.23 Type 2.2.1 megalithic graves: Xide Lake Sihe M8 (Type 2.2.1.1), M1 (Type 2.2.1.2) (after Sichuansheng et al. 2006: Fig. 27 and Fig. 31)

firmly rammed earth of 20–25 cm thickness. The layers were compacted with the help of round pestles of 20 cm diameter leaving clear impressions in the soil, a mode of construction that is so far unique in the Liangshan Region but rather

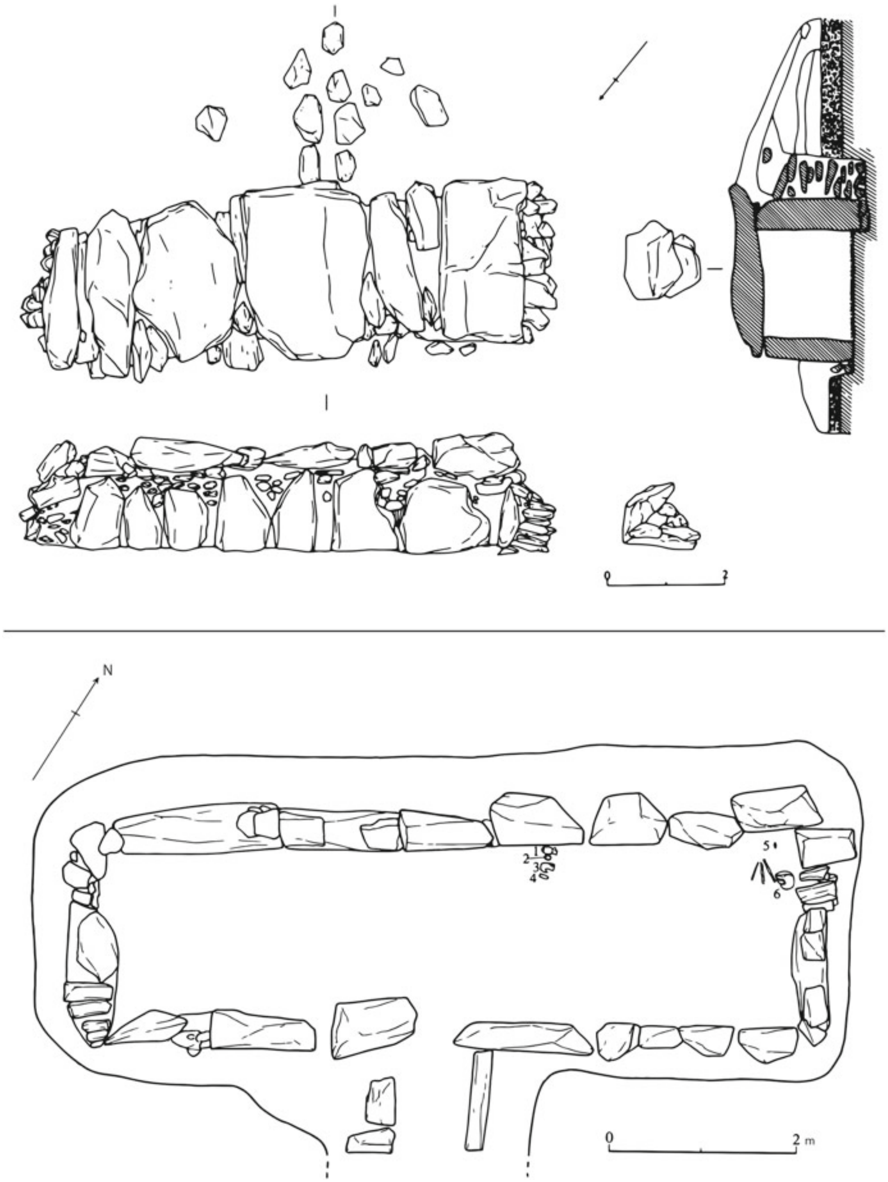

Fig. 4.24 Type 2.2.2 megalithic grave: Dechang Arong M3 (after Sichuansheng et al. 2006: Fig. 28–29)

common in other parts of China, especially the Central Plains, but also in places much closer at hand such as the Chengdu Basin. The pounding implements used at Tianwangshan are much larger than those employed in the construction of *hangtu* walls at sites such as the Shang city of Zhengzhou or the Neolithic site of Baodun

Fig. 4.25 Type 2.3 megalithic grave at Xide Wuhe

in Sichuan, and the resultant layers are considerably thicker.[13] Recent discoveries in the Ordos region have shown that rammed-earth walls were common over a much larger region than previously thought, but the connections between such walls in different parts of prehistoric China are currently still far from clear. If the Tianwangshan grave with its rather crude version of a rammed-earth technique was inspired by the much more sophisticated and also significantly earlier constructions on the Chengdu Plain is difficult to tell. Object assemblages and grave forms do not provide any evidence for connections between the Liangshan Region and the Chengdu Region prior to the first century BC, and Tianwangshan dates significantly earlier. As this grave is a singular case of rammed-earth construction in this region, however, it may reflect a singular instance of contact and experimentation with a foreign and poorly understood construction technique.

In any event, even with the cruder technique, the construction of the tumulus of Tianwangshan M10 would have required a major labor investment, especially considering its considerable size (Table 4.36). The same applies to the other tumuli

[13] At Zhengzhou, the rammed-earth layers of walls and building foundations were 8–10 cm thick on average with a range of 2–20 cm. The pestle impressions measured mostly only 2–5 cm in diameter, in some cases up to 10 cm but never 20 cm like here (An 1993; Henan 2000). At Baodun, the layers were 8–10 cm thick on average and showed tool impressions with about 5 cm diameter as well (Chengdushi et al. 2000). For details on rammed-earth constructions in China consult Edwards and Lin 1984 as well as Shan (1981).

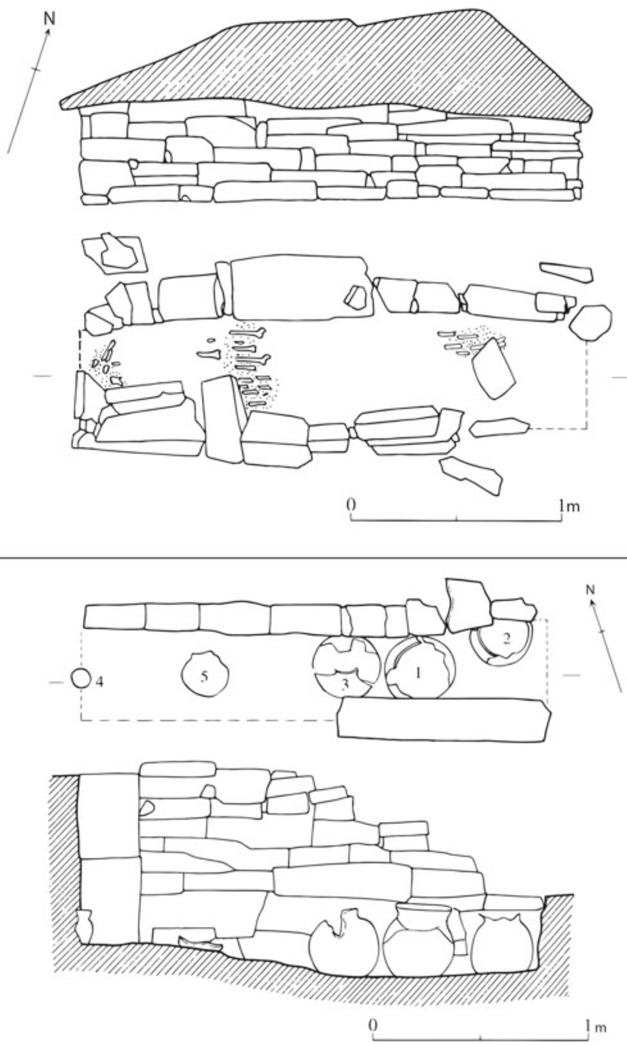

Fig. 4.26 Type 3.1 megalithic graves: Xichang Dayangdui DM1 (*top*) (after Xichangshi et al. 2004: Fig. 22) and DM2 (*bottom*) (after Sichuansheng et al. 2006: Fig. 4)

observed in the Liangshan Region which can measure as much as 40 m in diameter and up to 5.5 m in height (Tables 4.36 and 4.37). For the more complex rammed-earth walls of the Chengdu Plain, Flad and Chen have suggested that in one eight-hour-day one person could dig 3 m^3 of soil, move 13.3 m^3 20 m away, or compact 10.1 m^3, averaging out to 1.97 m^3 per day and person according to their calculations (Flad and Chen 2013: 87). As we do not know how many people may have been involved, how the work day was organized, or if specific rituals were conducted during the building process, it is very difficult to suggest a realistic estimate.

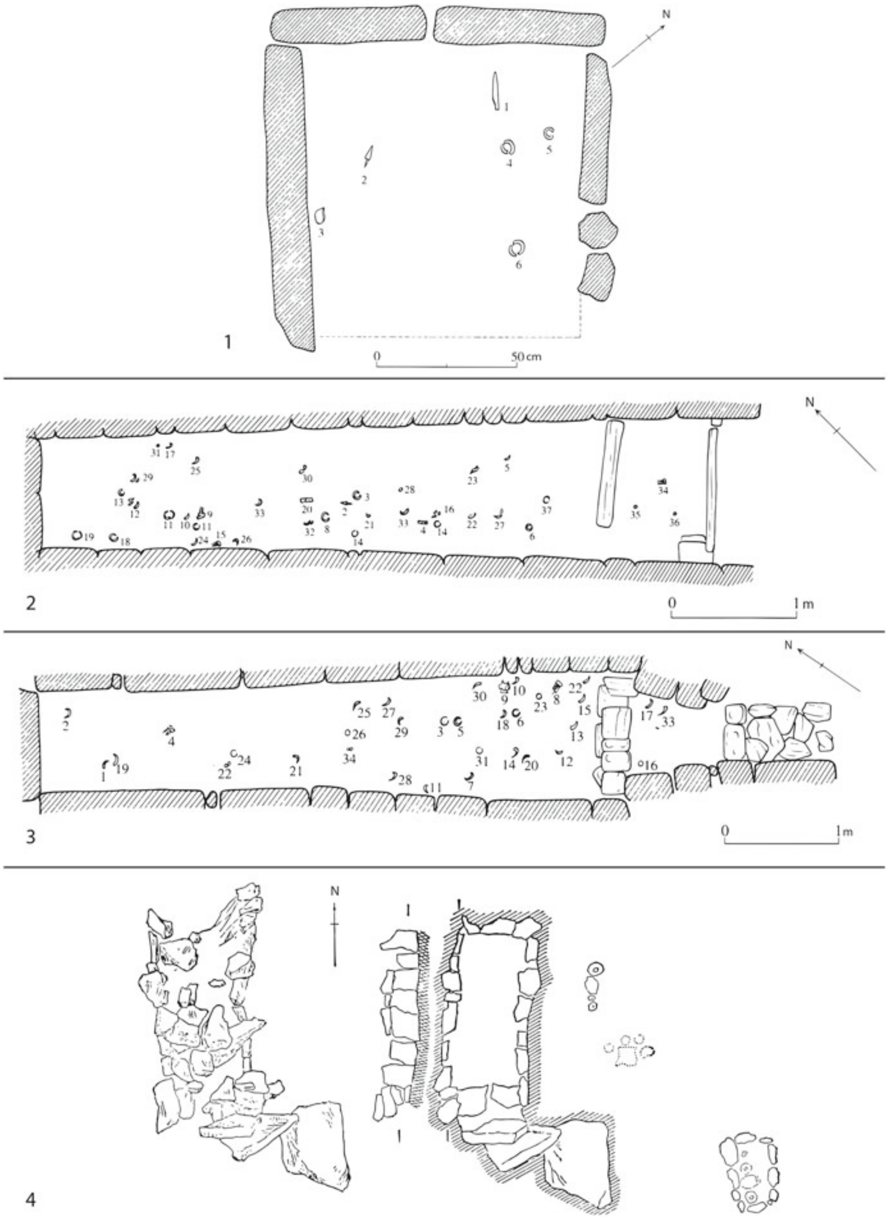

Fig. 4.27 Type 4.1.1 megalithic grave: Puge Xiaoxingchang AM2 (Dashimu Fig. 2), Type 4.1.2 megalithic graves: Puge Xiaoxingchang BM4 and BM2 (after Sichuansheng et al. 2006: Fig. 8 and 18); Type 4.2: Tianwangshan M10 (after Liangshan 1984: Fig. 1)

Fig. 4.28 Type 4.1 megalithic graves at Xide Wuhe

Compared to city walls such as those at Baodun or Zhengzhou, the amount of soil moved even for the large tumulus of the Liangshan Region would have been modest, a task easily completed by 50 people in 2–3 weeks.[14] Nevertheless, when adding the labor required for building the large stone grave lying underneath the tumulus, it becomes clear that the construction of such edifices would have been a considerable enterprise likely undertaken by one or several communities over extended periods of time.

The stone mounds observed over seven megalithic graves are all clustered within a few kilometers of each other in the central Anning River Valley (Table 4.38; Fig. 4.21—1). This feature may thus be a local particularity. The stone mounds are all round or oval in form, made of irregular cobbles, and always covered in thick layers of soil building an earthen tumulus on top; conversely, only 14 % of all earthen tumuli contain a stone mound. The stone mounds range widely in dimensions (Table 4.38) but considering the large number of cobbles involved, all of them would have required significant labor investment.

[14] The soil volume of Tianwangshan M10 calculated from the volume of the tumulus if it were solid (1648.03 m^3) minus the volume of the grave chamber (ca. 1 m^3) would result in 836 man days (or 17 days for 50 people) if calculated with an average work load of 1.97 m^3.

Fig. 4.29 Type 4.2 megalithic graves at Xide Wuhe

Table 4.33 Relative frequency of various types of megalithic graves

Types	Excavated	Percentage	Unexcavated	Percentage	All	Percentage
1	18	38.30 %	243	94.19 %	261	85.57 %
2	18	38.30 %	4	1.55 %	22	7.21 %
3	5	10.64 %	7	2.71 %	12	3.93 %
4	6	12.77 %	4	1.55 %	10	3.28 %
All	*47*	*100.00 %*	*258*	*100.00 %*	*305*	*100.00 %*

Table 4.34 Relative frequency of subtypes of megalithic graves

Subtypes	Excavated ($n=47$)	Percentage	Unexcavated ($n=258$)	Percentage	All (305)	Percentage
1.1	9	19.15 %	62	24.03 %	71	23.28 %
1.2	9	19.15 %	175	67.83 %	184	60.33 %
1.3	0	0.00 %	6	2.33 %	6	1.97 %
2.1	13	27.66 %	3	1.16 %	16	5.25 %
2.2	4	8.51 %	1	0.39 %	5	1.64 %
2.3	1	2.13 %	0	0.00 %	1	0.33 %
3.1	2	4.26 %	0	0.00 %	2	0.66 %
3.2	2	4.26 %	7	2.71 %	9	2.95 %
3.3	1	2.13 %	0	0.00 %	1	0.33 %
4.1	4	8.51 %	2	0.78 %	6	1.97 %
4.2	2	4.26 %	2	0.78 %	4	1.31 %

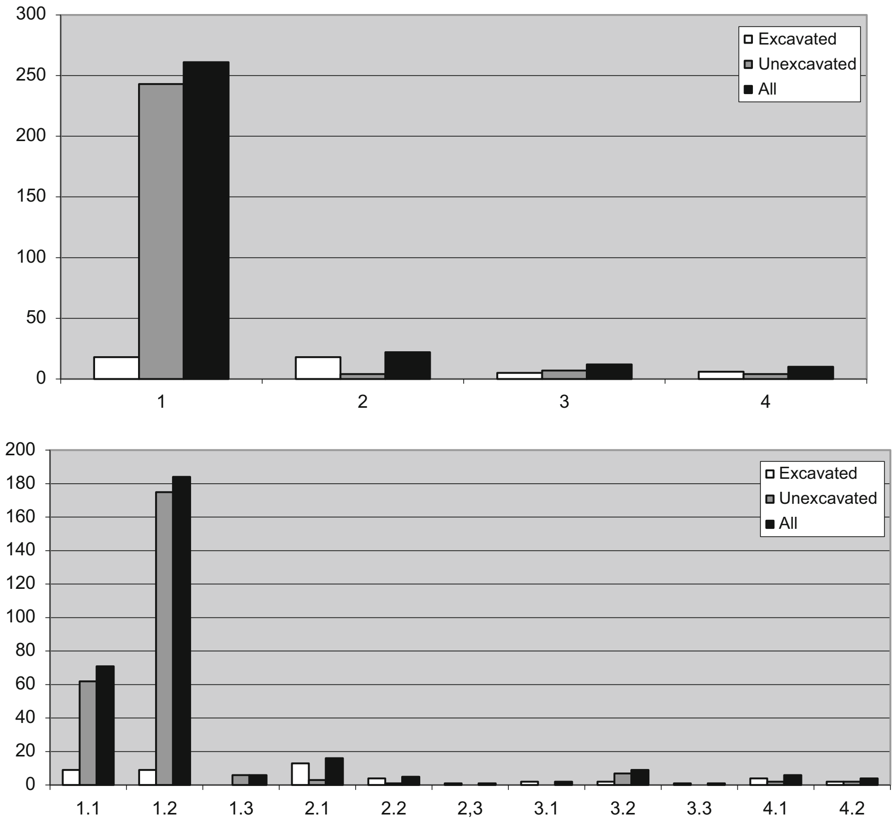

Fig. 4.30 Relative frequency of stone-construction grave types (*above*) and of subtypes of stone-construction graves (*below*)

Table 4.35 Frequency of occurrence of various kinds of external stone installations

Outside installation type	Count	Frequency I (all graves)	Frequency II (graves above ground)
Earth-tumulus			
Present	95	8.97 %	31.35 %
None observed	964	91.03 %	68.65 %
Stone mound			
Present	7	0.66 %	2.30 %
None observed	1052	99.34 %	97.70 %
Access ramp			
Present	35	3.31 %	11.55 %
None observed	1024	96.69 %	88.45 %
Tail			
Present	13	1.23 %	4.25 %
None observed	1046	98.77 %	95.75 %
Other external installations			
Present	17	1.51 %	5.60 %
None observed	1042	98.49 %	94.40 %
Types of other external installations			
Ba-shaped traversal arrangement of stones	8	47.06 %	2.64 %
Door-way of erected stones	6	35.29 %	2.00 %
Small stone assemblage close to door	3	17.65 %	1.00 %

4.3.2 Tails

A number of tumuli end in what has come to be known as "tails," i.e., human-made soil beds sloping up the hill and connecting it with the grave, possibly to facilitate sliding heavy covering stones into place (Table 4.39). This feature is therefore likely an outcome of the grave-construction process rather than a feature of deeper religious meaning. Another feature with a potential practical explanation is a short path paved with small smooth pebbles observed near the graves of Dechang Arong, which has been interpreted as a path for dragging stones toward the grave (Sichuansheng et al. 2006: 72); unfortunately, the survey report does not provide exact measurements or the relative location of path and graves, so it is difficult to assess its function. Nevertheless, as similar paths have been found by megalithic graves in Europe, the interpretation as an aid to the construction process is convincing (Beinhauer 1999; Midgley 2008). Access ramps, on the other hand, are most certainly connected with ritual proceedings rather than the construction process. These ramps occur only with graves above ground and they vary widely in size (Table 4.40). Given the small number of examples (34 graves) and the uneven preservation condition, it is not possible to gage if there is a greater significance to these differences in measurements.

Table 4.36 Form and known measurements (in meter) for earth mounds

	Form	Length	Width	Height	Volume
Dechang Arong M1	Oval	12	6.1	1.5	60.44
Dechang Malilang Zhannan M1	Oval	11	4	2	85.87
Xichang Beishan M2	Oval	16	10	2.2	186.52
Xichang Guihuacun M2	Oval	11	6		
Xichang Hexi Gongshe M6	Oval	12.4	8.2	1.5	69.27
Xichang Mimilang M1	Oval	15	10	2.5	229.07
Xichang Mimilang M2	Oval	8.5	7	1.2	33.25
Xichang Reshuitang West M1	Oval	15	6	3	268.61
Xichang Shizuizi M1	Oval	15	8.5	2	139.28
Xichang Tianwangshan M10	Oval	21.8	16.55	5.5	1648.03
Xichang Wanao M1	Oval	20	12.6	2.9	405.12
Xichang Wanao M3	Oval	25	9.6	2.8	403.11
Xichang Yunduanshan M1	Oval	20	11.5	2.8	364.94
Xichang Zhengjiafen M1	Oval	12.4	8.2	2	121.06
Xide Lake Sihe M8	Oval	11.5	1	1.16	24.79
Dechang Arong M2	Round	15.5	15.5	1	47.65
Dechang Xiaoliusuo M3	Round	21.7	21.7	1.6	170.23
Dechang Xiaoliusuo M4	Round	40.17	40.17	2.9	1035.78
Dechang Xiaoliusuo M5	Round	25.5	25.5	1.6	200.79
Dechang Xiaomiaoshan M2	Round	29.45	29.45	1.3	154.06
Dechang Xiaomiaoshan M3	Round	26.52	26.52	1.3	138.50
Dechang Xiaomiaoshan M4	Round	23	23	1.2	102.24
Dechang Xiaomiaoshan M5	Round	36	36	1.4	218.80
Mianning Sankuaishi M1	Round	10	10	1	30.37
Xichang Luzuishan M1	Round	11.2	10	1.5	71.39
Xichang Xijiao Gongshe M2	Round	20	20	2	242.95

Note: The volume was estimated with the formula for calculating spherical caps [Volume = 1/3 (πh^2) $(3r-h)$]

Table 4.37 Statistics for earth-mound measurements

	Length	Width	Height	Volume
Mean	18.68	14.73	1.99	258.08
Median	15.75	10.00	1.60	154.06
Mode	20.00	10.00	2.00	#N/A
Standard deviation	8.13	10.13	0.98	355.45
Range	31.67	39.17	4.50	1623.25
Minimum	8.50	1.00	1.00	24.79
Maximum	40.17	40.17	5.50	1648.03
Count	26.00	26.00	25.00	25.00

Table 4.38 Measurements for stone mounds (in meter)

	Diameter	Height	Volume
Xichang Bahe Baozi M1	13	3	155.51
Xichang Bahe Baozi M2	8.2	2.6	68.67
Xichang Bahe Baozi M3	6.5	2.62	51.25
Xichang Bahe Baozi M4	3.6	1.9	13.23
Xichang Bahe Baozi M5	4	1.9	15.50
Xichang Bahe Baozi M6	4.1	2.07	18.31
Xichang Xijiao Gongshe M1	6	1.7	22.09

Note: The volume was estimated through the formula for calculating spherical caps [$V_{KK} = 1/3\ (\pi h^2)\ (3r - h)$]

Table 4.39 Graves with tails and tail measurements (where known; $n = 11$)

	Length (in m)
Dechang Arong M1, M3, and M4	
Dechang Hongmiao M1	
Xichang Bahe Baozi M1	4.6
Xichang Bahe Baozi M2	4
Xichang Bahe Baozi M3	4.2
Xichang Bahe Baozi M4	10
Xichang Bahe Baozi M5	7
Xichang Bahe Baozi M6	8
Xichang Wanao M1 and M3	
Xichang Wanao M3	

Table 4.40 Graves with access ramps and ramp measurements (where known; $n = 35$)

	Length (in m)
Dechang Arong M3	
Dechang Guoyuan M1-M7	
Dechang Shuitangcun M1-M12	
Puge Xiaoxingchang	1.8
Xichang Bahe Baozi M1	4.1
Xichang Bahe Baozi M2	3.02
Xichang Bahe Baozi M3	3.3
Xichang Beishan M1	1.86
Xichang Huangshuitang M1	
Xichang Tuanbao M5	15
Xichang Wanao M1	3.4
Xichang Xijiao Gongshe M1	3.6
Xide Guluqiao M1	
Xide Lake Shihe M8	4.7
Xide Lake Sihe M1	1.81
Zhaojue Qianjinshe M7	

Table 4.41 Correlation matrix for presence/absence of various external features

	Door	Ramp	Tumulus	Stone mound	Tail	Other
Door	1					
Ramp	0.538052	1				
Tumulus	0.583308	0.163779	1			
Stone mound	0.236674	0.245664	0.259847	1		
Tail	0.29738	0.229735	0.309811	0.651849	1	
Other	0.392672	0.25357	0.35588	0.164555	0.388794	1

4.3.3 Other Stone Constructions

There are a few types of external features that occur only rarely and never in combination. One of them is a trapezoidal stone construction usually described *ba*-shaped (*bazixing*, referring to the shape of the Chinese character for the number eight) or screen shaped (*pingfengzhuang*). This type of structure consists of one or several stones standing on either side of the grave, either close to its front or directly at the door, forming a perpendicular line to the main extension of the grave, and thus giving the grave a cross- or T-shape (Figs. 4.17—3 and 4.21—2).[15] Another kind of external features reported from six graves are standing stones building a doorway (Fig. 4.22).[16] A pile of stones outside the grave without clear function has been reported from three graves.[17] All of these external additions were observed with graves in the Anning River Valley and mostly in its center.

4.3.4 Correlation Between Various Construction Elements

Of all graves above ground, 39 % (119 graves) have some form of external additions, most often a tumulus. A correlation matrix of the various external features shows connections between door and tumulus, door and access ramp, and also stone mound and tail (Table 4.41). All graves with an access ramp possess a clearly identifiable door, but not all graves with a door have an access ramp. Tumuli likewise always are associated with a door but not necessarily the other way around. Stone mounds are always combined with earthen tumuli and often with tails but the presence of neither a tail nor an earthen tumulus is a reliable predictor for the presence of a stone mound.

[15] This kind of arrangement has been observed with eight graves at three sites: Dechang Arong M1 and M4, Miyi Wanqiu M1 and M2, Xichang Hexi Gongshe M3, M4, and M5, and Xichang Wanao M2.

[16] Observed at Dechang Arong M3, Dechang Dashipai M5, Dechang Shaba M8, Xichang Wanao M1 and M3, Xichang Xijiao Gongshe M1.

[17] Xichang Hexi Gongshe M1, Xide Guluqiao M1, and Xichang Tianwangshan M10.

The correlation between stone mounds and tails provides some insight into the construction process. All graves with tails are leaning against a hill slope, the tail connecting slope, and grave. The tail thus might have been used to roll or slide stones from the slope onto the grave, providing an important lever for moving huge boulders or a large number of stones as they are needed for a stone mound. All graves with tails indeed are constructed of particularly large stones with large boulders as covers, and nearly half of these graves have a stone mound.[18]

All other graves built from exceptionally large stone boulders or slabs are either located on level ground or so poorly preserved that it is impossible to assess if they originally had a tail or not.[19] The same applies to the 165 graves for which the size of the stone-construction parts is unclear: the vast majority of them is located on an open plane or only slightly sloped ground with no reason or basis for a tail; of the remaining 11 unclear cases, five are poorly preserved and six published only by name but without a detailed description.[20] Overall, it is therefore reasonable to infer that tails were generally built to aid in the construction of graves located on a hill slope and involving the use of a considerable number of large stones. The alternative explanation—that this construction detail primarily had a religious or ritual significance—seems less likely.

The connection between door and ramp likely reflects practical as well as ritual concerns; the ramp was probably used to approach the grave during the burial ritual and/or in postburial activities that may have required a reopening and entering of the grave. Ramps cutting through the tumuli had to possess a door at the end providing access to the grave. All graves with a tumulus have a door but they are not always connected with an access ramp; furthermore, many graves without a tumulus have a door as well. In the former case, the grave may have been accessed through the door during the initial burial ritual and possibly a few times after; when the tumulus was built, however, the intent was never to open it again, hence no access corridor was needed. Graves with a door but without a tumulus may never have possessed one, or the tumulus may have been destroyed at a later point in time. In fact, many of the graves without a tumulus were so heavily disturbed that the excavators did not feel comfortable to judge on the presence/absence of a door; for

[18] The cover stones of these graves measure at least 1.9 × 1.2 × 0.6 m (Xichang Wanao M1) and at maximum 3.5 × 1.7 × 0.7 m (Xichang Bahe Baozi M1).

[19] The poorly preserved examples built on a slope include Xichang Xinying M1 and Xichang Lake Sihe M1.

[20] For 165 graves, the size of the stone-construction parts has not been reported; 123 (75 %) of them are located on level ground; 32 (19.4 %) were observed on hill slopes, but they were either poorly preserved or not properly published, so that it is impossible to be sure about the presence or absence of such a construction detail. The remaining 11 graves (Xichag Hexi Gongshe M1-M5, Xichang Lijiagou cun M1-M4, and Xichang Reshuitang M1) were built on sloped ground and reasonably well preserved including even remnants of tumuli but with no sign of a tail. The five at Hexi Gongshe were built on only slightly sloped ground that was probably not steep enough for a tail (Xichang Diqu 1978: Pl.1–2); the remaining graves were not published in detail but only listed in the *Zhongguo Wenwu Dituji*, which does not mention the presence of a tail even for excavated graves with known tails.

unexcavated graves with well-preserved tumuli it is likewise impossible to assess if they had a door. Where a door is present, however, it indicates repeated access and—in combination with an access ramp—even a reopening after the initial closure of grave and tumulus.

On the whole, the lack of detailed information in some cases and the incomplete preservation in others may preclude a statistical evaluation of external features, but when considered on a case-by-case basis, the material still allows for important inferences on construction procedures and burial ritual. The trapezoidal stone arrangements, for example, are too rare to allow for statistical analysis, but upon closer inspection they are always associated with both door and tumulus, i.e., with particularly complex and work-intensive constructions signaling the importance of these graves. Graves with stone piles at their entrance always have a door and sometimes a ramp. The stone piles might thus have been deposited during postburial rituals involving the reopening of the grave.

4.3.5 Correlation Between External Features and Grave Types

All external additions occur nearly exclusively with megalithic graves; the only exception is the stone-construction grave M9 at Yanyuan Laolongtou which is covered by an earthen tumulus. Other graves below ground might have had above-ground marker as well, but none of them was larger enough to leave lasting traces. Only the subtypes of megalithic graves without an identifiable door (Types 1.3 and 2.3) are never connected with any external features, possibly a reflection of a lower intensity of ritual activities around graves that were not supposed to be reopened on a regular basis. Stone mounds only occur on graves made of large boulders or a combination of large boulders and small cobbles (Types 1 and 2), highlighting the importance of and considerable labor investment for these graves. The same monuments also tend to have an access ramp reflecting their continued use. Where they were leaning against a hill, such graves usually featured tails that likely aided in their construction. Access ramps, on the other hand, occur with all grave types; they were thus not a special marker of importance of the interred but rather related to the continued use of the grave.

All other external features are rare and their occurrence difficult to judge.[21] There is no clear correlation between any of these structures and specific grave sizes either. Overall, it is therefore neither possible nor necessary to modify the typology of megalithic graves when taking into account external features. What has become clear though is that certain graves—especially but not exclusively the large ones—were constructed in several stages, the tumuli coming last and sometimes only after long periods of grave use. These graves were thus centers of complex rituals requiring

[21] Doorways occur both with Type 1 and 2 (1.1, 2.1 and 2.2), trapezoidal installations have been reported in connection with the same types but not the same graves, and stone tiles occur with Types 1.2, 2.1, and 4.2.

Table 4.42 Frequency of occurrence of inside installations by installation type and grave category

Type of inside installation	Earth-pit graves	Stone-construction graves	Megalithic graves	All
Head compartment	9	4	0	13
Wooden coffin	8	5	0	13
Foot compartment	0	4	0	4
Second-level ledge	2	1	0	3
Thin stone slabs under head or pelvis	11	0	0	11
Thin stone slab next to vessel	1	0	0	1
Middle partitioning	0	1	0	1
Front/back partitioning	0	0	3	0
Stairs	0	0	1	0
Two layers of stone slabs inside	0	1	0	1
Oval niche on one end	0	1	0	1
Stone coffin and other stone installations	0	1	0	1
Sum	*31*	*18*	*4*	*49*

repeated access to parts of the grave and/or its surroundings, possibly over extended periods of time. The nature of some of these ritual and their importance for defining local identities becomes clearer with the analysis of object assemblages and body treatment later in this book (Chaps. 5 and 6).

4.4 Internal Features

4.4.1 Internal Features in Megalithic Graves

Internal features are just as rare and varied as external additions to the grave (Table 4.42). Megalithic graves only rarely contain internal construction features with the exception of grave partitioning into a smaller front- and a larger rear-chamber in three graves, and the addition of a three-step staircase at the entrance of one grave, Xide Lake Sihe M1. This grave was built of large boulders with small stones filling the gaps, and it had a door in the middle of one long side, a tumulus, an access ramp, a tail, and a doorway (Type 2.2.1.2). The steps thus only reemphasis the intended accessibility of the grave.

The function of the grave partitioning is less clear. The objects on either side of the internal wall were largely identical, so the front chamber provided a second set of objects for an unknown purpose.[22] A partitioning was observed in all known

[22] For Zhaojue Qianjinshe M6, the publication does not provide details on object location, but in Puge Xiaoxingchang BM2 and BM4, the objects placed in the front and the rear chamber were essentially the same (personal ornaments made of bone, stone, and bronze).

instantiations of Types 4.1.2 (medium-sized graves, stone slabs for walls, large boulders as cover, pebble floor) and Type 3.3 (graves with walls built of several layers of irregular cobbles and Han bricks). The inside partitioning can therefore be added to the definition of those types. The brick grave is located in Zhaojue and the Type 4.1.2 graves in Puge, i.e., in two placed separated from each other by a mountain ridge. The partitioning is therefore not a local particularity, neither is it a chronological marker as the Han bricks indicate a first century date for Zhaojue Qianjinshe M6 while Puge Xiaoxingchang dates much earlier (see Chap. 7.4).

Xichang Beishan M1 represents an even later example of grave partitioning dating to the time of the Kingdom of Dali (937–1253); here, a brick wall was built across the whole length of the grave; simultaneously, ten urns were placed in and around the grave. A similar brick wall of Tang Dynasty date (AD 618–907) was reported from Xichang Tianwangshan M10. Large stone graves were thus sometimes reused many centuries after their original construction; however, because of the late date and lack of continuity in burial tradition, these post-Han additions are not included in subsequent analyses of local prehistoric burials.

4.4.2 Internal Features in Stone-Construction Graves

In earth-pit and stone-construction graves, internal features are significantly more common than in megalithic graves, but it is difficult to discern any regularity in their distribution or association. Second-level ledges have been reported from three stone-construction graves in the southern part of the research area, all of them stone-cover graves with stone-slab floors (Type 3.2.2), in two cases in combination with head- or foot compartment.[23] In one case, the second-level ledge held objects; in the other two cases, the ledge was empty, potentially having served some particular function during the burial proceedings that did not leave traces.

Head and foot compartments always serve as object repositories.[24] Both are usually connected with stone-slab cover and/or walls (Types 1, 2, and 3) but they never occur together in the same grave. All graves with such compartments are located in the southern part of the research area and they are unique in many other respects as well.[25] The complex burial rituals reflected in these graves are strong indicators of social stratification within a group defined by strong local particularities combined

[23] They occur at Yanyuan Laolongtou M4, Yongsheng Duizi M59, and Huili Xiaoyingpan M4.

[24] Due to their construction of overlapping stone slabs, graves of Type 2.4.1 naturally have a partitioned-off section at the foot and/or head, but these spaces are very small and never contain any objects; they were thus likely not intentionally created and can therefore not be addressed as compartments.

[25] Foot compartments were reported from Yanyuan Laolongtou M4 and M6 (both stone-construction grave Type 3.1.1), and Huili Xiaoyingpan (Type 1.3.1.2). Head compartments were observed at Yongsheng Duizi M59 (Type 3.2) and Huili Xiaoyingpan M13 (Type 1.3.1.2), M20 (Type 2.3.2.1), and M21 (Type 2.3).

with many signs of far-reaching contact networks. In spite of being outliers, these graves therefore bear describing in detail at this point.

In the case of Yanyuan Laolongtou M4, a foot compartment was combined with a second-level ledge and a wooden coffin. Wooden coffins have only been observed in Ninglang and Yanyuan, largely due to the favorable local preservation conditions. Even here, wooden coffins are reserved for particularly large structures or graves with other singular features.[26] The coffin in Yanyuan Laolongtou M6, for instance, was divided into two compartments with a divider of 20–30 cm width in between providing space for the placement of further objects; additionally, the grave had a foot compartment covered by a wooden lid that held objects as well (Fig. 4.13—4). Laolongtou M4 featured both a coffin, a foot compartment containing objects, and a second-level ledge providing room for a secondary interment and various objects (Fig. 4.13—1). Laolongtou M7 combined a coffin with an oval niche in one of its walls (Fig. 4.13—3), and M11 held both a coffin and further stone arrangements of unclear function (Fig. 4.13—2).

All of these structures and combinations of elements are perfectly unique, but the most complex burial at Laolongtou and among stone-construction graves in the Liangshan Region at large is M9 (Fig. 4.11). A complete stone coffin filled the northern half of the wooden coffin. On its western end, a number of small stone slabs had been arranged together with a sword and other bronze fragments. In the southern half, there was an additional stone encasement containing fragments of a human skull, teeth, ceramic sherds, and other objects, all of them burned and covered by ash. The graves at Laolongtou can therefore be classified as special local forms of stone-cover graves.

4.4.3 Internal Features in Earth-Pit Graves

Most earth-pit graves differ from each other mainly in size and form, but some also held special internal construction parts. Just as the stone-construction graves, some of the earth-pit graves in Ninglang and Yanyuan contained wooden coffins. In fact, all eight earth-pit graves with wooden coffins were found there. Earth-pit graves with coffins were larger and deeper than graves without this feature. The deepest of these graves, Ninglang Daxingzhen M5, additionally had a head compartment.[27] Grave size, depth, and presence of complex internal feature thus likely marked the special status of the interred. The graves from Ninglang and Yanyuan are overall

[26] All graves at Laolongtou are stone-cover graves (Types 3.1.1 and 3.1.2), but only five held a wooden coffin that was in three cases held together by bronze nails. Wooden coffins were reported from M4, M6, M7, M9, and M11; of these, M4, M6, and M7 held 63, 10, and 8 nails, respectively. The coffins were all fitted neatly into the grave; they were made from several layers of wooden planks.

[27] Graves without coffins measure 1.5–1.75 m × 0.56–0.65 m × 1.1–1.12 m; graves with coffins measure 2–2.5 m by 0.7–0.9 m, and the known cases were all over 1.6 m deep at the time of excavation, the deepest measuring 3.25 m in vertical extension (Ninglang Daxingzhen M5).

very different from those in other parts of the Liangshan Region, and these are local and not regional customs. The four earth-pit graves with head compartments observed in the Southeast, for example, did not contain other special features and were not remarkable in size either.[28] In the Anning River Valley, on the other hand, second-level ledges were observed in two particularly large earth-pit graves of nearly square dimensions.[29]

With only two and four cases each, it is impossible to suggest a firm correlation, but it is quite clear that the earth-pit graves differ greatly in form between subregions and likely belong to separate burial tradition. The custom of placing thin stone slabs under the head or pelvis of the deceased or next to the burial objects, for instance is a local custom observed only at the cemetery of Huili Fenjiwan in the Southeast, always in large or medium-sized graves of long-rectangular or long-narrow form.[30] Instead of such a slab, many other graves in this cemetery contained one or two flat oval cobbles likewise placed under the head or in the pelvis area. Both types of stone placements—one in the form of stone slabs similar to those used in stone-construction graves, the other in the form of roughly hand-sized object-like cobbles—may have had a similar ritual function and/or religious meaning.

4.4.4 Evaluation: Correlation Between Internal Features and Grave Types

Overall, internal features appear only infrequently and are particularly rare in megalithic and stone-construction graves. For stone-construction graves, internal features were observed only in the southern part of the research area, especially at Yanyuan Laolongtou in the Northwest. All of these special graves at Laolongtou are stone-cover graves made of one or several large slabs (Type 3.1) and are characterized by several unique features. Similar, Yongsheng Duizi M59 combines a second-level ledge and head compartment in a grave of Type 3. All of these graves can therefore be grouped into a special southwestern subtype of stone-cover graves. In all other cases, the combination of special internal features and grave types does not follow a regular pattern that could or should be reflected in the typology for stone-construction graves.

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[28] Head compartments were observed in four graves at Huili Washitian, associated with two other graves that did not have special internal features. Complete measurements are only known from grave M1, which was medium-sized but narrow (2 m × 0.3 m). Washitian M4 was severely disturbed but must have measured around 1.5–2 m in length as well.

[29] These graves are Xichang Ma'anshan M1 (measurements: 3.67 × 2.9 × 2.02 m) and Xichang Qimugou M3 (4.98 × 3.1 × 0.6 m).

[30] In two of these graves, thin stone slabs were placed in the pelvis region (M12 and M40), and in nine graves slabs were found under the head (M13, M78, M87, M93, M95, M108, M110, M115, and M143). In one grave, M113, a small stone slab was placed upright next to a ceramic vessel.

Table 4.43 Main dimensions of variation in grave construction for earth-pit graves

ega	*Earth-pit grave types by size*		*Second-level ledge*
eg1a	Very large	sl0	No
eg2a	Large	sl1	Yes
eg3a	Medium sized		*Wooden coffin*
eg4a	Small	wc0	No
eg5a	Unclear size	wc1	Yes
egb	*Earth-pit grave types by form*		*Head compartment*
eg1b	Rectangular	hc0	No
eg2b	Rectangular with rounded corners	hc1	Yes
eg3b	Trapezoidal		*Thin stone slabs inside*
eg4b	Oval	ts0	No
	Size	ts1	In pelvis area
s0	Unclear size	ts2	In head area
s1	Very small	ts3	Next to ceramic vessel
s2	Small		
s3	Medium sized		
s4	Large		
s5	Very large		
	Form		
f1	Rectangular		
f2	Long rectangular		
f3	Long narrow		
f4	Square		
f5	Trapezoidal		
f6	Oval		
f7	Irregular		
f8	Rectangular with rounded corners		

In the case of earth-pit graves, special internal features are usually associated with large or medium-sized graves of rectangular form, never in graves of small or exceptional form (i.e., trapezoidal, oval, or rectangular with rounded corners). Earth-pit graves can therefore be categorized by progressing from size, to special features, to grave form; or they can be arranged by grave form first and then by size and special features (Table 4.43). The first typology has the following main types and subtypes (Appendix Fig. B.5):

- Type 1a very large earth-pit graves

  Type 1a.1 second-level ledge; rectangular, long rectangular, or square (9)
  Type 1a.2 no second-level ledge; rectangular, long rectangular, or square (9)

- Type 2a large earth-pit graves

  Type 2a.1 thin stone slab in pelvis area; rectangular form (2)
  Type 2a.2 thin stone slab at pelvis; rectangular, long rectangular, or long narrow (9)

Type 2a.3 stone slab next to vessel; long-rectangular form (1)
Type 2a.4 no slab; rectangular with/without rounded corners, or long rectangular (49)

- Type 3a medium-sized earth-pit graves

Type 3a.1 wooden coffin; rectangular form; with or without head compartment (8)
Type 3a.2 no coffin; rectangular w/without rounded corners, square, trapezoidal (96)

- Type 4a small-sized earth-pit graves

Type 4a.1 square form (3)
Type 4a.2 rectangular form (27)
Type 4a.3 rectangular with rounded corners (18)
Type 4a.4 long rectangular (18)

- The second typology runs as follows (Appendix Fig. B.6):
- Type 1b rectangular earth-pit graves

Type 1b.1 very large; with or without second-level ledge (14)
Type 1b.2 large; with or without thin stone slabs at pelvis, head, or object (59)
Type 1b.3 medium sized; with or without head compartment (63)
Type 1b.4 small; with or without head compartment (58)

- Type 2b rectangular earth-pit graves with rounded corners

Type 2b.1 large (2)
Type 2b.2 medium sized (6)
Type 2b.3 small (4)

- Type 3b trapezoidal earth-pit graves (3)
- Type 4b oval earth-pit graves (17)

The interpretative value of these two typologies differs slight: by emphasizing size and special features, the first typology primarily reflects differences in labor investment. The second typology primarily differentiates between basic grave forms, thus highlighting local particularities: oval grave forms were observed only in the utmost Southwest, trapezoidal graves in the Southeast, and rectangular graves with rounded corners are particular to the central Anning River Valley around Xichang.

For earth-pit graves, there is thus a strong correlation between geographic location, overall form, size, and special installations. For stone graves above or below ground, the case is very different. For stone-construction graves, the presence/absence of cover, walls, or bottom as well as the dimensions of the stones used in construction seem to be the main distinguishing criteria, while grave dimensions and internal features are secondary. For megalithic graves, the size, shape, and number of stones used are important as well, but external additions facilitating access are of at least equal importance. Accessibility is of course a major concern for the burial ritual and other activities in and around the grave. In a next step, I therefore turn to the burial rituals associated with the graves to test if they correlate with any of the features discussed so far or if they cut across various grave types, construction elements, and regions.

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Chapter 5
Placing the Dead: Interment Practices and Other Rituals

After analyzing the graves of the Liangshan Region as built structures, this chapter now turns to the use of these constructions in the burial ritual. In terms of the model proposed in Chap. 2, the focus thus shifts from the grave itself to its content, i.e., the body (in the present chapter) and the objects (to be discussed in Chap. 6). At the same time, we are moving chronologically from the preparatory stage of grave construction to the actual mortuary ritual. Certain aspects of the body emerged prior to the actual burial and mostly even prior to building the grave; these aspects encompass first the physical development of the deceased up to the point of his/her death and second the preparation of the body for interment. In connection with the burial ritual itself, the body may be altered even further and then decay and undergo various postburial changes after the closing of the grave. The burial record furthermore can show traces of other ritual acts that took place in and around the grave. All of these indicators for past burial customs are discussed in this chapter.

5.1 Considering the Body

Of the 443 excavated graves considered in this study, about a third (i.e., 138 graves) contained identifiable human remains, most of them in an advanced stage of deterioration. Sometimes, the excavation report states only that "human bones" were found without mentioning if they belonged to one or several individuals. These cases have to be omitted from analysis, resulting in a reduced sample of 134 graves.[1]

[1] In many cases, the precise number of skeletons is unclear and the excavators only suggest a range of potential values for the factor "number of interred" (e.g., "two or more bodies" or "2–5 individuals"); for comparative analysis and statistical evaluation, I use the minimal number suggested by the excavators.

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5.1.1 Physical Condition

The physical condition of the body at the point of excavation allows for inferences on the life history of the individual. The more favorable the preservation conditions, the more fruitful an osteological analysis will be. In ideal cases, injuries, deceases, nutritional deficiencies, and even traces of repetitive motions indicating at a specific occupation or mode of transportation (e.g., rowing, horse-riding, or hide working by chewing) can be identified (e.g., Cox and Mays 2000). For the material at hand, such detailed data are not available, but in some cases, the excavation report mentions body height, sex, and/or age of the deceased (Table 5.1). Body height estimates have been published for 25 individuals from two cemeteries, Yanyuan

Table 5.1 Physical characteristics

Grave location/number	Body height (m)	Sex	Age	Number skeletons
Huili Xiaoyingpan M1	1.45			1
Huili Xiaoyingpan M2	1.6			1
Huili Xiaoyingpan M3	1.56			1
Huili Xiaoyingpan M4	1.6			1
Huili Xiaoyingpan M5	1.3			1
Huili Xiaoyingpan M6	1.3			1
Huili Xiaoyingpan M7	1.18			1
Huili Xiaoyingpan M8	1.55			1
Huili Xiaoyingpan M9	1.45			1
Huili Xiaoyingpan M10	1.6			1
Huili Xiaoyingpan M11	1.6			1
Huili Xiaoyingpan M12	1.5			1
Huili Xiaoyingpan M13	1.4			1
Huili Xiaoyingpan M14	1.4			1
Huili Xiaoyingpan M15	1.5			1
Huili Xiaoyingpan M16	1.5			1
Huili Xiaoyingpan M17	1.55			1
Huili Xiaoyingpan M18	1.5			1
Huili Xiaoyingpan M19	1.45			1
Huili Xiaoyingpan M20	1.6			1
Huili Xiaoyingpan M21	1.4			1
Yanyuan Laolongtou M11	1.9			1
Yanyuan Laolongtou M6	1.63			4
Yanyuan Laolongtou M6	1.8			4
Yanyuan Laolongtou M4	1.7			2
Mianning Sankuaishi M1		Both		17
Miyi Wanqiu M1		Unclear	Adult and senile	5
Puge Xiaoxingchang AM1		Both	Adult and senile	10

(continued)

Table 5.1 (continued)

Grave location/number	Body height (m)	Sex	Age	Number skeletons
Puge Xiaoxingchang AM2		Both	All	4
Puge Xiaoxingchang BM1		Both	All	82
Puge Xiaoxingchang BM2		Both	All	48
Puge Xiaoxingchang BM4		Both	All	125
Xichang Bahe Baozi M1		Unclear	Juvenile, adult, senile	95
Xichang Hexi Gongshe M1		Unclear	1 juvenile, 5 adult	6
Xichang Xijiao M1		Both	All	123
Xide Lake Sihe M1		Both	All	10
Xide Lake Sihe M5		Both	All	10
Xide Lake Sihe M6		Both	All	10
Xide Lake Sihe M7		Both	All	10
Xide Lake Sihe M8		Both	All	10
Yongsheng Duizi (18 graves)		Unclear	Infans	1 in each urn

Laolongtou in the Northwest and Huili Xiaoyingpan in the Southeast. It is remarkable that the height measurements from the modestly equipped graves of Huili all range around 1.4–1.6 m while the individuals interred in the rich graves of Yanyuan were significantly taller. Daring speculations would suggest differences in nutrition related to differences in local subsistence[2] and/or individual wealth, or even differences in population origin; however, with 23 data points from only two cemeteries, such far-reaching inferences are not permissible. The stark differences between the two sites nevertheless highlight the importance of a complete analysis of all human remains discovered in graves in the Liangshan Region that may help identify differences in living conditions between regions as well as between different subgroups of the same community.

For 15 megalithic graves with multiple interments in the Anning River Valley, the excavators have provided information on sex and age in their reports. In all cases but two, the graves contained both male and female adult and senile skeletons; in two cases, single juvenile skeletons were also present but infants do not seem to have been buried here. This suggests that not all parts of the population were interred in megalithic graves, but that this form of burial was reserved for older individuals, possibly even for a subgroup distinguished by higher social status or other special characteristics.

It is difficult to say what happened to the other members of the local communities after death. Some of the local earth-pit graves—at least the ones dating to the same period as the megalithic graves—may contain part of the missing population, but they are too far and few between to account for all the young adults and juveniles that died before reaching a mature age. Furthermore, even the earth-pit graves do

[2] As has been shown elsewhere, the communities of the Southeast were likely settled agriculturalists while the communities in the Northwest may have had a pastoralist lifestyle (Hein 2014).

Table 5.2 Number of interments per grave

Number interred	Count	Percentage (%)
Single	86	64.18
Double	4	2.99
Multiple (3–6 skeletons)	11	8.21
Group burial (9–20 skeletons)	10	7.46
Mass interments (48–125)	7	5.22
Several interments	16	11.94
Sum	*134*	*100.00*

not contain infant burials. Urn burials containing the cremated remains of infants have been found only at Yongsheng Duizi in Northwest Yunnan but not in other parts of the research area. Ethnographic accounts and archaeological examples from around the world show that the corpses of infants below a certain age may be deposited far away from normal cemeteries or living quarters or on the contrary under house floors (e.g., Goody 1959, 1962; Moore 2009; Shaanxi 2009), but in the Liangshan Region no evidence can be found for either practice.

Nevertheless, even the scanty evidence available at present shows that at least in the Anning River Valley during the time of the megalithic graves complex burial customs prevailed that entailed differential treatment of specific subgroups of the local population, including a differentiation in types of interment and body treatment, burying some in various types of graves and deposing of others in a way that does not leave traces in the archaeological record.

5.1.2 Interment Types

Where skeleton numbers are known, we can distinguish between single, double, and multiple burials (Appendix Table B.4). For multiple burials, the number varies widely from 3 to over 125 skeletons; these graves can be subdivided further into small group burials (3–6 skeletons), large group burials (9–20 skeletons), and mass interments (48–125 skeletons) (Table 5.2).

Interment types vary as well: in addition to the standard three categories of primary burial, secondary burial, and cremation, there are mixed forms of primary and secondary burial as well as instances of inhumation and cremation within the same grave. It is generally assumed that large above-ground structures with multiple skeletons always contained “secondary disorderly interments” (*erci luanzang*), but detailed descriptions in a few excavation reports suggest that this assumption may be erroneous. Grave M1 at Mianning Sankuaishi, for example, contained 17 relatively well-preserved skeletons, all of them extended-supine primary burials that had been wrapped in cloths and piled on top of each other, likely in successive instances of interment (Xichang 1978a). With less favorable preservation conditions or less careful observation, such an arrangement may well be interpreted erroneously as a secondary interment. Preliminary excavation reports lacking detailed description of the grave fill but simply stating that a megalithic grave held "secondary disorderly interments" therefore need to be read carefully to identify potential cases of multiple primary depositions.

The well preserved, carefully excavated, and fully published grave M1 at Xichang Xijiao Gongshe provides further insights into the likely interment process—or rather processes—that formed the complicated layers of multi-interment megalithic graves. This grave held remains of at least 123 individuals, most of them lying in unorderly heaps of disarticulated bones toward the rear end of the grave; additionally, a small number of largely complete skeletons were observed lying directly behind the door. As the excavators argue very convincingly, this peculiar arrangement does not reflect a single act of secondary interment but is likely the outcome of several instances of primary burial (Xichang 1978b). In this process, the bones of previous interments were pushed to the side to make space for the new bodies, the earlier interments ending up in disjointed layers toward the rear end of the grave. In some cases, the graves seem to have been not just reopened but reentered to pile the bones of previous interments neatly in the rear while a small number of largely intact skeletons—probably the remainders of the most recent interments—were found in the main part of the grave.[3] In other cases, the grave was likely not reentered but the remains of previous interments were only shoved to the side, sometimes apparently not deep enough as bones and objects were occasionally crushed under the closing stones of the door.[4]

Many if not most of the multiple burials labeled as secondary interments thus are probably the outcome of multiple instances of primary burial. This assumption is supported by the presence of personal ornaments and weapons in direct association with hand, neck, or hip bones: earrings lying next to the head and bracelets still being on the arms, which would be highly unlikely in the case of secondary burials[5]; I therefore reclassify these graves as "disarranged primary burials."

Not all multiple interments were primary, though. A few small-sized stone graves—nearly all of them observed in the Northeast and most of them located above ground—contained only long bones and skulls, all of them carefully sorted by type and stacked in separated parts of the grave (Fig. 4.16).[6] As smaller bones

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[3] Examples are Xichang Bahe Baozi M1, Miyi Wanqiu M1 and M2, and Puge Xiaoxingchang AM1.

[4] This was observed at Xide Lake Sihe M1, M5, M6, M7, and M8, and from Bahe Baozi M4, M5, and M6.

[5] Such observations were reported from Mianning Sankuaishi M1; Xichang Xijiao Gongshe M1; Puge Xiaoxingchang AM 1 AM2, BM1, BM2, and BM4; Miyi Wanqiu M1; Xide Lake Sihe M1; and Xide Guluqiao M1.

[6] For instance, in Xichang Dayangdui DM1 the skulls were positioned in the West and the long bones neatly aligned in the middle; in grave M3 at Zhaojue Chike Boxixian the long bones were piled along the sides of the grave; at Zhaojue Wazhaishan M4 three skull fragments were arranged on a stone, and multiple long bones were placed parallel to each other in the middle and at the rear; at Zhaojue Qianjinshe M9 long bones were stacked in the rear; and at Zhaojue Pusu Bohuang M9 three skulls and several long bones were arranged in one pile.

Table 5.3 Frequency of various interment types

Interment type	Count	Percentage (%)
Primary	49	36.57
Secondary	31	23.13
Primary and secondary	1	0.75
Inhumation + cremation	3	2.24
Cremation	27	20.15
Unknown	23	17.16
Sum	*134*	*100.00*

Table 5.4 Skeleton positions

Skeleton position	Count	Percentage (%)
Extended supine	51	38.06
In urn	28	20.90
Irregular placement	31	23.13
Mostly piled in rear, some scattered	4	2.99
Stacked in layers throughout grave	6	4.48
Unclear	14	10.45
Sum	*134*	*100.00*

were not present, it is reasonable to assume that these were actual secondary interments of selected bones (Table 5.3).

On the whole, single primary interments are most common but secondary burials appear frequently as well, be it as single or multiple interments (Tables 5.2 and 5.3). In the case of primary interments, most often the bodies are placed in extended supine position but various types of disarticulated placement occur as well (Table 5.4).

5.1.3 Body Treatment

For extended supine burials, there are a number of special interment practices that may be subsumed under the general rubric of "body treatment." Most common is the stacking, piling, or general rearrangement of bones, be it for secondary interment or during the reopening of the grave during postburial rituals or for additional interments. A rare type of body treatment is the detachment of the skull in otherwise complete skeletons and its placement in the stomach area or its complete removal from the grave (Table 5.5).[7]

[7] Extended supine burials of complete skeletons whose heads had been placed in the stomach area occurred in Luquan Yingpanbao M4, and Huili Xiaoyingpan M13 and M16; in grave M14 at the latter site the skull was even completely missing. As the bones in all these graves are otherwise not disarticulated and small bones such as fingers and toes are present, it is clear these are not secondary burials but primary interments with a particular body treatment, i.e., the detachment of the head.

Table 5.5 Types of body treatment

Body treatment	Count	Percentage ($n = 134$) (%)
Wrapping	1	0.75
Application of red substance	1	0.75
Detachment of skull	1	0.75
Skull placed on stomach	4	2.99
Rearranging	24	17.91
Stacking of bones	9	6.72
Bones by type in piles	1	0.75
Sum	*41*	*30.60*

Where they appear, cremated bones are usually held in ceramic vessels, but in three cases a cremated was skeleton placed directly into a grave previously used for multiple primary inhumations.[8] In one case, a single bone was placed into a ceramic vessel, but the excavation report does not specify whether there were any burn marks, and the grave itself did not contain any further human remains (Xichangshi et al. 2004).

Another rare occurrence is the application of red colorant—in one case cinnabar, in other cases a substance described as "carmine-red soil" (*yanzhitu*)—on human bones (teeth, head, or chest) or animal remains. All of these cases were observed at the single site of Yanyuan Laolongtou in the Northwest and in only three particularly richly equipped graves, indicating a local custom reserved for individuals of a special social standing. Although the excavation report distinguishes between these two types of red substance, they have not been scientifically analyzed and it is therefore not clear if they are chemically different. Considering that both substances were used in the same way, at last the burying group apparently did not differentiate between them. In both cases, the placement suggests that the red color had a ritual function rather than a beautifying one.

5.1.4 Evaluation

Altogether, there are thus six different interment types, five kinds of skeleton positions, and six types of additional body treatments (Fig. 5.1, Tables 5.3, 5.4, and 5.5). The correlation table connecting interment types and skeleton positions shows that single burials are usually primary interments or cremations and more rarely secondary burials; double interments are usually primary or a combination of primary and secondary burials, and interments of larger numbers of people are generally primary disarranged or secondary, sometimes combined with cremation (Table 5.6). All primary interments are extended-supine burials, and nearly all extended-supine burials are

[8] These graves are Xichang Xijiao Gongshe M1 and Puge Xiaoxingchang AM1 (both primary disarranged and cremation) and Yanyuan Laolongtou M9 (primary or secondary and cremation).

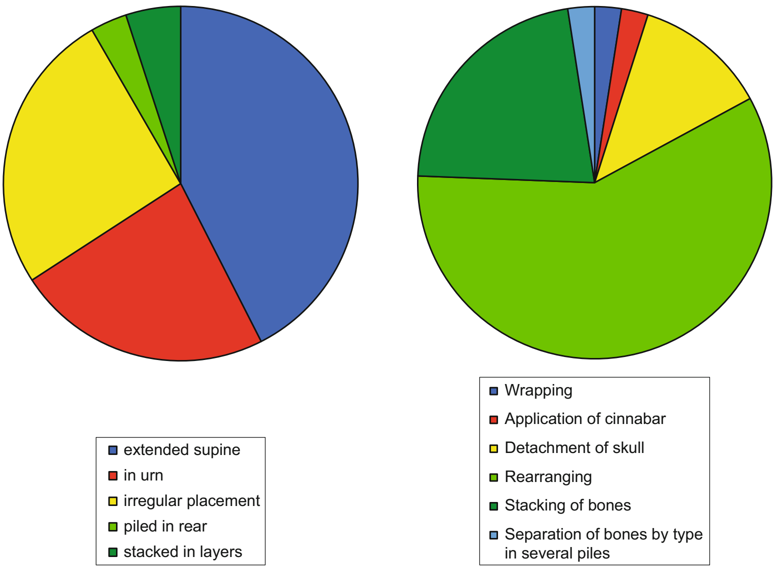

Fig. 5.1 Relative frequency of different skeleton positions (*left*) and types of body treatment (*right*), disregarding unclear cases and cases without known special body treatment

Table 5.6 Correlation table of skeleton number types and skeleton positions

	All	Primary	Primary disarranged	Second ary	Primary + secondary	Inhumation + cremation	Cremation	Un-known
Single	86	45	0	8	0	0	26	7
Double	4	3	0	0	1	0	0	0
Multiple	11	1	2	5	0	1	0	2
Group	10	0	6	1	0	1	0	2
Mass	7	0	4	0	0	1	0	2
Several	16	0	1	5	0	0	0	10
Sum	*134*	*49*	*13*	*19*	*1*	*3*	*26*	*23*

primary with only one case of combined primary and secondary interment and one case of primary disarranged bodies, i.e., the case of Xichang Xijiao Gongshe M1 described earlier where the bodies had been wrapped in cloth (Table 5.7).

Traces of body treatment are very rare and mainly occur with primary disarranged or secondary interments. The various forms of irregular placement, piling, or stacking of the bones are all associated with primary disarranged or secondary burials, in two cases combined with a single cremation. Extended supine burials—the dominant form of interment—are usually single or double burials, but they do also occur with interments of large groups of people (Table 5.8). Irregular placement or piling of bones is naturally mostly connected with the interment of larger groups of people.

In terms of the timeline suggested in Chap. 2 (Fig. 2.3), the decision between single, double, multiple, group, and mass interment can occur before or after the

Table 5.7 Correlation table of interment types and skeleton positions

	All	Primary	Primary disarranged	Second ary	Primary + secondary	Inhumation + cremation	Cremation	Un-known
Extended sup.	51	49	1	0	1	0	0	0
In urn	28	0	0	1	0	0	27	0
Irregular	31	0	8	8	0	1	0	14
Piled in rear	4	0	3	0	0	1	0	0
Stacked	6	0	1	4	0	1	0	0
Unclear	14	0	0	6	0	0	0	8
Sum	*134*	*49*	*13*	*19*	*1*	*3*	*27*	*22*

Table 5.8 Correlation table of skeleton number types and skeleton positions

	All	Single	Double	Multiple	Group	Mass	Several
Extended supine	51	45	4	1	1	0	0
In urn	28	28	0	0	0	0	0
Irregular placement	31	1	0	6	6	4	14
Piled in rear	4	0	0	1	1	1	1
Stacked	6	0	0	3	2	1	0
Unclear	14	13	0	0	0	1	0
Sum	*134*	*87*	*4*	*11*	*10*	*7*	*15*

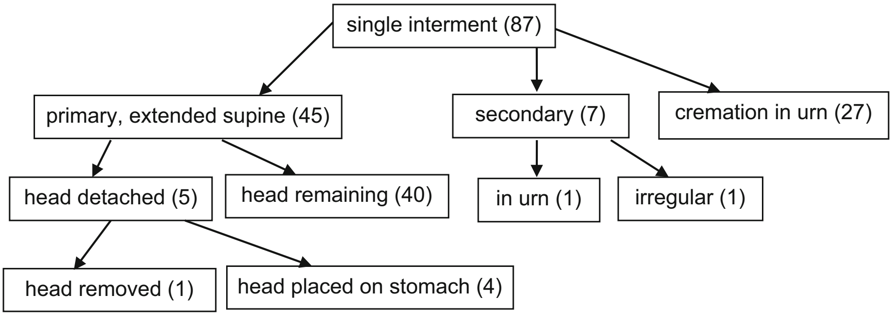

Fig. 5.2 Decision tree for single interments

decision for a specific interment type, while the skeleton position is decided either during the burial procedures or it may be predetermined by the gender or status of the deceased. Special body treatment can occur at various stages during this process. When displaying these decisions in tree diagrams (Figs. 5.2, 5.3, 5.4, 5.5, 5.6, and 5.7), a few special cases stand out:

- One secondary interment in an urn without signs of burning (Xichang Dayangdui DM2);
- One irregularly placed single interment (Yongsheng Duizi M10);

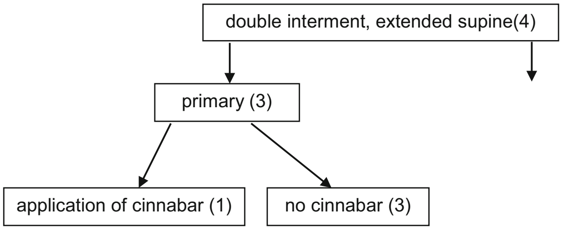

Fig. 5.3 Decision tree for double interments

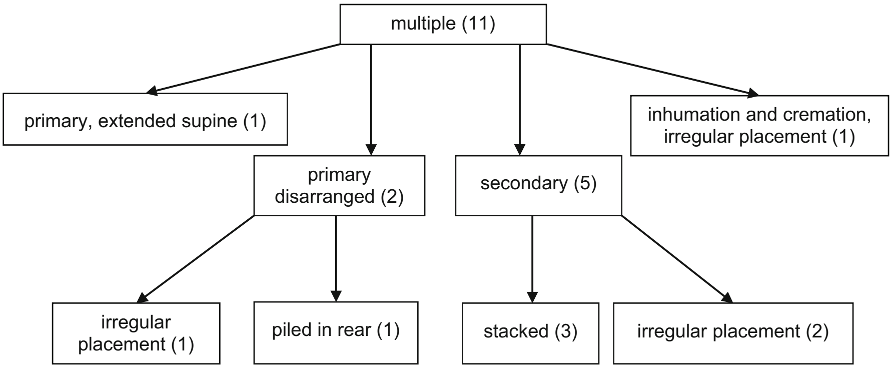

Fig. 5.4 Decision tree for multiple interments

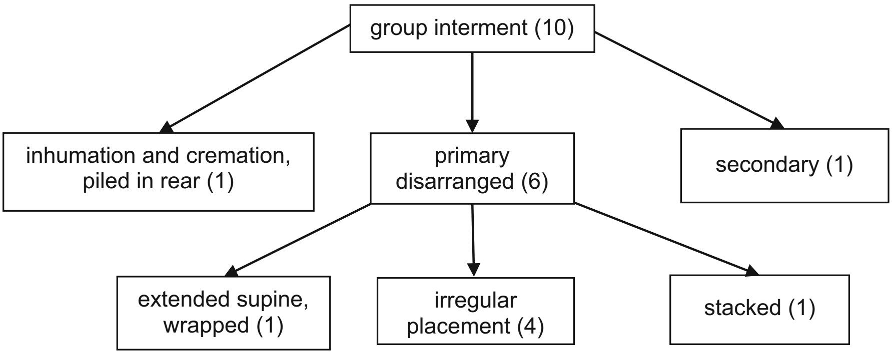

Fig. 5.5 Decision tree for group interments

- One multiple burial containing primary extended supine interments (Yanyuan Laolongtou M6);
- The rare combination of interments and cremation burials (Puge Xiaoxingchang AM1, Xichang Xijiao Gongshe M1, Yanyuan Laolongtou M9).

An urn containing a single human long bone was placed in the middle of the small megalithic grave Xichang Dayangdui DM2 but very close to two other vessels of similar form without any human remains. The report does not specify whether

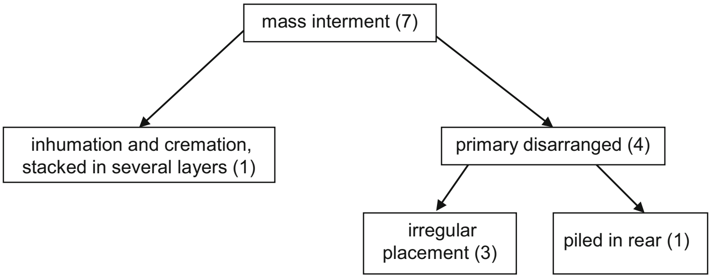

Fig. 5.6 Decision tree for mass interments

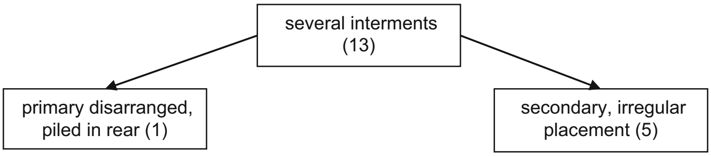

Fig. 5.7 Decision tree for several interments

there were burn marks on the bones, so this may be a case of missing information rather than a special form of burial. The same may apply to the irregularly placed single interment in grave M10 at Yongsheng Duizi, a site that has not been published in print.

Yanyuan Laolongtou M6 is a fairly large grave containing four skeletons and marked by a complex set of installations, objects, and ritual practices not common to other multiple interments. The overall arrangement of the four bodies in extended supine position with separate sets of assemblages is similar to primary double burials. It should therefore be dressed as a small-group interment rather than a mass interment. At Yanyuan Laolongtou M9, a single cremation occurred together with three inhumations with separate assemblages; this grave therefore likewise can be classified as a small-group interment. All other graves containing several skeletons reveal patterns of deposition and reopening similar to the large-group interments and can therefore be labeled as large-group interments, too. This applies also to the two cases of graves combining primary disarranged interments and single cremations (Puge Xiaoxingchang AM1, Xichang Xijiao Gongshe M1).

Overall, there are thus three behavioral groups:

1. Single interments without reopening of the grave;
2. Small-group interments probably without a reopening of the grave, burying all corpses at the same time either as primary or secondary interments; and
3. Interments of large groups of people in several instances of burial requiring a reopening of the grave or in one instance of secondary burial.

These three behavioral groups can be combined with a number of different forms of body treatment and other ritual acts (Fig. 5.8).

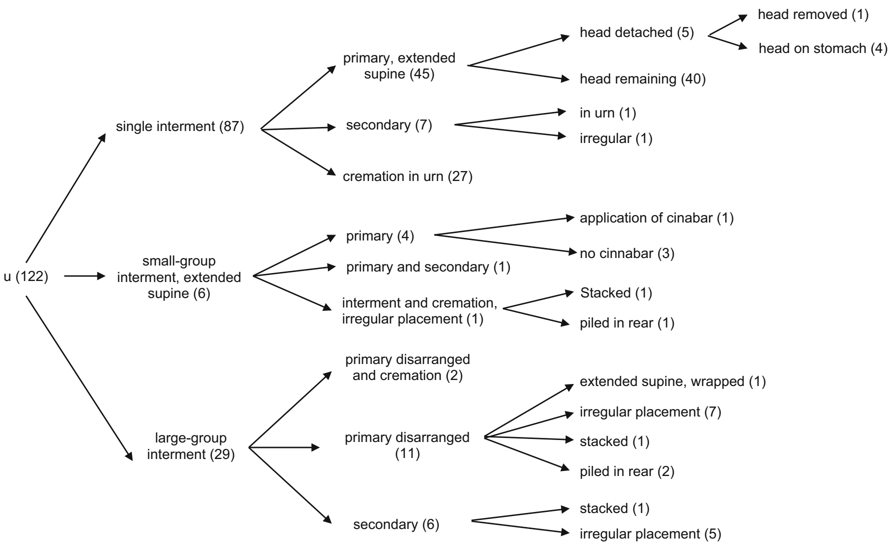

Fig. 5.8 Key diagram for interment behavior

5.2 Traces of Ritual Acts in and Around the Grave

A ritual is generally defined as a "religious or solemn ceremony consisting of a series of actions performed according to a prescribed order" as dictated by a tradition or community (Oxford Dictionaries 2010/2012). The term "burial ritual" is often used interchangeably with "burial custom," "mortuary practices," "funerary ritual," and "burial rites" (Sprague 2005: 2–4). These terms are very general and comprehensive, including all actions related to the "disposal of the dead," as Sprague calls it. Adopting this open definition, I am using the term ritual acts/actions to refer to activities in connection with the burial and/or the grave aside from the grave construction or the treatment and placement of the corpse. Such acts can take place before, during, or after the actual interment, and they are only partially traceable in the archaeological record. Visible traces are remains of food and animal offerings, fire treatment of bones and/or objects within the grave, offerings in the vicinity deposited either as *Nachgaben* in connection with the funeral or during later rituals, and finally traces of a reopening of the grave and/or rearrangement of the bones, either for later instances of interment within the same grave or for rituals connected with previous interments, e.g., on holy days or anniversaries or for other memorial services.

5.2.1 Animal Deposits and Food Offerings

As animal bones might be the remainders of food offerings or ritual animal interments, there is a certain overlap between the two categories; however, the part of the animal interred provides indicators as to the nature of the deposit (Table 5.9). Horse

Table 5.9 Animal bones and (other) food offerings in graves

Site	Horse bones	Other animal bones	Burn marks on bones	(Other) food items
Xichang Bahe Baozi M1				Calcinated rice husks
Yanyuan Laolongtou M4	2 horse skulls, 2 horse long bones, 1 lower palate bone of a horse, 1 horse skull bone			
Yanyuan Laonngtou M6	Yes	Unidentified		
Yanyuan Maojiaba M2	1 horse skull, long bones			
Yanyuan Laolongtou M7		Oyster shells, 10 sheep shoulder blades; other unidentified animal bones	Yes	
Yanyuan Laolongtou M9	Horse long bones	1 pig skeleton, chicken bones	Yes	
Yongsheng Duizi M49				2 eggs
Zhaojue Fuchengqu M3		Pig teeth		

remains occur only in the Northwest, mostly as a combination of 1–2 horse skulls and associated long bones. Similar deposits of animal head and limb bones—sheep/goat and bovine as well as horse—are known from graves and other ritual monuments of the Bronze and Iron Age Eurasian steppe (Allard and Erdenebaatar 2005; Fitzhugh 2003; Martin 2001; Wright 2014). In some Late Iron Age graves in Mongolia with favorable preservation conditions, it was observed that remains of skins wrapped around each animal's head or that the skin was spread out, the skull and hoofs still attached to it, while the meatier parts were missing (Martin 2001). The horse remains in the graves from the Northwest may have been deposited in a similar manner while the meaty portions were consumed, probably also in connection with the burial ritual.

In the Liangshan Region, the deposition of bones of animals other than horses in graves is equally rare and mostly occurs in the Northwest as well, mainly at the single cemetery of Yanyuan Laolongtou. These remains include pig bones, selected chicken bones (not equivalent to a whole chicken), deer antlers, unidentified animal bones, oyster shells, and sheep shoulder blades, many of them calcinated indicating ritual burning. While the antlers are an inedible part of the deer and therefore likely had a symbolic meaning, the other bones might have been the remainders of food offerings. The only instance of animal bone deposits outside of Yanyuan was reported from the Northeast, i.e., from the opposite end of the research area, where animal teeth (likely from a pig) were placed in the lower tier of a two-tier stone coffin. The excavators therefore interpreted the grave as symbolizing a house, the lower story housing the animals and the upper story providing space for the humans (Liangshan 1977), a not unlikely but hardly provable supposition. What can be said with a certain amount of certainty, however, is that there are various types of animal deposits in graves, some of them the remains of funeral meals, some food donations for the deceased, and others symbolic deposits of animals accompanying the deceased into the afterlife or playing some other role in the burial ritual. Considering that some of the horse heads may have been interred with the skin and hoofs attached to them, it is also possible that they were used in ritual processions or as part of the attire of a religious practitioner—resembling the dressing of so-called shamans in deer or bear hides with the animal's head attached to their own as it has been reported from Tuva, for instance (Hallowell 1926; Mikhailova 2006). The extensive use of animals in burial ritual, however—at least as far as it is reflected in archaeological remains—seems to have been a local particularity of the Northwest.

Given the poor preservation of bones in general, the absence of animal bones is not necessarily conclusive; nevertheless, where human remains were preserved we can assume that the bones of medium- to large-sized animals if present would have been observed as well. Of the 137 excavated graves with human remains only four held animal bones; the practice of animal or meat offerings on bones was thus not very common. Nonmeat food has been observed in only two graves in the Anning River Valley. Food offerings could also have been contained in vessels, but as no residue analyses have been conducted, this question must remain unanswered.

5.2.2 *Fire and Stone in and Around the Grave*

Ritual acts reflected inside the graves include traces of fire (burned earth, ash, charcoal, burn and scorch marks on objects, bones, and/or stone installations) and the arrangement of small stone slabs around bones or objects. Ash remains are very common (54 cases), exactly half of them being the remains of cremation that had taken place outside the grave. In all other cases, the ashes stemmed from the burning of objects, wood, or other substances, either inside or outside the graves. Where red-burned earth was present, we can be certain that burning took place inside the grave, apparently a rather common occurrence, especially in the megalithic graves of the Anning River Valley.[9] A particularly striking example of burned offering can be seen in Xichang Bahe Baozi M1, for instance, where a small pile of organic remains was found containing a mixture of burned black soil and calcinated rice husks, likely the remains of a ritual offering inside the grave.

Ash and scorch marks on objects were in most cases connected with calcinated bones, wood, red-burned soil, and or even bronze slag,[10] bearing witness to acts of

[9] Red-burned earth was observed in 14 graves: Miyi Wanqiu M2; Puge Xiaoxingchang M1; Luquan Yingpanbao M1, M2, M3, M4, M7, and M8; Xichang Bahe Baozi M1; Xichang Yingpanshan M1 and M2; Xichang Wanao M1; and Dechang Arong M1 and M4.

[10] Slag was observed in Xichang Wanao M2.

burning inside the grave. From the particularly well-reported megalithic grave Xichang Xijiao Gongshe M1, carbonized bones, objects, and traces of ash have been reported; the ash was distributed throughout the whole grave and some parts of the stone construction were positively scorched. The excavators suggested that these traces were left by torches and other light sources that people brought with them when entering the tomb (Liangshan 1983: 148). Similar scorch marks are known from other large megalithic graves, too, indicating that the entering of graves already closed by a covering stone was not uncommon.

Outside the Anning River Valley, instances of fire inside the grave are known mainly from the Northwest, most remarkably in Yanyuan Laolongtou M9, a grave reflecting complex burial rituals and containing among other things a stone frame enclosing fragments of a human skull, animal bones, ceramics, and bronze objects, all of them carrying burn marks. The stone frame itself did not carry burn marks, though, suggesting that these objects were selected remains of a cremation conducted elsewhere.

Another custom observed in a small number of graves is the placement of thin stone slabs under the head or pelvis of the deceased or next to the burial objects, a local custom observed only at the cemetery of Huili Fenjiwan in the Southeast.[11] These slabs may be seen as part of the internal grave installations or as part of the burial ritual. While these slabs are rare, many other graves in this cemetery contained one or two flat oval cobbles likewise placed under the head or in the pelvis area, indicating that both types of stone placement may have shared the same ritual function and/or religious meaning.

Another unique glimpse at actions taking place before the actual deposition of the body in the grave—apart from acts of cremation—is provided by the wooden fragments in the megalithic graves of Miyi Wanqiu in the southern reaches of the Anning River Valley. These fragments may have belonged to stretchers used for transporting the dead, suggesting that they were carried over a certain distance and with a "devise" that was subsequently left in the grave as a *Nachgabe* not fit for further use by living beings or during future burial processions.

5.2.3 Reopening, Reentering, and Reusage

Apart from torch marks, some graves also show other indicators of reopening or entering; these include the presence of several distinct layers of grave filling and interments, the crushing of bones beneath objects inside the grave, and the crushing of bones and/or objects by the closing stones. Of course, the reopening of a grave does not prove complete reentering, especially for graves with a height below 1.40 m and/or particularly long or narrow form. In those cases, accessing the rear

[11] In two of these graves, thin stone slabs were placed in the pelvis region (M12 and M40), and in nine graves slabs were found under the head (M13, M78, M87, M93, M95, M108, M110, M115, and M143). In one grave, M113, a small stone slab was placed upright next to a ceramic vessel.

part would have been particularly difficult, considering that the grave would have been filled with objects and at least bones if not bodies in different stages of decay.

For graves with clear traces of reopening, we can therefore imagine different scenarios of grave usage that can be separated into three main stages of:

1. Grave construction and usage;
2. One or several instances of reopening;
3. Final closing.

For step 1, there are four possible scenarios:

(a) Building the grave → first primary interment and rituals → placing cover stone →
(b) Building of the grave → placing of cover stone but entrance remains open → first primary interments and rituals → closing door →
(c) Building the grave → first secondary interment and rituals → placing covering stone
(d) Building of the grave → placing of cover stone but entrance free → first secondary interments and rituals → closing door →

For step 2, there are three possible scenarios:

(a) **|:** Later reopening of door on the side or front → complete entering → rearranging of previously interred bodies, making space for new interments → new primary or secondary interments and/or rituals → reclosing of door **:|** [12]
(b) **|:** Later reopening of door on the side or front → partial entering → pushing previously interred bodies to the rear → new primary or secondary interments and/or rituals → reclosing of door**:|**
(c) **|:** Later reopening of door on the side or front → no entering → pushing previously interred bodies to the rear → new primary or secondary interments and/or offerings → pushing related bones and objects inside → reclosing of door**:|**

What actually happened in any given case can best be ascertained by considering the following factors:

1. *Accessibility* (grave height, length, and width; presence/absence of a clearly identifiable doorway; size of door closing stones at door; percentage of grave above ground; presence/ absence of stairs);
2. *Content and internal organization* (bones or objects crushed under door, presence/absence of layers and their nature, objects and/or bones overlaying or crushing each other); and
3. *Bone findings* (interment type, skeleton position, number of skeletons, traces of rearrangement of the bones).

The third set of information is only available for the small number of graves with human bones recorded in detail, but content and organization are known for most

[12] Borrowed from music notation conventions, **|: :|** indicates the repetition of the section in between for an unknown number of times.

Table 5.10 Probability scale used to ascertain the likelihood for a ritual reopening of graves

Probability	With bones	Without bones	Unexcavated
High	12–17	7–10	5–7
Medium	6–11	6–4	3–4
Low	1–5	1–3	1–2
None	0	0	0

excavated graves, and accessibility can be ascertained for all graves whose construction has been reported in sufficient detail. With this in mind, we can calculate the degree of likelihood of reopening for each grave.

When assigning value points to each of the factors listed earlier and ranking all burials by number of points, the results are inconclusive for many graves. The main reasons are the unevenness of degree of excavation, preservation conditions, and reliability and extensiveness of the information published; and the assigning of the same value to each factor regardless of its importance. Part of the problem can be met by analyzing excavated and unexcavated graves separately and distinguishing between graves with and without human bones; additionally, each variable can be assigned a different value depending on its indicative power. Important factors receiving a higher value (two instead of one) are as follows:

1. The number of skeletons;
2. Signs of rearrangement of bones;
3. Bones or objects crushed under the door;
4. Several clearly identifiable layers containing bones and objects; and
5. The existence of a door.

The results are rated according to a scale that differentiates by state of excavation and presence/absence of bones (Table 5.10).[13] After this purely mechanical exercise of assigning scores to graves, I tested the result against the parameter of preservation condition, which can distort the picture considerably. Furthermore, I reread all reports carefully, searching for indicators for a reopening that might be decisive, such as a rearrangement of the bones or the crushing of bones or objects under the door. A grave's location relative to the surface is crucial as well: graves located below ground could not have been reopened without disturbing and altering the grave form substantially, which would have been noted in the excavation report. Theoretically, size could be an indicator as well, as burials of many bodies need more space; however, there are many examples to the contrary: the large graves at Yanyuan Laolongtou contain a maximum of only four skeletons and is very unlikely to have been reopened; in contrast, the small grave BM1 at Puge Xiaoxingchang measures only $1.05 \times 1 \times 0.9$ m but contains 82 skeletons. Therefore, size has to be

[13] The theoretical maximum number of points is 21 for excavated graves, but 17 is the maximum achieved by any grave; for excavated graves without human bones the maximum numbers are 15 and 10, and for unexcavated graves they are 9 and 7. For details on the point distribution consult the online material.

Table 5.11 Degree of likelihood of reopening of graves

Degree of likelihood of reopening	Count	Percentage (%)
High	188	17.72
Medium	111	10.46
Low	555	52.31
None	204	19.23
Unclear	3	0.28
Total	*1061*	*100*

disregarded. With these adjustments and controls, the original estimate of the likelihood of reopening for most graves can be confirmed, but some graves have to be reclassified (Online Material: Reopening).[14]

Overall, for about 1/3 of the graves, there is a high or medium likelihood of reopening, while for the remaining 2/3 of the graves the likelihood is low or nonexistent (Table 5.11). For the 31 graves that have likely been reopened or where the case is unclear, the object assemblages have to be treated with particular care, as it cannot be assumed that all objects entered the grave at the same time. In those cases, the grave cannot be treated as a “sealed deposit” or “closed find” in the sense of Montelius.[15] Where possible, I therefore split these assemblages by layers and/or location within the grave and investigate them separately (Chap. 6).[16]

5.2.4 Object Deposits Outside the Grave

Object pits and other kinds of deposits in the vicinity of a grave are important indicators for rituals conducted outside of the grave proper, be it before, during, or after the initial interment. As the surrounding of graves have not been surveyed systematically, it is difficult to ascertain how common such practices were. The few known cases are all connected with megalithic graves, mostly in the center of the Anning River Valley. There is only one singular case of a deposition of objects in the grave tumulus but outside the grave chamber; in the megalithic grave M10 at Xichang Tianwangshan, the grave chamber was devoid of objects, but the fill of the tumulus held two object deposits: a stone frame with four ceramic vessels inside and a separate deposition of nine ceramic vessels without stone installations around. All of the objects were complete and not intentionally destroyed or damaged. The overall placement suggests that

[14] Xichang Tianwangshan M10, and Zhaojue Qianjinshe M6 and M7 have to be placed into a new category labelled “unclear,” mainly because of poor preservation conditions; a considerable number can be moved into a higher category, and Zhaojue Watuo M1 has to be moved into a lower category.

[15] “Ein [geschlossener] Fund … kann als Summe von denjenigen Gegenständen bezeichnet werden, welche unter solchen Verhältnissen gefunden worden sind, dass sie als ganz gleichzeitig niedergelegt betrachtet werden müssen.” (Montelius 1903: 3).

[16] Layers and their content have been distinguished for Dechang Arong M1, M3, M4; Xichang Dayangdui DM1; Xichang Hexi Gongshe M2, M3; Xichang Wanao M1, M2; Xichang Xijiao Gongshe M1; and Xide Guluqiao M1.

the objects in the stone frame might have been offerings to the dead deposited after the closing of the grave but before finishing the tumulus (i.e., they were *Beigaben*); the other objects may have been the remains of rituals involving food and/or drink conducted either during or after the actual burial ritual, i.e., they were *Nachgaben*. Other tumuli may have contained similar depositions but as most of the covering earth had been destroyed, such objects would have been removed as well.

For separate object pits dug in the vicinity of megalithic graves, chances for preservation are significantly better. So far, three cases have been reported, all of them from the central Anning River Valley, always in close vicinity to megalithic graves.[17] The ceramics in the pits were neatly arranged, all of them complete vessels similar to those in the graves. It is therefore reasonable to suggest that all of these pits were offering pits connected with the megalithic graves. Liu Hong has suggested that the pits may have been created in connection with the reopening of the grave (Liu 2009: 91 f.), but in that case one would expect to find the objects inside the grave itself. These objects were thus either used in the funerary ritual itself or during later rituals connected with the grave, or they had been deposited as a gift for the deceased to be used in the afterlife or containing food provisions for them. If they had been used ritual acts, rendering them unfit for use in everyday life, one would expect that they would be ritually destroyed, but this was not the case. As the vessels are complete and undamaged, an interpretation as later gift for the deceased seems more likely.

The question remains why such object pits have only been reported from two sites. Liu Hong (2009: 92), until 2012 the head archaeologist of Liangshan Prefecture, suggests that the reason lies simply in a lack of appropriate field research: the ground around the other graves has never been systematically surveyed so that it is impossible to tell if there were similar pits close to other megalithic graves or not. The pits at Xichang Dayangdui were only discovered because the site erroneously had been classified as a settlement and was therefore extensively excavated, and at Xichang Maliucun the pit was found by accident by local peasants while the megalithic graves remain untouched until the present. With such large graves built in a community effort and usually holding a considerable number of skeletons interred over a long time span, it is reasonable to assume that further rituals were conducted around them, rituals which might have left traces to be explored in future systematic surveys and excavations.

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[17] One object pit was discovered at Xichang Maliucun and two at Xichang Dayangdui.

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Chapter 6
Providing for the Dead: The Object Assemblages

The third aspect constituting a burial besides the built structure of the grave itself and the remains of the interred are the objects accompanying him or her. The majority of excavated graves in the Liangshan Region contain objects, but the amount and reliability of information on the composition of the assemblages varies greatly from case to case: some were severely disturbed and only part of the original assemblage could be retrieved; others are insufficiently published, making it impossible to estimate the original number or combination of objects (Table 6.1). For an analysis of object combinations, only the 275 well-preserved and sufficiently published graves can be taken into consideration. Additionally, we have to take into account that some graves had probably been reopened, suggesting that not all objects may have entered the grave at the same time. Furthermore, some graves contained more than one skeleton and might therefore hold several separate assemblages. For ten of the 61 graves with multiple interments, the excavators reported the exact location of each object; we can thus distinguish between 30 assemblages from ten graves with multiple interments, which I investigate separately (Online Material: Assemblages).[1] Apart from objects clearly connected to a specific grave, surface finds at sites with disturbed graves are helpful in ascertaining the distribution of specific object types throughout the research area.

Considering the great variability in burial practices, preservation, and extensiveness of publication throughout the research area, different questions have to be answered based on a varying range of assemblages (Table 6.2). Before turning to complex issues concerning behavioral patterns of object depositions and their connection with other aspects of burial behavior, first the range of object forms needs to be assessed. In a second step, I turn to object treatment, placement, and artifact combination; in a third step, I then investigate the co-occurrence of various artifact types, grave constructions, body treatments, and other ritual acts.

[1] Layers and their content could be distinguished for Dechang Arong M1, M3, M4; Xichang Dayangdui DM1; Xichang Hexi Gongshe M2, M3; Xichang Wanao M1, M2; Xichang Xijiao Gongshe M1; Xide Guluqiao M1.

A. Hein, *The Burial Record of Prehistoric Liangshan in Southwest China*,
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Table 6.1 Amount of information on grave assemblages available from excavated graves ($n = 443$)

	Number	Percentage (of 405)
Graves without artifacts	38	N/A
Graves with artifacts	405	100.00 %
Severely disturbed	70	17.28 %
Insufficiently published	61	15.06 %
Well preserved and well published	275	67.90 %
Reopened	45	11.11 %
More than one skeleton	61	15.06 %

Table 6.2 Main research questions and range of material evidence used in answering them

Question	Range of material
Kinds of artifacts present in graves	All grave assemblages and collections from surface surveys, inclusive of single finds from graves (442 assemblages from 412+ graves at 79 sites)
Artifact placement	1550 artifacts from 152 graves from 19 sites
Artifact sets	Assemblages from well-preserved and well-published graves with single interments (220 graves); separate analysis of assemblages from graves with multiple interments were layers/assemblages could be distinguished (30 assemblages from 10 graves)
Range of artifact types present at different kinds of sites	All grave assemblages and collections from surface surveys, inclusive of surface finds and single finds from grave sites (442 assemblages from 412+ graves at 79 sites)
Co-occurrence of different artifact types	All graves with discrete but not necessarily complete assemblages (397 graves)

6.1 Object Forms and Technofunction

As pointed out by Brew (1946) and many other scholars (e.g., Adams and Adams 1991; Chang 1967; Read 2007), there is no single correct object typology for any given region or time period; nevertheless, typologies are not arbitrary but related to both material characteristics of the objects at hand and research objectives. When used as a scientific device for ordering excavated material, there may therefore be a need for several separate classification systems depending on the questions asked. The main concern at this point of the study is object function while development over time becomes relevant in the following chapter (Chap. 7). Function is a complex matter, especially if understood as referring not only to an object's utilitarian aspects, but also to its overall performance in society. Sackett (1977: 370) therefore distinguishes between *technofunction* (i.e., the utilitarian aspect), *sociofunction*, and *ideofunction*, all of which influence the artifact's overall form and design. Of these three, the technofunctional aspect is most easily observable and largely can be inferred based on object form. Socio- and ideofunction are less easy to discern.

In a previous study, I have suggested a typology for all objects from the Liangshan Region including settlement finds, grave assemblages, object deposits, and single

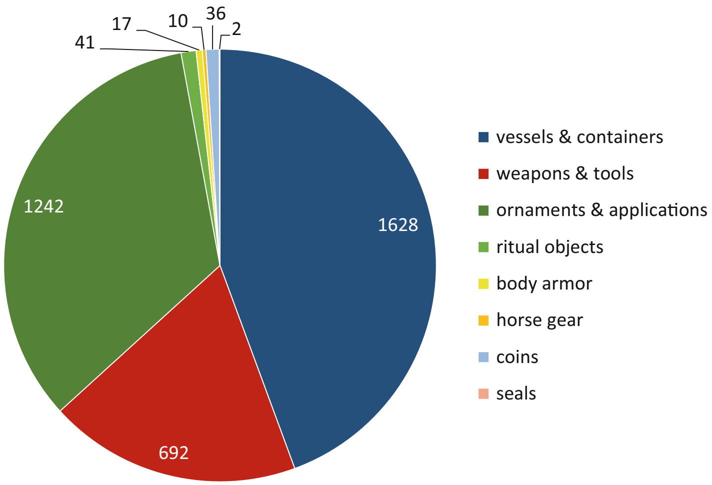

Fig. 6.1 Functional object types and their absolute and relative frequency of occurrence at grave sites (objects from 402 graves)

finds (Hein 2013). In this context, I conducted a first sorting by visual impression and then refined this initial classification through attribute clustering with the help of statistical analysis using variables influencing functionality such as lip angle for ceramic vessels or blade length for knives. In my previous study, I focused on regional differences in production and thus discussed the objects separate by raw material category; in this monograph, the main concern lies with behavioral patterns in burial contexts, and I thus concentrate on questions of function, both in grave contexts and in the previous uselife of the artifacts in question. As the raw material influences object production and form while intended function dictates raw material choice, I pay particular attention to the interplay of these three observable elements: form, raw material, and production techniques.

In the following, I introduce the objects separately by functional types in the sense of *technofunction* concentrating on basic object forms. In a second step, I discuss questions of socio- and ideofunction based on a combination of different attributes such as specific aspects of object form, material, placement, and signs of usage/alteration (Sect. 6.2). To highlight the particularity of the objects deposited in graves, throughout this study I compare object assemblages from graves and settlement sites.

The main functional object categories occurring in graves include various types of containers, weapons and tools, personal ornaments and clothing applications, body armor and horse gear, likely ritual objects and other, rarely occurring items such as coins and seals (Fig. 6.1). The main raw material types used in the production of objects found in graves are clay, followed by metal and stone; bone, tooth, shell, and other materials were used considerably more rarely (Fig. 6.2). The choice of raw material has functional as well as regional implications; both are explored further in a later part of this study (Sect. 6.2.1).

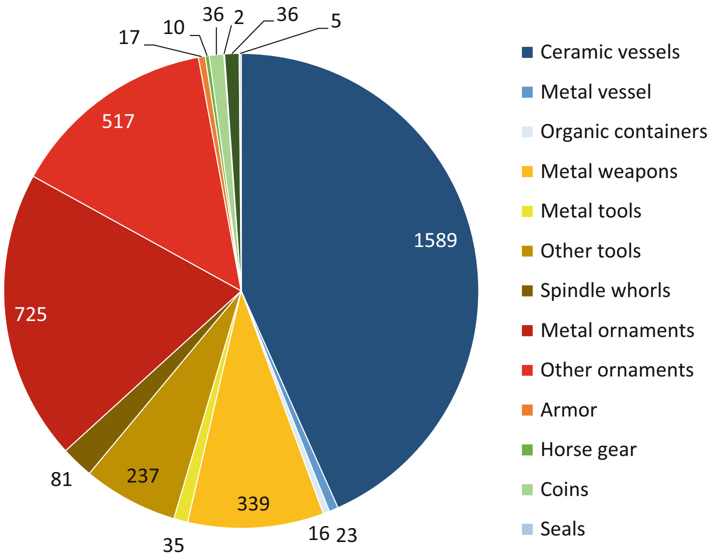

Fig. 6.2 Types of objects by technofunction and material occurring at grave sites (objects from 402 graves)

6.1.1 Ceramic Vessels and Other Containers

The majority of containers retrieved from graves consist of ceramic material while metal vessels and organic containers are very rare (Table 6.3).

6.1.1.1 Ceramic Vessels

Ceramic vessels retrieved from graves comprise 1589 objects. The main ceramic vessel forms include (Appendix: Plates A.1–A.8)[2]:

Urn (*weng/guan*): large vessel (height = 30–60 m) with a tripartite body, with restricted orifice, pointed-bottom form, wide shoulders, and small to medium-sized opening (Plate 1)

[2] For ease of reference to the Chinese literature, in the following, I am providing both the English terms for these objects and the Chinese equivalents. Throughout the remainder of the book, I use the English terms exclusively unless there are established Chinese terms such as *fu* and *mou* used for specific forms known from the Han-cultural realm. In cases where several Chinese terms are used for specific subforms of the same type, I am using a combination of Chinese and English terminology to distinguish between the different subtypes (i.e., *dou* goblet, *bei* goblet, and *gu* goblet).

Table 6.3 Main raw material types of objects in graves

	Count	Percentage (%)
Ceramics	1672	45.58
Metal	1215	32.99
Stone	468	12.76
Bone/tooth/shell	253	6.90
Other	65	1.77
Sum	*3673*	*100.00*

Jar (*guan*): medium-sized vessel (16–24 cm high, 16–21 cm belly diameter, 14–24 cm rim diameter, 6–11 cm bottom diameter) with a tripartite body, a large bottom, a wide opening, an upright ellipsoid body, an S-curved profile (Plate 1)

Single-handled, double-handled, and four-handled jar: same form as jars without handles but with outward-curving rim and of slightly smaller size (10–17 cm high, 8–13 cm belly diameter, 7–11 cm rim diameter, 4–9 cm bottom diameter) (Plates 2, 3, and 8)

Jar with horn-shaped handle: a low-recumbent ellipsoid body, a straight medium-high neck, and a horn-shaped upward-curving handle with pointed end attached to widest point of body (Plate 8)

Double jar: flat-bottomed jar (16–18 cm high, 6–7 cm rim diameter each, 9–12 cm bottom diameter each, 12–16 cm belly diameter each) with tripartite body attached at belly and rim with one or two handles (Plate 8)

Beaker (*guan*): small vessel (10–14 cm high, 6–9 cm belly diameter, 6–11 cm rim diameter, 4–8 cm bottom diameter) of a shape and size that can be held comfortably with one hand; three-partite with a wide mouth, flat bottom, and only moderately S-curved sides with an outward-curving lip (Plate 4)

Cup (*bei*): small to medium-sized vessel (6–15 cm height, 4–14 cm rim diameter, 3–12 cm belly diameter, 4–9 cm bottom diameter) with straight or nearly straight sides and flat bottom (Plate 4)

Closed bowl or ***bo*** **bowl** (*bo*): low vessel (4–7 cm high) that is wider than deep, with a height of 1/3 to equal the height of its maximum diameter, some specimens having a collar but never a neck, with straight or inward-curving rim; come in four sizes: small 6–10 cm, medium-sized 11–18 cm, large 20–26 cm, and very large ~30 cm (Plate 5)

Open bowl or ***wan*** **bowl** (*wan*): same as closed bowl but with outward-curving rim (Plate 5)

Basin (*pen*): shallow flat container with an open body, straight or outward flaring sides, and a height of 1/5 to 1/3 of its rim diameter (Plate 5)

Stemmed bowl or ***dou*** **bowl** (*dou*): comes in a variety of sizes (mostly 12–20 cm in diameter, 10–20 cm high) with a short stem (Plate 5)

Goblet (*dou*, *bei*, *gu*): high-stemmed vessel of medium size (10–20 cm height, 5–10 cm body diameter, 6–16 cm rim diameter, 4–8 cm bottom diameter) with a cup-, beaker-, or bowl-shaped body (Plate 6)

Ewer (*hu*): large (16–33 cm high, 10–20 cm belly diameter, 9–12 cm rim diameter, 5–10 cm bottom diameter) spouted vessel with a wide or trumped-shaped opening, a wide belly, a high neck, a flat or sometimes ring-footed bottom, and in some cases a handle (Plate 7)

Vase (*ping*): similar in shape with ewers but without a spout (Plate 7)

Vat (*zun*): high (8–17.3 cm high) straight-walled or nearly straight-walled coarse vessel, sometimes with a long thin band-handle reaching from one shoulder to the other (Plate 8)

***Fu* pot** (*fu*): large (height of 15–25 cm, a rim diameter of 11–22 cm, and a belly diameter of 18–27 cm) Han-style vessel with a round base, a deep rounded stout body, a short or constricted neck, and a medium-high angular outward-flaring rim (Plate 8)

***Mou* cauldron** (*mou*): similar to a pot but smaller (6–10 cm in height, 8–11 cm around the rim, and 8–13 cm around the belly) and with a ring handle on neck or shoulder (Plate 8)

Jars with and without handles are the most common type of ceramic vessels found in graves (Table 6.4). Depending on their size, such jars may have served as storage or serving vessels. Common are also forms that can be associated with eating and drinking, particularly goblets, vases, and bowls, as well as cups and ewers. Large vessels such as urns, particularly very large varieties such as Type A, and large jars without handles are very common in settlement sites (Hein 2015), but they can occur in graves, too, albeit rarely. Nearly all known specimens of high-collared jars of Type B—forms ideal for storage—were found at settlement sites. The vast majority of jar-like vessels employed in burials have curved outward-flaring or more rarely angular-everted rims indicating that they were used in a pouring motion, be it in drinking (for smaller specimens) or for transferring liquids from a larger vessel into a smaller one. Small or medium-sized jars (10–17 cm height) with one, two, or sometimes four band handles are very common in graves throughout the research area, but they only rarely occur in settlement sites. They have outward-curving rims as well and could have been used in serving or drinking.

Vase and ewer forms may have been employed for serving, transporting, or holding of liquids. All vases are high narrow in form with an S-curved body and flat bottom, but otherwise there is much variation in size and form. The majority of vases was found in graves, not at settlement sites, and they are of only medium size, some of them flask shaped, some with a shorter neck, but all with curved outward-flaring wide rims ideal for pouring. The ewers are specifically suited to the task of pouring liquids as well. The wide funnel-shaped opening on the top allows for easy filling without spillage, while the long spout of Types A and B and to a lesser extent C facilitate directed pouring into narrow vessels, maybe filling alcoholic or other beverages into various types of goblets or beakers, while the short spout on the globular vessels of type D would have been more suited for filling shallow drinking bowls.

Among bowls and basins, small open forms that could be used as shallow drinking vessels or single-serving food containers (i.e., *wan* bowls, *bo* bowls with straight sides and/or outward-turning lips, small basins of type Bb and C) are most

Table 6.4 Frequency of main ceramic types in graves and at settlement sites

	Grave sites		Settlement sites	
Object type	*Count*	*Percentage* (%)	*Count*	*Percentage* (%)
Jar	413	25.28	441	39.59
Single-handled jar	109	6.67	3	0.27
Double-handled jar	227	13.89	35	3.14
Four-handled jar	2	0.12	0	0.00
Jar with handles	7	0.43	8	0.72
Double jar	3	0.18	0	0.00
Urn	51	2.88	137	12.30
Vat	32	1.96	0	0.00
Cup	51	3.12	9	0.81
Beaker	73	4.47	3	0.27
Goblet	106	6.49	5	0.45
Ewer	50	3.06	3	0.27
Vase	126	7.71	16	1.44
Basin	10	0.61	2	0.18
Bo bowl	59	3.61	56	5.03
Wan bowl	103	6.30	18	1.62
Dou bowl	16	0.98	3	0.27
Fu cauldron	6	0.37	0	0.00
Mou cauldron	4	0.24	0	0.00
Lid	1	0.06	20	1.80
Object stand	0	0.00	2	0.18
Net weight	1	0.06	1	0.09
Spindle whorl	82	5.08	11	0.99
Pendant	2	0.12	0	0.00
Ram's head	1	0.06	0	0.00
Flat bottom	27	1.65	209	18.76
Ring foot	13	0.80	36	3.23
Pedestal base	28	1.71	18	1.62
Handle	7	0.43	53	4.76
Spout	0	0.00	12	1.17
Wall sherd	28	1.66	13	1.17
Sum	*1630*	*100.00*	*1114*	*100.00*

common; large and/or closed forms with inward-curving rims are rare. Other vessels likely used for drinking, including most types of stemmed goblets, beaker, cups, and stemmed *dou* bowls, as well as libation vessels such as ewers and vases, are common in graves and rare at settlement sites. *Bo* bowls are varied in size and form, but their high body and slightly inward-curved rim suggests that they may have held liquids but were not meant to pour them. All three bowl types vary significantly in size, from vessels of only 6–7 cm diameter and about 4 cm height, to large objects of 20–30 cm rim diameter and up to 12 cm height. While the larger vessels most likely have been used in serving or holding food with at least some liquid components, the small *bo* bowls with straight rim and the small *wan* and *dou* bowls with outward-flaring rims would be fitting drinking vessels.

Judging by their size, most goblets could have been used as drinking vessels as well, held in one or both hands. Especially for the long-stemmed types A, B, and C, a usage as personal drinking vessels seems probable: their everted rims, open body forms, and long narrow stems would allow for easy tipping, and their relatively small size enables easy handling. Type F, G, and H, although having a very short stem, are small enough to serve as drinking vessels, too. *Gu*-shaped goblets, on the other hand, are overly high and have a short squat stem and wide outward-flaring body, which changes the tipping point and pouring performance. These vessels might thus have been used for serving rather than for ingesting liquid. Moreover, type Ea goblets are similar in form to *gu*-shaped goblets and therefore probably similar in function.

Cups occur in a wide variety of types, with or without handles. The cups without handles bear some resemblance to beakers, but the cups have straight or only slightly curved sides, while the beakers have an S-curved profile. Nevertheless, the usage as drinking vessel might have been the same, because form, size (10–14 cm height, 5–12 cm rim, and 6–12 cm belly diameter), and the everted rim make these vessels into very handy mug-shaped containers. All vessels of this type have been retrieved from a small number of graves but so far they have not been found at settlement sites. Large, flat basins have been found only in graves as well; they likely held solid food meant as offerings.

Overall, the vessel forms observed in grave contexts thus indicate consumption of food and drink in single portions—be it by the mourners during the burial process or by the deceased in the afterlife—and potential (re-)filling from medium-sized vessels. These medium-sized vessels may also have been used for offering small to medium amounts of food and drink during the burial ritual or during festivities imagined to take place in the afterworld, but they were too small to contain large quantities of sustenance to be used by the deceased in the afterlife over a long period of time or for large feasts.

Material quality and details of production and decoration provide further information on potential object function. The ceramic material from Southwest Sichuan mostly consists of hand-thrown, low fired, sand-tempered, reddish-brown clay, and the objects are largely undecorated (Tables 6.5, 6.6, 6.7, 6.8, and 6.9). In contrast with ceramics from settlement sites, those found in graves are of higher quality, and

Table 6.5 Firing temperature of ceramic objects from settlement sites and graves

	Settlement		Graves	
Firing temperature	*Count*	*Percentage (%)*	*Count*	*Percentage (%)*
High	4+	15.38	332	42.46
Medium	4+	10.81	3	0.38
Low	32+	73.81	447	57.16
Sum	*40*	*100.00*	*782*	*100.00*

Table 6.6 Forming technique used for ceramic objects at settlement sites and graves

Technique	Settlement		Graves	
	Count	*Percentage (%)*	*Count*	*Percentage(%)*
Hand-thrown	38+	68.93	454	58.06
Fast wheel	13+	2.73	186	23.79
Slow wheel	0	0.00	8	1.02
Coil built	22+	30.78	7	0.90
Molded	0	0.00	1	0.13
Unknown	0	0.00	126	16.11
Sum	*73*	*100.00*	*782*	*100.00*

Table 6.7 Ceramic quality of objects from settlement sites and graves

Ceramic quality	Settlement		Graves	
	Count	*Percentage (%)*	*Count*	*Percentage (%)*
Fine clay	0	0.00	34	2.45
Clay	310	3.28	229	16.51
Coarse clay	0	0.00	1	0.07
Fine sand	0	0.00	41	2.96
Sand	5388	94.56	987	71.16
Coarse sand	0	0.00	95	6.85
Sum	*5698*	*100.00*	*1387*	*100.00*

Table 6.8 Color of ceramic objects from settlement sites and graves

Color	Settlement		Graves	
	Count	*Percentage (%)*	*Count*	*Percentage (%)*
Red	53+	19.00	284	21.95
Red-yellow	0	0	34	2.63
Red-brown	34+	12.00	345	26.66
Brown	44+	15.00	87	6.72
Yellow-brown	22+	8.00	41	3.17
Yellow	0	0	54	4.17
Gray	54+	19.00	157	12.13
Gray-brown	40+	14.00	168	12.98
Black	21+	7.00	86	6.65
Black-gray	54+	19.00	24	1.85
Black-brown	17+	6.00	14	1.08
Sum	*339*	*100.00*	*1294*	*100.00*

Table 6.9 Presence/absence of decoration on ceramic objects from settlement sites and graves

Decoration	Settlement		Graves	
	Count	*Percentage (%)*	*Count*	*Percentage (%)*
Decorated	715	12.54	416	26.18
Undecorated	4983	87.46	1173	73.82
Sum	*5698*	*100.00*	*1589*	*100.00*

Table 6.10 Types of decoration techniques used on ceramic objects from settlement sites and graves

	Settlement		Graves	
Decoration	*Count*	*Percentage* (%)	*Count*	*Percentage* (%)
Applique	114	15.94	97	17.73
Impressed	250	34.97	195	35.65
Incision	240	33.57	152	27.79
Cutting	4	0.56	7	1.28
Applique/incision	0	0.00	62	11.33
Applique/impressed	107	14.97	6	1.10
Incision/impressed	0	0.00	3	0.55
Cutting/incision	0	0.00	25	4.57
Sum	*715*	*100.00*	*547*	*100.00*

Table 6.11 Types of surface treatment used on ceramic objects from settlement sites and graves

	Settlement		Graves	
Surface treatment	*Count*	*Percentage* (%)	*Count*	*Percentage* (%)
Burnished	61	72.62	35	26.52
Black slip	22	26.19	89	67.42
Red slip	0	0.00	5	3.79
White slip	1	1.19	2	1.52
Glazed	0	0.00	1	0.76
Sum	*84*	*100.00*	*132*	*100.00*

surface enhancements are more common, especially burnishing and various types of incised and impressed decoration, showing a greater consideration for beauty and refinement in objects used in burial context.

The main decorative programs include water-ripple bands, bundles of horizontal or traversal lines, and complex patterns covering the shoulder or sometimes even the whole body of the vessel (Tables 6.10, 6.11, 6.12, and 6.13). Over one-third of all grave ceramics have been enhanced in this fashion, while at most settlement sites undecorated objects account for over 90 % of all material. The percentage of ceramics with a gray or black surface color is likewise higher for grave finds than for settlement ceramic, but red and red-brown ceramics remain in the majority, accounting for over 50 % of all grave ceramics. The percentage of high-fired ceramics is significantly higher in graves than at settlement sites; fine ware is more common, too, as are wheel-thrown vessels. In spite of all contrasts, ceramics from both graves and settlement sites are mostly made of hand-thrown sand-tempered ceramics fired at low temperatures, indicating that these technological characteristic may be a regional particularity.

There are some technological differences between vessel forms, some connected with differences in function, others reflecting regional or chronological particularities. Urns and large jars are exclusively made of sand-tempered ceramics fired at low temperatures in an oxidizing atmosphere (Table 6.14). Most goblets and about half of the

Table 6.12 Decorative programs used on ceramic objects from settlement sites and graves

Decoration	Settlement		Graves	
	Count	*Percentage (%)*	*Count*	*Percentage (%)*
Finger-tip impressed clay strip	32	9.52	3	0.38
Impressed leaf-vein pattern	82	24.40	132	16.60
Horizontal applique band	27	8.04	73	9.18
Vertical strip	0	0.00	5	0.63
Incised horizontal lines	53	15.77	113	14.21
Zigzag of points	0	0.00	7	0.88
Horizontal lines of points	53	15.77	40	5.03
Corded pattern	24	7.14	2	0.25
Incised net pattern	25	7.44	14	1.76
Water-ripple patter	8	2.38	110	13.84
Water-ripple bundle with application	0	0.00	59	7.42
Horizontal lines of pairs of points	0	0.00	0	0.00
Cut-out triangles	2	0.60	32	4.03
Incised traversal lines	16	4.76	85	10.69
Lying S application	0	0.00	10	1.26
Other applique	9	2.68	5	0.63
Incised horizontal lines with vertical application band	0	0.00	1	0.13
Large double spirals	0	0.00	2	0.25
Fish-bone pattern	5	1.49	13	1.64
Rows of triangles	0	0.00	10	1.26
Multiple complex patterns	0	0.00	76	9.56
Horizontal band of two points on top	0	0.00	2	0.25
Two points	0	0.00	1	0.13
Sum	336	100.00	795	100.00

Table 6.13 Decoration placement on ceramic objects from settlement sites and graves

Decoration placement	Settlements		Graves	
	Count	*Percentage (%)*	*Count*	*Percentage (%)*
Lip	23	6.84	4	0.56
Below rim	57	16.96	20	2.82
Neck	30	8.93	20	2.82
Shoulder	120	35.71	230	32.39
Body	51	15.00	108	15.21
Handle	0	0.00	86	12.11
Foot	4	1.20	90	12.68
Bottom	51	15.18	152	21.41
Sum	*336*	*100.00*	*710*	*100.00*

single-handled jars commonly occur in graves are made of clay-tempered ceramic material. As most of these goblets come from Huili, however, form and production techniques may be a regional particularity.

Table 6.14 Correlation between selected vessel types and ceramic quality (clay ceramics vs. sand-tempered ceramic material)

	Clay	Percentage (%)	Sand	Percentage (%)	Sum
Basin	2	12.50	14	87.50	16
Bo bowl	11	10.68	92	89.32	103
Wan bowl	11	8.80	114	91.20	125
Dou bowl	3	15.79	16	84.21	19
Cup	6	8.00	69	92.00	75
Goblet	82	76.64	25	23.36	107
Urn	3	4.35	66	95.65	69
Jar	53	14.13	322	85.87	375
Beaker	0	0.00	55	100.00	55
Guan	27	5.33	480	94.67	507
Single-handled jar	53	49.07	55	50.93	108
Double-handled jar	58	22.39	201	77.61	259
Jar with handles	1	9.09	10	90.91	11
Double jar	0	0.00	3	100.00	3
Four-handled jar	0	0.00	2	100.00	2
Handle	1	1.72	57	98.28	58
Ewer	5	14.71	29	85.29	34
Spout	1	11.11	8	88.89	9
Vase	20	14.60	117	85.40	137
Vat	0	0.00	29	100.00	29
Fu cauldron	2	28.57	5	71.43	7
Mou cauldron	0	0.00	3	100.00	3
Lid	0	0.00	17	100.00	17
Object stand	0	0.00	2	100.00	2
Drop-shaped pendant	0	0.00	2	100.00	2
Ram's head object	0	0.00	1	100.00	1
Net weight	0	0.00	2	100.00	2
Sum	*339*	*15.88*	*1796*	*84.12*	*2135*

All beakers from settlement sites are made of sand-tempered material, but beakers retrieved from graves mostly consist of fine clay. Here, the distinguishing factor is thus context of usage. *Wan* bowls are nearly exclusively made of low-fired sand-tempered pottery, but some of the *bo* and *dou* bowls are of high-fired fine ware. This is true mostly of *bo* of types E and F; they are no more lavishly decorated than their sand-tempered counterparts, and they come both from grave and settlement contexts. The differences in temper might thus have a regional or chronological explanation rather than a functional or ideational one.

The various types of cups—with or without handles—are largely undecorated and nearly exclusively made of sand-tempered low-fired pottery; they may thus have been everyday drinking vessels. The only exception are a few examples of types Ca and Cb, conical vessels of high-fired clay-tempered ceramic material found exclusively in grave and produced with greater care to be used in this ritual context. Vases and ewers—both forms largely reserved for burials—occur in various qualities and with a wide variety of decorative patterns or completely undecorated. These differences seem to be site or region specific as they do not tally with specific subtypes. The majority of double-handled jars are fired at a high or medium-high temperature, but there is considerable variety between different sites for all subtypes as well, indicating again spatial and temporal differences. These regional and chronological differences are discussed in detail later in this study (Sects. 6.2 and 6.3, and Chap. 7).

The majority of jars without handles are made of sand-tempered pottery with no clear correlation between the use of fine ware and specific pottery forms. The only exception are the small pitcher-like vessels of Type K, which are usually made of high-fired fine ware. Their red surface obtained through firing in a reducing atmosphere has furthermore been polished, giving the objects a beautiful luster, but also a greater material density that would have prevented liquid from evaporating or leaking. Here the same feature may have a practical and a decorative function.

All urns and the vast majority of large and medium-sized jars found in graves are made of low-fired sand-tempered ceramic material; additionally, they are often deliberately coarsened on the outside with a slip or corded-ware impressions and have knob handles or other additions for greater ease of handling. These likely storage vessels nearly exclusively occur at settlement sites, but have been placed in burials as well, in very few cases potentially as cremation urns, in others possibly for storing provisions for the deceased to be used in afterlife. Smaller jars of Types Cb, Cd, Da, on the other hand, are more finely made, have nice surface decorations, and were mostly found in graves. Although reported only from grave finds, vats also belong to the coarser medium-sized vessels with a likely utilitarian function, likely as containers or cooking ware.

Fu and *mou* vessels with their round bottom, globular body, and roughened surface in the lower part suggest an interpretation as pots; in the case of *fu*, this hypothesis is further confirmed by the large size of the vessels (up to 21 cm height and 26 cm belly diameter) combined with the mottled surface color and high-fired body. Nevertheless, all of these vessels were retrieved from graves, while unequivocal cooking equipment is missing from settlement sites.

6.1.1.2 Containers Made of Metal or Wood

In graves, *fu* pots and *mou* cauldrons occur in bronze and ceramic material. Other bronze vessels include single- and three double-handled jars, *pen* basins, and fragments of a basin of unclear form (Plate 8). These vessels were cast in complex molds and the handles—where present—were cast on in a second step. The cauldrons, jars, and basins are very similar to the ceramic counter parts, albeit a little larger; only the *fu* pots are completely different. Of very large size (20–21 cm height, 28–33 cm belly diameter, and 22–25 cm rim diameter) and characterized by a squat recumbent-ovoid body and a high collar, they resemble undecorated inverted drums more so than ceramic vessels. Considering their size and rarity, these metal vessels therefore likely had a special function that went beyond being mere containers. This impression is confirmed by the fact that one basin found in a grave in Zhaojue in the Northeast was wrapped in fine cloth. Form and quality of the basin furthermore identify it as likely Han import, and the other metal vessel forms closely resemble Han forms as well, making them special and distinct from ceramic vessels.

Wooden vessels have been reported only from a single grave in the Northwest, Ninglang Daxingzhen M5; the wooden assemblage of this grave consists of a small high-stemmed bowl with a straight rim, a pointed lid, the bottom of a quiver with remains of other organic material attached to it, a long stick with perforations on both ends and in the middle, and an oval object with extended sides (Plate 8). The stick might have been part of the quiver construction or it may have served for stiffening some other kind of textile or leather bag. The oval object might have been the bottom of an organic container whose other parts had disintegrated. Other graves at the same site did not contain any similar objects, indicating that they were rarely used as grave goods even here. At Yanyuan Laolongtou, i.e., less than 50 km northeast of Ninglang, graves M6 and M11 both revealed tree-bark containers. The one in M6 was placed on the divider between the two halves of the double grave and held an assortment of small tools and particular stones; the tree-bark object in M11 was found near the right hip of the deceased and held severely fragmented bronze and iron objects whose original form remains unclear. Both items might therefore have been bags holding tools and other small items such as talismans that the deceased carried with them on the belts. In a number of graves throughout the research area, arrowheads, small stone and metal tools, and coins were found in the pelvis area of skeletons, indicating that they were either worn on the belt or carried in pouches as well.[3] Organic containers might thus have been rather common, but they are difficult to trace in the archaeological record.

6.1.2 Weapons and Tools

Weapons and tools found at grave sites in the research area comprise 697 objects and fall into the following main functional categories and types (Plates 9–15):

Weapons: *jian* sword/dagger, scabbard tip, *mao* spearhead, *ge* dagger-axe, butt of *ge* dagger-axe, *yue* axe, *qi* battle-axe (Plates 9–12);
Woodworking tools: *fu* axe, adze, chisel (Plate 13);
Fishing and hunting tools: arrowhead, net weight, fish hook (Plate 14);
Agricultural tools: sickle, spade;
Percussion tools: chopper, pestle (Plate 15);
Grinding tools: grinding rod, grinding slab, handstone (Plate 15);
Clothes-production tools: spindle whorl, needle, awl (Plate 14);
Multi-purpose tools: knife, cutter, burin, flake, microlith.

[3] Examples include Xide Lake Sihe M1 and M5, and Zhaojue Chike Boxixian M3.

Most of these object types occur either in stone or wood exclusively but some—mainly arrowheads, axes, adzes, knives, and clothes-production tools—can be made out of stone, metal, or in some cases wood, bone, or ceramic material. Most types of stone tools have been observed in both graves and settlements, but metal weapons are usually only found in graves (Table 6.15), or—unfortunately—on the antiquities market. Indeed, the majority of metal weapons and tools known from the research area were retrieved from the antiquities market in Yanyuan (315 objects) and from surface collections at grave sites in Yongsheng (Longtan: 52 objects; Laoying: 20 objects), both of them in the Southwest. Based on form, material composition, and technical details, I have shown that most if not all of these objects came from looted graves in and around Yanyuan (Hein 2014). Nevertheless, as the context is lost, objects from the art market cannot provide answers on questions of assemblages, co-occurrence, or function of specific objects in graves. In this study, I therefore focus on finds whose original place of deposit is known, including surface finds from grave sites and single finds with known geographic location.

While stone items have been found throughout the research area, the majority of metal weapons and tools were found in Yanyuan, Ninglang, and the Southeast.[4] In the Northwest, metal objects are distributed widely over a number of sites, but a few graves are particularly richly equipped while others hold but one or two metal objects or none at all. In the Southeast, only the single site of Huili Guojiabao held a considerable number of metal objects, while at all other sites they were but single occurrences. Graves in other parts of the research area hold only very few metal weapons, and metal tools are overall rare. By absolute number, weapons and tools made of stone, bone, and clay are rarer than those made of metal, but they are more evenly distributed throughout the research area with no locational bias for any specific region.

6.1.2.1 Metal Weapons

Swords, daggers, and spear heads, all of them made of metal, are the most common types of undisputable weapons (in the sense of objects with a form that is meant to harm or damage objects, structures, or peoples) found in graves in the research area. In excavation reports, long double-sided blades are usually referred to as *jian*, i.e., swords or short swords, but some of the shorter varieties are more likely to have been used as daggers. In many cases, the swords retrieved from graves have been too poorly preserved to assess length and distinguish securely between sword and dagger. Furthermore, the Chinese-language reports do not distinguish between the two and in some cases report the presence of *jian* without describing their length or form any further. I therefore distinguish between three categories: sword (including short swords), dagger, and sword/dagger as combined category for all objects where it was not possible to distinguish between the two (Online Material: Objects). Swords as

[4] 54 objects come from graves at Yanyuan Laolongtou, 52 from surface finds at Yongsheng Longtan, and 64 from surface finds at Huili Guojiabao.

Table 6.15 Weapon and tool types in graves and settlement sites (697 objects from graves and 1240 objects from settlement sites)

	Graves		Settlements			Graves		Settlements	
	Count	*Percentage (%)*	*Count*	*Percentage (%)*		*Count*	*Percentage (%)*	*Count*	*Percentage (%)*
Weapons	**205**	**29.41**	**0**	**0.00**	**Percussion tools**	**17**	**2.44**	**133**	**10.73**
Sword, metal	80	11.48	0	0.00	Chopper, stone	10	1.43	83	6.69
Yue axe, metal	22	3.16	0	0.00	Hammerstone	0	0.00	50	4.03
Ge dagger-axe, metal	15	2.15	0	0.00	Pestle, stone	7	1.00	22	1.77
Butt of *ge* dagger-axe, metal	3	0.43	0	0.00	**Grinding tools**	**44**	**6.31**	**65**	**5.24**
Mao spearhead, metal	83	11.91	0	0.00	Grinding rod	29	4.16	13	1.05
Qi axe, metal	1	0.14	0	0.00	Handstone	14	2.01	25	2.02
Scabbard tip, metal	1	0.14	0	0.00	Grinding slab	1	0.14	27	2.18
Fishing and hunting tools/weapons	**202**	**28.98**	**86**	**6.94**	**Clothes production tools**	**101**	**14.49**	**45**	**3.63**
Arrowhead, metal	126	18.08	0	0.00	Spindle whorl, ceramic	94	13.49	8	0.65
Arrowhead, stone	66	9.47	56	4.52	Spindle whorl, stone	2	0.29	20	1.61
Arrowhead, bone	5	0.72	0	0.00	Needle, stone	2	0.29	13	1.05
Arrowhead, wood	2	0.29	0	0.00	Needle, bone	0	0.00	4	0.32
Fish hook, metal	1	0.14	0	0.00	Awl, stone	3	0.43	0	0.00
Net weight, stone	0	0.00	28	2.26	**Multi-purpose tools**	**78**	**11.19**	**355**	**28.63**
Net weight, ceramic	1	0.14	2	0.16	Knife, metal	63	9.04	0	0.00
Woodworking tools	**46**	**6.60**	**543**	**43.79**	Knife, stone	11	1.58	195	15.73
Fu axe, metal	17	2.44	0	0.00	Drill, stone	0	0.00	7	0.56
Axe, stone	15	2.15	231	18.63	Burin, metal	1	0.14	0	0.00

Adze, stone	7	1.00	194	15.65	Cutter, stone	1	0.14	4	0.32
Chisel, stone	5	0.72	96	7.74	Flake	1	0.14	57	4.60
Chisel, metal	2	0.29	0	0.00	Microlith	1	0.14	21	1.69
Agricultural tools	**2**	**0.29**	**17**	**1.37**	Scraper	0	0.00	71	5.73
Shovel	1	0.14	13	1.05	*Sum*	*697*	*100.00*	*1240*	*100.00*
Plow	0	0.00	2	0.16					
Sickle, metal	1	0.14	0	0.00					
Ring stone	0	0.00	2	0.16					

defined here are double-edged weapons for thrusting or cutting that consist of a distinct blade and handle and measure over 30 cm in length (mostly 40–60 cm) including a handle of 7–8 cm length and 3–4 cm width. The handle measurements for daggers are naturally similar but the overall length can be as short as 12 cm and sometimes a little over 30 cm, blurring the boundary between swords and daggers at least in measurements. What distinguishes a sword is that it may be used for cutting while a dagger is used exclusively for thrusting. By far the most common are varieties with a three-pronged hilt, torqued hyperboloid handle, oval pommel, and protruding middle ridge on a willow-leaf shaped or triangular blade (Type A). They appear in short forms that were likely used as daggers (dagger Types Aa and Ab) and long versions that are clearly swords (sword Types Aa, Ab, and Ac). Additionally, a few daggers were found that were very flat and coarse and did not have a protruding middle ridge or torqued handle but instead showed decoration that imitated such protrusions in the form of incisions (dagger Types Ac). These items had been cast in single-sided molds and showed clear traces of the casting process that had not been removed. These objects were thus probably produced specifically for the grave, serving as *mingqi* but not as real weapons. Specimens with a double-circle pommel and a very straight form are all short, suggesting a use as daggers (dagger Types B). This type of objects is less common than the sword/dagger variety with three-pronged hilt; all other forms are positively rare and have been reported only from a small number of sites (sword Types B and C; dagger Types C, D, E, F, and G).

In most cases, both blade and handle are made of bronze (65, 81.3 %); some swords/daggers are composite weapons with an iron blade and bronze handle (13, 16.3 %), and two specimens were made completely of iron. The handles of most swords/daggers were decorated, and the protruding points, lines, and spirals would have ensured a firm grip, quite apart from being decorative. The torqued form and point patterns might also mimic organic bands coiled around or applied to a handle that originally consisted only of a narrow stem. The round or rhombic indentation at the end of many pommels might also be a "typological rudiment" of partially organic/partially metallic handles held together by a nail or thorn at the end.[5] Other handle forms are clearly decorative in nature; all decoration motifs were cast and in some cases refined by hand to remove unwanted edges left by the casting process.[6]

One blade fragment was made by forging, but most swords/daggers were produced from double-sided molds with some reworking of the blade and edges. The few swords/daggers made from single-sided molds (21, 19 %) were rather coarse in quality and the traces of the casting process mostly had not been removed. These objects were thus probably produced specifically for the grave, serving as *mingqi* but not as real weapons. In spite of sometimes very complex decorative patterns, the quality of the material and workmanship for all kinds of swords/daggers is

[5] For an explanation of the term "typological rudiment" (typologisches Rudiment) consult Eggers 2004: 94ff.

[6] Decorative additions include the scale-like motifs on fish-tail shaped handles on type D daggers, the double-circle pommel with concentric lines of type B daggers, or the horse-head shaped pommel of type E daggers. Purely decorative are also the various geometric patterns on the sword guards of many types, and even more so the blade decoration on a small number of type D and E daggers consisting of geometric or animal designs.

rather coarse. Furthermore, only one single sword of type A shows clear signs of wear on the blade. It is therefore likely that these items were purely decorative or symbolic in function. Further indicators of the presence of swords/daggers either made of organic material or in symbolic representation are scabbard tips, all of them made of bronze and carefully worked.

Similar to swords and daggers, *mao* spearheads are very common in graves. They have a hollow socket with our without two small loops on the side, a flat-rectangular handle, or a massive round socket, while for the blade willow-leaf, narrow willow-leaf, long oval, small broad leaf, and rhomboid forms can be distinguished. The shorter varieties were probably indeed used as spears while the longer varieties are more likely to have served as lances. The vast majority of spearheads are made of bronze and had likely been mounted on wooden staffs whose fragments can sometimes be found in the shaft. The few specimens made of iron (16, 19.3 %) differ in form from their bronze counterparts. Most of them have a massive round or flat-rectangular socket and only rarely a hollow socket without side loops, while the blade form can differ. Most spearheads were cast in double-sided molds, but three bronze specimens of type B and type C seem to have been completely or partially forged.

The spearheads vary widely in size with no apparent correlation to any of the types distinguished here. Decoration is very rare, occurring on only eight bronze and two iron specimens. The blades of some spearheads of type Ab or Ac carry an oval decoration field filled with triangles, and a few staffs of type A or B spearheads show incised or protruding horizontal lines. While less decorative, the spearheads are of higher quality than the other weapons introduced so far and might have been used for practical and not just symbolic purposes. A further indicator for the presence of either spears or other objects with a long wooden handle are two hollow conical metal points of about 3 cm diameter found in graves—one of them made of bronze, the other of iron—that might have been mounted at the end of such long staffs.

While swords, daggers, and spearheads are clearly weapons used against other human beings, arrowheads, knives, and axes might serve as weapons or tools or both. As arrowheads very often occur in settlement sites as well, I classify them as fishing and hunting tools; knives are clearly multipurpose tools and are therefore discussed separately. Stone axes only rarely occur in graves but are very common in settlement sites; among metal axes we can distinguish between the straight-sided *fu* axes that are similar in form and size to stone axes, mostly roughly made, and undecorated, thus suggesting the use as tools, and the shouldered *yue* and the round *qi* axes that tend to be larger, of higher quality, and often decorated, suggesting a use as weapons or items of representation. *Fu* axes may thus be addressed as tools and *yue* and *qi* axes were likely weapons, as were the *ge* dagger-axes which tend to be even larger and more elaborately decorated.

Just as a sword, the *ge* dagger-axe or halberd has a double-sided blade, but it is hafted in a perpendicular fashion. *Ge* are thus short with a wide flat butt, a blade that is wide outward flaring toward the hilt, and a clear break between butt and blade. The butt is always rectangular in form and usually has one large perforation in the middle for hafting. The hilt or blade can also be perforated to help secure the weapon on a wooden handle. Both sides of the blade are usually evenly curved and the tip is wide and rounded. They come in three sizes, most commonly of medium length or more rarely particularly long or somewhat shorter.[7] The smaller versions have a very narrow blade, were produced in a single-sided mold, worked from only one side, and are very coarsely made, indicating that they might be symbolic in nature rather than objects of actual use. They can therefore be placed in a separate group of *mingqi ge* dagger-axes.

Except for the *mingqi*, all dagger-axes have been cast in double-sided molds, worked from both sides, and are of medium quality with no traces of use-wear. Some are decorated, mostly on the blade with a sunk-relief pattern of concentric circles and squares in a triangular frame with curved sides following the shape of the weapon. Additional to complete dagger-axes consisting of butt and blade, three separate butts of dagger-axes have been found that show no traces of a blade. All of them have elaborate symmetrical geometric patterns within a rectangular decoration-field with one W-shaped side. It is unclear if the blade of these weapons was destroyed in some fashion or if the butt was meant to stand alone, serving as *pars pro toto*. In any case, the elaborate ornamentation on the separate butts as well as on many full weapons shows their decorative and/or symbolic function.

The *yue* axes are shouldered, hollow, and were mounted on a wooden shaft. They can have a round, oval, long oval, or spade-shaped blade, round or angular shoulders, a short or high neck, and an oval, rectangular, or biconvex cross-section. Y*ue* axes are between 7 and 12 cm long, 4 and 8 cm wide at the blade, and 3 and 5 cm around the handle. Some *yue* axes are decorated, mostly with the protruding horizontal double lines or with bridge-shaped protruding lines or double spirals.

The single known *qi* axe is a very finely worked object consisting of a completely circular blade with narrow-trapezoidal haft and an intricate incised design showing a snake, combined with two protruding parallel horizontal lines on the haft. This lavish design combined with the round blade, which would make it rather useless as a tool, testifies to the symbolic function of this object. All other metal axes with their simple and fairly standardized form, limited decoration, but good technical execution, could have been objects of actual use; nevertheless, macroscopic observations do not reveal any traces of use-wear.

6.1.2.2 Fishing and Hunting Tools

Likely fishing and hunting tools comprise arrowheads, net sinkers, and a single bronze fish hook found at Yongsheng Duizi. About 2/3 of all arrowheads found in graves were made of bronze, nearly 1/3 was made of stone (mostly fine slate), and

[7] Most dagger-axes have a length of 23–28 cm and a width of 7–10 cm, the butt usually being about three times as long as the blade. Only very few weapons are as long as 29–33 cm or as short as 16–20 cm.

a few were made of bone or wood. All types of arrowheads made of all kinds of materials occur at both settlement sites and in graves with no noticeable difference in execution or choice of material. Overall, arrowheads fall into two main categories with several subtypes: stemmed (type I) and not-stemmed (type II) with a staff-shaped, leaf-shaped, lanceolate, triangular, of fish-shaped body with or without wings. The measurements are rather similar throughout all types: 4–5 cm length, 1–2 cm width, 0.2–0.3 cm thickness. There is a clear preference for certain materials for specific types (Appendix Table B.5). Wooden arrowheads always have a long stem and narrow shape, a form that would give them more force and allow them to penetrate a target in spite of the softer raw material. Such arrowheads likely were meant for use on very small game such as birds. The preference for narrow staff-shaped forms with stemmed bone arrowheads might have a similar functional explanation. Bronze arrowheads usually have a stem as well but a slightly wider blade.

Considering the usual form of molds in which arrowheads are made—large molds making about a dozen arrowheads at a time, all of them connected at the stem and forming a tree to allow for easy pouring and distribution of the molten metal—stemmed arrowheads are the natural choice. Stone arrowheads without a stem are easier to make and less prone to breaking than stemmed ones. The correlation between specific forms and certain kinds of raw material can therefore easily be explained by practical concerns of production and/or usage.

Indicators for fishing are mainly net weights made from ceramic or stone material. Both varieties are very common in settlement contexts but so far only a single ceramic net weight has been found in a grave. Stone net weights are usually oval flat cobbles with indentations pecked into the middle of both long sides, giving them a kidney shape. The objects are very smooth, probably made from naturally smoothed river cobbles that did not require any further grinding or polishing. The ceramic net weights are oval in form and smaller than their stone counterparts. All net weights show striations and signs of damage over the whole object, indicating rough handling. The material chosen for the stone specimens tends to be tough, i.e., igneous rock, limestone, or sedimentary rock with a high silica content, which can withstand such treatment. The ceramic material is porous and only coarsely made. The single bronze fish hook that was found so far was forged, not cast, as is more natural for such an item.

6.1.2.3 Woodworking Tools

Not surprisingly, woodworking tools (axes, adzes, chisels) occur much less frequently in graves than in settlement sites and in much smaller numbers, and the few known metal specimens were all found in graves. Metal and stone *fu* axes differ slightly in form. The metal varieties are rectangular, long trapezoidal, or short trapezoidal, with straight or slightly concave sides, convex or straight blade, oval, biconvex, or trapezoidal cross-section and sometimes simple line decorations. Most are cast from double-sided molds and of fine to medium quality; only one particularly small and coarse one is forged and two are made of iron but otherwise do not differ in form or workmanship from the bronze varieties.

Stone axes are on average similar in measurements to the metal axes but there are a few particularly large and a few particularly small specimens. They are rectangular, long rectangular, trapezoidal, or triangular in forms, with a convex or straight blade, concave, convex or straight butt, and straight or concave sides. Most form types known from settlement sites are also represented in graves, but axes retrieved from settlement layers are often made of coarse material and only roughly made, while with axes from graves material and execution are particularly fine (i.e., ground very smooth) and special material (nephrite, quartzite, very fine igneous rock) and color (gray-green, white, yellow) was chosen instead of coarse igneous rock, basalt, gabbro, or serpentinite. The same applies to stone adzes and chisels. The adzes from both graves and settlements are smaller than axes.[8] The forms are rectangular, long rectangular, trapezoidal, or triangular with straight, convex, or slightly curved blades, straight or slightly curved sides, and a concave, convex, or straight butt. Chisels are more thoroughly ground than either of the other two types, but for objects found at settlement sites only up to 2/3 of the object surface had been ground down, while most objects found in graves had been smoothed allover. Chisels vary widely in size. All chisels are flat and thin, with a very thin, long blade, and a straight or slightly curved working edge, but they range widely in size without any discernible patterns in size distribution. The objects are made of slate, fine igneous rock, serpentinite, very rarely high-polished chert or nephrite, and sometimes tough forms of sedimentary rock. Apart from stone chisels, two metal chisels have been reported from graves. Both were finely made and placed together with other small tools; they may thus have been personal tools used for a variety of functions, not only wood working. In any case, the fine execution and high-grade material of potential woodworking tools found in graves suggests that they had a special symbolic function and were not mere items of general practical use.

6.1.2.4 Agricultural Tools

Objects clearly identifiable as agricultural tools are rare even at settlement sites, comprising a few potential shovels, plows, sickles, ring stones, and knives that may have been used as harvesting tools. In graves, apart from knives more correctly addressed as personal multipurpose tools, the excavators could only identify two potential agricultural tools, an iron shovel and a bronze sickle. Judging by the form, the item addressed as a sickle by the excavators was indeed likely a sickle, but no drawing or description of the iron shovel has ever been published and the original object was lost; its actual form and function are therefore questionable. Overall, agricultural objects are thus rare to nonextant in graves.

[8] Adzes measure $7.1 \times 4 \times 1.3$ cm on average instead of the roughly $11 \times 6 \times 4$ cm common for axes.

6.1.2.5 Percussion and Grinding Tools

Percussion and grinding tools made of stone that might be linked to food preparation and/or various production activities are likewise rare in graves with the only exception of grinding rods; these are fairly common in graves but rare in settlement contexts. These grinding rods are either narrow-oval or leaf-shaped in form, have a flat-oval, D-shaped or nearly rectangular cross-section, a flattened or rounded tip, and measure 12–18 cm in length and 2–4 cm in width. All specimens show striation and wear on one side and in some cases also on the tip, indicating a sliding motion. About half of the grinding rods are perforated at one end, and the hole was in all cases drilled from both sides. The resulting hole is fairly narrow, indicating that a string or strap was drawn through it. As nearly all of the grinding rollers were found in graves and usually in the hip area of the dead, it is likely that they were fastened on a belt or kept in a pouch. The object form and degree of use-wear suggest that in life these grinding rods might have been used for sharpening tools or weapons; their placement in graves indicates that they had become part of the attire of a certain group of people that could not be removed after death, making these objects *Mitgaben*. All specimens were furthermore made of highly polished, very homogenous, smooth, dark-gray material, which might have been chosen not only for its mechanical properties but also for its visual appeal. It is also remarkable that nearly all perforated grinding rods were made of slate or shale, while the unperforated ones consisted of sandstone, gneiss, or other sedimentary rock. There also seems to be a regional component at play: the perforated grinding rods mainly were found in the southern part of the research area and the unperforated ones in the center.

Other types of grinding and percussion tools found in graves are pestles, handstones, grinding slabs, and choppers. They are very common in settlement sites and occur in a wide variety of forms, but they only rarely were found in graves. Similar to grinding rods, pestles are long oval, but they are larger and heavier, with one wider, convex end, and measure $14 \times 5 \times 3$ cm on average. All specimens are made of fine igneous rock, sandstone, limestone, or other heavy sedimentary rock that does not break easily and allows developing considerable force in striking. These objects could have been used in food processing but also in other kinds of production activities, and stand therefore between the two categories of processing and production tools.

Choppers may likewise be used as processing or production tools. They are coarse tools that can be hand-sized or larger, and mostly measure around 7–12 cm in both length and width and a thickness of 3–6 cm, lending them a square or round shape and a noticeable weight. Choppers are usually made of igneous rock, making them hardly decorative but very sturdy.

Handstones and grinding slabs are made of sandstone or more rarely igneous rock, granite, or gneiss, all materials with a coarse surface adequate for abrasive work. The grinding slabs are fairly large and oval, round, rectangular, or trapezoidal in form.[9] Only one grave held a grinding slab, fittingly associated with a hand stone,

[9] They are mostly 10–28 cm long, 4–20 cm wide, and 2–5 cm thick.

but several other graves revealed handstones without such a grinding slab. These stones are usually oval or rectangular with one side flattened by grinding. They vary in size from small stones that easily fit in the palm of one hand to large specimens that would have required the use of two hands. Their function in grave contexts would be either symbolic, reflecting part of the buried individuals' identity or occupation in life, or meant to be used in the afterlife. They may thus have been *Beigaben* or *Mitgaben*.

6.1.2.6 Clothes-Production Tools

It is very likely that in grave contexts clothes-production tools took on a symbolic meaning. Stone or ceramic spindle whorls are equally common in settlement sites, but in graves ceramic specimens have been found considerably more often; indeed, ceramic spindle whorls are about ten times more numerous in graves than at settlement sites. They are small perforated disks of 2–5 cm diameter and a height of 0.8–1.8 cm that can be low or high disk shaped, high trapezoidal, or rarely pill shaped, rhomboid, or octagonal in form. Apart from single pill-shaped and octagonal varieties, all types occur both in settlements and graves, both in fine ware and coarse sand-tempered material. Needles and awls made of stone and bone are equally rare in graves and at settlement sites, and they do not differ much in form or execution between the two contexts.

6.1.2.7 Multipurpose Objects

Multipurpose objects that may have been as weapons or tools comprise knives, cutters, burins, flakes, and microliths. The function of the single small long-pointed metal burin, termed *kedao* by the excavators, is not quite clear. It narrows toward its slightly convex tip, has a rectangular cross-section, and was probably hafted by winding organic material around the lower part of the object. It may have served in a variety of tool or object production processes.

Only very few settlement sites in the research area hold microliths; it is therefore even more surprising that a single microlithic scraper, a flake tool, and a few small amorphous quartzite stones that may have served as raw material for microlithic industry or as talismans of some kind, have been reported from graves. They may have been part of tool sets belonging to the personal equipment of the deceased, i.e., *Mitgaben*. Cutters and knives are easier to explain in their practical function. A few cutters—very thin, small rectangular objects made of finely ground and polished yellow-green sandstone—were found in settlement sites and in one grave. Similar to the microlith and flakes, they may have belonged to a personal tool set.

Knives of either metal or stone are much more common than simple cutters. The forms differ quite substantially between metal and stone specimens. *Per definitionem*, a knife is a single-bladed short cutting tool and often has a handle. The stone knives found in the research area do not have a handle, but the metal knives usually consist of a handle and blade made in one piece. Stone knives from graves and settlement sites are largely identical in form; only the sickle-shaped types—so clearly identifiable as agricultural objects both by their form and the sickle gloss on their blades—have exclusively been found at settlement sites. All stone knives are fairly thin, well polished, measure on average 11 × 4 cm, and were mostly made from fine gray slate. The majority of stone knives are half-moon shaped, long oval, or more rarely two-point shaped and mostly perforated with one or two holes that are aligned parallel to the rim. A string drawn through these holes and attached around the wrist would have allowed for a secure grip in cutting. In this fashion, they could also have been attached to a belt and worn on the body. Even the items from graves all show striation marks from cutting and sharpening and are chipped in places, indicating that they were much used and might have accompanied the dead as part of their attire, i.e., as *Mitgabe*.

Only one known bronze knife is D-shaped with a single perforation, thus imitating the stone knives. All other knives consist of a clearly articulated metal handle and metal blade, and the different types and subtypes differ in handle and pommel form, as well as in the shape of their back and blade, all of which can take on a wide variety of forms.[10] Some (9, 14.3 %) carry simple line decorations but most remain undecorated. The majority of knives are long narrow in form, and bronze blade and handle mostly are made from one piece.[11] The few iron knives are usually straight, very narrow, and often overly long. For a number of iron knives, no handle has been preserved, suggesting the use of organic material. There are also two composite knives consisting of an iron blade and a bronze handle; both are ring-headed knives. Most knives (all iron and composite objects as well as 70 % of the bronze specimens) are of coarse quality, made from single-sided molds, and embellished with decoration on only one side. All knives with double-circle pommel and a few examples with a trapezoidal head are significantly more refined in craftsmanship, probably made from double-sided molds, and embellished on both sides. One of them also shows clear signs of wear and resharpening, while for the other specimens no clear traces of use-wear have been reported. As these nicely worked knives were all found very close to the skeletons in graves, mostly in the hip area, it is reasonable to assume that they belonged to the personal attire of the deceased, making the knife a *Mitgabe*. The coarse, unused knives, on the other hand, had likely been produced specifically to be used in the burial context; also similar in form and placement to the other knives, they were thus *Beigaben* rather than *Mitgaben*.

[10] The main forms are ring-headed, round-oval pommel, rectangular with perforated end, plain rectangular, double-circle pommel, trapezoidally widening head, trapezoidal handle with concave end and long-rectangular holes in the middle, slightly rounded end, flat round pommel.

[11] Most knives measure 15–30 cm in length, and 2–3 cm in width, with a ratio of blade to handle of 1.8:1 to 3:1.

Table 6.16 Materials used for making personal ornaments and clothing applications

Material	Number	Material	Number	Material	Number
Metal	744	Bronze	698	Agate	85
Stone	226	Iron	16	Turquoise	117
Bone/tooth	200	Gold	23	Nephrite	5
Shell/snail	65	Silver	7	Other stone	19
Frit	25	*Sum metal*	*744*	*Sum stone*	226
Ceramic	3				
Wood	2				
Sum	*1261*				

6.1.3 Personal Ornaments and Clothing Applications

Personal ornaments and clothing applications occur throughout the whole research area but they vary greatly in form and number by both region and grave type. This kind of objects can be made of a wide range of different materials, most commonly metal, but also stone or more rarely other material (Table 6.16). We can distinguish four main categories of ornaments (Plates 16–19):

Rings: bracelets, finger rings (Plate 17);
Ornaments worn around the neck: chains, pendants, beads (Plate 18);
Hair and head ornaments: hair needles, combs, spirals (Plates 16 and 19);
Clothing elements: buttons, belt ornaments, belt buckles, clothing applications (Plate 16).

6.1.3.1 Rings Worn on Arms, Fingers, or Ears

Bracelets made of metal (12 iron, 4 silver, and 220 bronze) are somewhat different in form and types from those made of bone or wood.[12] All metal bracelets are gilded and they fall into the two main types of open (Type A) and closed (Type B) forms; some are thin and flat, others high and flat, others ring shaped, and there are also a few torqued rings, all of them open, and a few particularly broad, wrist-guard like specimens that are all closed. Overall, open forms are more common than closed forms, and ring-shaped bracelets outweigh all other types. Less than a third of all metal bracelets (73, i.e., 31 %) were decorated, and all of them were made of bronze. Most common are simple application points as well as protruding horizontal bands. A pair of points or bands are often used as end- or closing-decoration (likely to cover

[12] For bracelets, the two terms of *zhuo* and *huan* are used. Technically, a *zhuo* should have a round or oval cross-section while a *huan* should be a flat, middle-perforated disk, but in excavation reports and secondary literature alike, the two terms are used largely interchangeably. I therefore use the term “bracelet” for all kinds of band- or ring-shaped ornaments of an appropriate size to have been used as arm-decoration.

the place where the ring was closed) and can be combined with other decorative elements. The broad cylindrical objects of thin bronze that have been classified as "wrist-guard like" (Type Bc) are all densely covered in decoration, both protruding and incised. These bracelets are broad enough to be part of an archer's wrist-guard and might thus have both a decorative/symbolic and a practical function.

Bracelets of bone (13), nephrite (1), and wood (3) have been reported from nine graves and are thus rather rare. They may be thin or broad, open or closed. All bracelets are carefully worked, and the wooden bracelets, which are naturally the thickest, have furthermore been decorated with cut-out surface-covering half- and full-circle ornaments.

Other kinds of open or closed decorative rings include finger rings of bronze (all of them forged), silver, iron, or bone. A few rings have a small multipart chain attached to the side that ends in a small flat-oval disk. Additionally, a number of small closed bronze rings with round cross-sections have been found that are too small to be actual bracelets, but too wide for finger rings. Depending on form and construction, I have classified this kind of object as "decorative rings" of the following two subtypes: earrings (Type A), and rings of unclear function (Type B). Slit rings (*jue*) made of bone or more rarely nephrite may have been worn as earrings as well.

Additionally, there is a group of flat closed rings made of bronze, bone, or nephrite. They have usually been labeled "*huan*," a term derived from jade objects from the Central Plains. Most of these rings have a collar protruding from the inner rim (Type B), and more than half of the bronze collared rings are decorated with incised nested zigzag lines. The production technique for these objects is unclear, but both mold casting and forging or a combination of both is conceivable. The decoration is very intricate and consists of thin lines and points that are most likely to have been incised rather than molded. The nephrite specimens are larger than the bone specimens (outer diameter: 9–10 cm vs. 2.5–5.3 cm; inner diameter: 6–7 cm vs. 1–3.1 cm). For all of these objects, the function remains unclear. The same applies to the *huang* ring segments made of bone or stone. They are flat, perforated on one or both ends, and of medium size (outer diameter: 1.8–5.5 cm; inner diameter: 2.6 cm; thickness: 0.1–0.3). They were single- or double-perforated on one or both ends and may thus have been part of a chain or clothing decorations.

The same applies to the thin metal application bands that have been reported from the Northwest. They were forged and then decorated by cold-needle incision and cutting.[13] Some had hooks, a trapezoidal thickening, or holes at both ends that might have served for fastening the band to some kind of organic material, or they may have served as clothing or object applications. In any event, they most likely had a decorative or at most apotropaic/symbolic function.

[13] These bands are all equally thin, measuring only 0.1–0.3 cm in thickness, but they differ widely in all other dimensions. Some are short gold strips of only 6.2 cm length and 1.9 cm width with incised curved lines. Others are long bronze bands of sometimes over 50 cm length and a width of 1–2 or 3–4 cm.

6.1.3.2 Ornaments Worn Around the Neck

One of the most common kinds of personal ornaments found in graves are beads and pendants. The beads fall into three size categories: short (height: diameter <1), medium (height: diameter = 1–2.2), and long (height: diameter >2.2). They are tubular with convex, straight, or rarely concave sides, rhombic, double-oval or double-round, drop-shaped, or cowrie-shaped. Tubular beads with straight or convex sides are by far the most common. Bone is the most commonly used material in bead production, closely followed by various types of stone; frit, bronze, and especially organic beads are rare (Appendix Tables B.6–B.8). The most common stone material used is turquoise, followed closely by agate, while nephrite and unidentified blue stone are less common. Agate was mainly worked into small, short tubular beads with convex or straight sides (Type Aa), while tubular forms with straight sides occur less frequently. For turquoise, both high and squat varieties of tubular beads with straight sides are common, both of them of larger dimensions. For nephrite and blue stone, the numbers are too small to determine any regularities.

Bone beads are very common, but the majority of specimens was found strung on four chains, which skews the numbers significantly. When omitting these chains, medium-sized tubular beads with straight sides (Type Bb) are the most common, followed by small short beads of the same form (Type Ba). The beads found strung on chains, however, are mainly of the second type or of a different form with round sides and medium height (Type Ab). Frit beads are mostly of medium size and tubular form with straight sides with fairly regular dimensions, measuring 1.5 cm in length and 0.8 cm in outer diameter. Since they come from the same grave of Xichang Xijiao Gongshe M1, it can be assumed that they all belonged to a single chain or other ornament. Also the majority of the bone beads have similar dimensions, and those coming from a single grave might thus have formed a set as well.

Five complete chains have been reported, consisting of bone beads, perforated animal teeth, cowrie shells, or a combination thereof.[14] As the majority of all other beads was concentrated in five graves, it is reasonable to assume that most of them originally belonged to similar chains and only few occurred as single beads or pendants.[15] Pendants of different material assume widely different shapes. Shell

[14] One chain consists of 200 flat bone beads with convex sides, each bead measuring 0.4–0.7 × 0.1 cm (Type Aa); another chain contains over 130 perforated animal teeth (Type Ab); one short chain consists of nine double-oval beads (Type B); and two other chains consist of a large number of tiny flat-cylindrical bone beads (over 50 and over 130, respectively, measuring 0.4 × 0.5 cm each) combined with a small number of cowrie shells (Type C).

[15] These graves are Huili Guojiabao M2 with its combination of 44 turquoise (type Bc), one nephrite (type Aa), and two agate beads (type Bb), Xichang Wanao M2 with 34 bone (type Ab) and two agate bead (type Bc), combined with a triangular stone pendant, Xichang Xiaohuashan M1, with the 25 nearly identical frit beads, one bone bead (type Ab), and one tusk ornament (type Cd), Yanyuan Laolongtou M4 with 10 agate (type Ac), three turquoise (type Da), and 20 bone beads (type Bb), as well as M11 from the same site with 39 agate (type Aa) and two turquoise beads (type Da).

(either cowrie or shell) and tooth ornaments (all of them suid-tusks perforated at several points) are largely only perforated and therefore rather unified in form and execution, while the extensively worked stone and bone pendants differ greatly in shape and size. Pendants of bone and stone can be rhombic, needle shaped, or triangular. Additionally, there are two tear-drop shaped ceramic objects that might be pendants as well. A single tubular perforated glazed ceramic object was found in the head area and has therefore been referred to as "ear pendant" (*liuli erdang*), but the item might also have been part of the headgear or a pendant.

6.1.3.3 Hair and Head Ornaments

Hair and head ornaments found in graves were mainly made of bronze and more rarely bone. They include decorative combs, hair needles, and round ornaments. The decorative combs—referred to as hair ornaments (*fashi*) or hair pins (*faji*) in the excavation reports—are all made of metal and consist of a usually lavishly decorated head plate and mostly 3–5 needles. The most common decoration motives are small knobs in combination with incised triangle-, line-, and net-pattern, often enclosed in a frame. There is some difference in quality of execution and density of decoration between coarse examples with less decoration and finely made specimens with a pattern so dense that it resembles a weaving pattern. The combs were probably produced in single-sided molds and later embellished with cold-needle impression and incision techniques.

Besides decorative hair combs with large head plates, there are also a number of hair needles made of bronze or bone. The bronze needles were made of casting and partial or complete forging. All bone and most bronze specimens consist of a single straight needle with one tip and an oval, trapezoidal, circular, or horizontally attached sun-ray shaped head. Some are decorated with cut-out triangles or holes in the head plate; others carry protruding points or spiral incisions, but none of them are lavishly decorated. The needles measure usually 6–7 cm in length and many have been found in the head area, identifying them as hair ornaments. Some, however, were found in between the bones and might thus have served as clothing needles.[16]

6.1.3.4 Clothing Elements and Other Decorative Items of Unclear Function

Likely clothing elements—all of them made of metal—include belt hooks, other belt parts, and various part of clothing application. The belt elements are oval or rectangular plates, some of them with hooks identifying them as belt hooks. They are sometimes associated with hollow box-shaped objects open on two sides that

[16] Twelve circular bronze ornaments of 4–5 cm diameter from Xichang Xijiao Gongshe in the central Anning River Valley have been classified as head gear because they were found near a skull. One of them was decorated with incised spirals, another was gilded, but no pictures, drawings, or other details on their form have been published, so it is impossible to describe or classify them more precisely.

were probably belt ornaments. All belt parts are made of bronze, either by casting or forging or a combination of both techniques, and one belt hook was additionally gilded. All are decorated, usually with incised lines following the form of the object, concentric circles, half-circles, and/or triangles and sometimes protruding points within a decoration field. As most of these elements came from only two graves and one single find, it can be assumed that they belonged to three separate belts. Only two belt hooks consisting of an oval plate and a curved hook and one with a tiger-shaped head differ significantly in form and decoration and were not associated with other clearly identifiable belt ornaments. They are furthermore covered with intricate patterns and generally of high quality.

Additionally, a large number of decorative metal applications of various forms have been found, some of them potentially also belt ornaments, but most were likely clothing applications or decorative parts of horse gear. Most of these applications are round, with diameters of 3–5 cm and a thickness of 0.3–1 cm, but some varieties can be as large as 7.3 cm in diameter. Some have anchors, a ring on top, and/or wheel-, spiral-, or star-shaped patterns on top. These button-shaped ornaments are usually referred to as *koushi*, *paoshi*, or *paoding* in the excavation reports, but without consistent differentiation between the three terms. Given the sometimes complex form with protruding or deepened anchor and the sometimes intricate patterns with protruding and deepened decoration in the same field, these objects were likely produced in a combination of molding, forging, and cold- or hot-needle incisions, and embossing.

Other potential clothing applications include various kinds of small biconvex or wave-shaped objects with an open bottom and one or two thorns, presumably for attaching to organic material. Both types were incised and made in a combination of casting, forging, and incision. The moderate size of these applications, their small thorn-shaped anchors, and their occurrence in groups of 13–51 objects suggest that they were clothing applications or buttons, possibly on mantles or other larger garments. Many other types of small sheet-metal forms with or without anchor likewise occur in groups of 10–15 similar objects and sometimes show traces of organic material, indicating that they were garment or object applications.

Singular small bronze objects include an intricately decorated box-shaped object, a flower or butterfly ornament with four perforations showing that it was probably sewn onto organic material, two wheel-shaped and one double-peaked ornaments incised with spoke lines, a long-handled paddle-like undecorated object, fragments of one U-shaped and one curved ornament, as well as other unidentifiable fragments, some of them decorated with incised lines, circles, and triangles. Furthermore, fragments of two small gold objects—possibly earrings—and two small iron objects have been reported, but their original form is unclear. Additionally, two small ring-handled mirror-like flat round objects of 3 and 4.9 cm diameter, respectively, have been found, one of them incised with line decoration. Given their size, they can hardly have served as mirrors, but they may have been pendants or applications. Ritual uses also could be imagined.

6.1.4 Body Armor and Horse Gear

Another kind of personal attire in the widest sense is metal body protection, mainly arm guards and body armor (Plate 15). The fragments of body armor retrieved from graves are usually not well preserved and the original forms are often unclear. The body armor consisted of several metal sheets of oval, round, or trapezoidal form attached to leather or cloth, as the multiple perforations on the edges suggest. The same applies to the arm guards, which consist of 3–5 roughly trapezoidal parts with holes around the rim. Both kinds of protective gear are made of thin forged bronze plates sometimes incised with fish-bone zigzag or other geometric designs.

A few graves furthermore contained round bronze objects with a thorn on the underside; the smaller varieties (8.2–8.3 cm diameter) with short thorns (Type A) may have been horse head ornaments, but the larger (15 cm, Type B) and very large (35 cm, Type C) varieties with longer middle thorns are more likely to have been shield bosses. Unambiguously identifiable parts of horse gear include horse-bits (Type A), cheek-pieces (Type B), and strap-crossing pieces (Type C). The horse-bits are always undecorated, but the cheek-pieces and strap-crossings usually carry incised decoration of concentric rhombi or spirals. All horse gear elements were made of bronze. Type B and C were probably cast, but the horse-bits might have been forged or torqued.

6.1.5 Potential Ritual Objects and Other Items

Apart from object with easily recognizable practical function such as containers, weapons/tools, or personal ornaments, some graves contained objects which may have served ritual purposes (Plates 20–21). This includes ten high-quality mold-cast bronze drums that can be categorized according to the bronze-drum typology established for the material from Yunnan and Southeast Asia.[17] They include several varieties of the *Wanjiaba* type (Types A and B) and the *Shizhaishan* type (Type C) and are decorated with geometric motives or intricate anthropomorphic and zoomorphic patterns. The drums were cast in the piece-mold casting technique.

The other type of musical instruments of likely ritual function found in the research area are bronze bells. The *bianzhong* bells have a long oval downward-narrowing body, a thick ring-shaped handle, and have been produced in double-sided molds in relatively high quality; however, six of them have been found in a single pit at Huili Zhuanchangba and only one was retrieved from a grave at Yanyuan Laolongtou. *Ling* bells are considerably more common in graves. They are very small (2.7–7 cm in height, 2.3–3.7 cm in width), coarsely made, and of oval shape with a ring handle on top and sometimes sound-holes and/or a tongue inside. Most *ling* bells are undecorated; only a few have been incised with horizontal lines. Made of double-sided

[17] See Li and Huang (2008), Li Weiqing (1978), and Zhongguo (1988) for further details.

molds, these small bells are very coarse. As they were mostly found in the hip or pelvis area of the deceased and poorly preserved, it is reasonable to assume that they were part of the personal attire rather than ritual objects used during the burial ceremonies. As small bells are a common part of the attire of shamans as known from Central Asia, these objects might nevertheless have had a ritual rather than a decorative function (Walter and Fridman 2004: Vol. 1, p. 60; Eliade and Trask 1964). The same may apply to the small mirrors mentioned earlier.

Other objects with potential ritual significance are staffs and staff heads, as well as large bronze plates or tables with animal figures, all of them made of bronze and at least partially forged and incised. Unfortunately, nearly all of them have been retrieved from the antiquities market in Yanyuan but in such large numbers that they cannot be completely ignored. It is remarkable similar objects are unknown from other parts of Sichuan or Yunnan and that they are furthermore of very low quality and a composition that indicates local production (Hein 2014). The staff heads known so far vary in height between 8 cm for the small varieties and over 20 cm for the large tree-shaped staff heads, and the 2-dimensional versions are usually as thin as 0.3–0.4 cm. Some staff heads are decorated with lines following the object form or additional horizontal, concentric, or wheel-shaped incisions. While the three-dimensional objects of type A and B have probably been cast in double-sided molds, the tree- and bird-shaped ornaments might come from single-sided molds. That the borders have not been smoothed indicates that these objects were produced specifically for the occasion of the burial. The few known complete staffs were more carefully made. Bronze plates (probably tabletops) and tables are generally more finely executed, indicating a somewhat longer uselife and/or greater importance of these objects.

A type of likely ritual objects found exclusively in graves are round to slightly oval stones of 6–7 cm diameter placed in the leg or foot area of the deceased. They were reported only from graves in the southern part or the research are, while the even more frequently occurring flat oval cobbles placed in the head or pelvis area of the deceases were mainly found at the cemetery of Huili Fenjiwan in the Southeast. These cobbles are fairly homogenous in measurements (7–14 × 5–10 × 2–4 cm) and were made of smoothly ground yellowish-gray sedimentary rock of local origin, probably river cobbles smoothed by water and not by humans.

One grave also revealed a small fragment of low-fired clay of irregular, vaguely triangular shape that has been described as “ram’s-head shaped ornament” (*yangshou xingshi*), but the form is so crude that it is impossible to ascertain if this was really the remnant of a figurine.

The function of coins and seals (*Beigabe, Mitgabe*, or *Zeremonialgerät*) is likewise uncertain (Plate 20). The coins are round with a square middle perforation and protruding characters reading either *wuzhu*,[18] *daquan wushi*,[19] or *banliang*.[20] These coins have been produced by mold casting and can be clearly dated by their

[18] First issued 118 BC, but continued over 700 years.

[19] Dates to AD 9–14.

[20] Used from 221 to 118 BC.

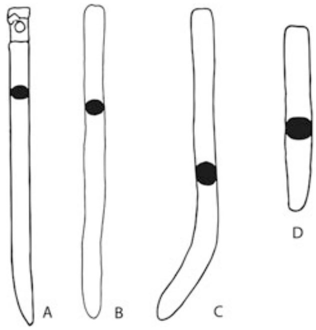

Fig. 6.3 Types of nails: Aa: YLLM4.4, Ab: YLLM6.43, B: YLLM7.6, C: YLLM7.4 (Liangshan and Chengdu 2009: Figs. 7.3, 16.6, 27.5–8)

form and cast-on inscriptions. The large number of coins discovered at smelting sites in the South shows that at least some are local products.

Small seals made of bronze with a ring handle on top are a rare occurrence. They measure $1 \times 1 \times 0.7$ cm, are square in form, and have geometric and line incisions on top but no characters or signs on the bottom, marking them as imitations or *mingqi* for burial purposes.

The nails in a small number of graves at Yanyuan Laolongtou, on the other hand, are likely to have had a very practical function (Fig. 6.3). Undecorated and coarse but of sturdy quality, they were found lining the inside border of graves, indicating the former presence of a wooden coffin. The nails are oval, round, or triangular in cross-section, usually made of bronze and in one case iron.

6.2 Indicators for Socio- and Ideofunction

Besides their likely technofunction that can be inferred based on object forms and raw material types, objects found in graves naturally have a special function in the burial context. As established in Chap. 2, the objects associated with graves include: (1) actual grave goods meant for the use of the dead in afterlife (*Beigaben*), (2) personal belongings (*Mitgaben*), (3) grave furnishings, and (4) objects and materials used in the burial process (*Nachgaben*). But it is often not easy to ascertain the actual function of each individual object in the burial process. Ceramic vessels may have been meant for the use of the dead in the afterlife (*Beigaben*) or they may have entered the grave as *Nachgaben* after having been used by the participants in the burial. Likewise, personal ornaments or clothes may have been made especially for the burial or they may have been part of the personal belongings of the deceases, making them *Mitgaben*, and additional sets of clothing may have been placed into the grave as *Beigaben*. Object type and state of preservation, i.e., the presents/absence of signs of wear, provide some clues as to their function in the grave context, but object placement and signs of special ritual treatment are even more decisive.

Another factor to be considered are raw material choice and technical details which can give insight into the intended use of the object in question. Weapons made of soft metal and kept in unrefined shape without a sharp edge or traces of wear are unlikely to have been meant for actual use as weapons but might be so-called *mingqi*, objects produced solely for the grave, or they may have had a symbolic rather than a practical purpose. Such objects are likely to have served as *Beigaben*. High-quality weapons with sharp edges and signs of resharpening, on the other hand, had been used in real life and may have accompanied the dead as part of his/her attire or belongings, i.e., as *Mitgaben*. The same applies to objects kept in a pouch in the hip area or on a belt, for example. Personal ornaments are a little more problematic. Signs of use-wear on beads, for instance, may identify an item worn on a regular basis in daily life, but they may as well be signs of an heirloom or reused items that previously had been part of a different ornament. The raw material chosen in the production of personal ornaments may likewise have a wide variety of meanings. Esthetic considerations may of course play a role, but a type of material that may seem of little attraction to the modern-day person such as bone or animal teeth, for instance, may have had a deep symbolic meaning for their past users. Even though the deeper meaning of specific objects found in graves will always remain unknown, the use of rare kinds of raw material or special forms; their placement in a special position; or their particular treatment through wrapping, burning, and the like, at least help to identify objects imbued with special meaning.

6.2.1 Raw Material Choice and Technical Details

As has become clear earlier, there is a certain—albeit limited—overlap in object types between grave sites and other archaeological contexts, but sometimes combined with differences in raw material choice and technical execution pointing to differences in function.

Clay is the most common type of raw material used for the production of objects found in both graves and settlement sites, but the ceramic vessels interred in graves tend to be of higher quality and are often decorated, sometimes even with elaborate patterns, the settlement ceramics are generally coarser and decoration is rare. In many cases, the vessels used in burial context were thus produced with greater care for the special purpose. There is also a preference for smaller vessels suitable for serving or consuming liquids and to a lesser extent food, either by the participants in the burial ritual or by the deceased in the afterlife.

At settlement sites the second most common raw material type after clay is naturally stone, but for graves it is metal, mainly bronze (Table 6.3). When considered by number of graves instead of by number of objects, the majority of undisturbed graves (319 of 395 graves, i.e., 80.76 %) contained ceramics while less than 20 % (76 graves) were devoid of ceramics; by contrast, only 25.82 % (102) of all graves with known complete assemblages contained metal objects. More than half of all graves (205 graves; 51.90 %) held only ceramics, 13.67 % (54 graves) contained ceramics and other objects but no metal, 15.20 % (60) ceramics and metal, 8.60 % (34) neither ceramics nor metal but objects made of other kinds of raw material, and 10.63 % (42) were furnished exclusively with metal objects. While the absolute number of metal objects retrieved from graves is high, the objects and object types are distributed unevenly between different graves and regions. As not all kinds of raw material are equally accessible in all places, the regional component is important to consider at this point (Appendix Tables B.9 and B.10).

6.2.1.1 Ceramics

Clay suitable for ceramic production can be found in most places; it is therefore not surprising that ceramics occur in the majority of graves in all parts of the research area, but it is remarkable that in certain regions the number of ceramic objects per grave is much higher than in others. These are, in particular, the graves in the Anning River Valley, i.e., in Dechang (32 ceramic objects per grave), Mianning (11 ceramic objects per grave), and Xichang (10 ceramic objects per grave), and to a lesser extent the eastern part of the research area, i.e., Xide and Huili (8 ceramic objects per grave each). We do, of course, have to keep in mind that many of the graves found in the Anning River Valley are megalithic graves that were reopened several times and sometimes contained large numbers of skeletons, thus warranting larger numbers of grave goods; however, the number of objects made of other kinds of raw material is not equally high, suggesting that ceramics played a significant role in the burial ritual in the Anning River Valley and to a lesser extent Xide and Huili, but that such vessels were of lesser importance in other parts of the research area.

As has been shown elsewhere (Hein 2013), there is much variation in the form, quality, and execution of settlement ceramics both regionally and chronologically. Both factors therefore have to be taken into account for ceramics from graves as well. In the Southeast, low-fired hand-thrown vessels without decoration are in the majority, but some local grave sites also hold decorated vessels and objects fired at high temperatures, such as Huili Guojiabao, where about 2/3 of all vessels are decorated, all of them are high fired, yellow-brown in color, and of fine paste ware with no or only fine-grained sand inclusions. All 92 vessels from the particularly richly furnished grave of Huili Leijiashan M1 are high fired and gray-brown as well, and mostly highly decorated (71 vessels) and of fine-past ware (85 vessels). Huili Washitian, Xiaoyingpan, and Fenjiwan, on the other hand, are characterized by low-fired, hand-thrown, yellow or yellow-brown undecorated vessels of sand-tempered ware. Only a few graves at Fenjiwan contained decorated vessels, e.g., M148 and M26, where most ceramics are decorated, and which furthermore contain goblets, ewers, and single-handled vessels that are otherwise rare at Fenjiwan. Handled vessels are a marker of Guojiabao as well and goblets are most common in the assemblage at Leijiashan, while they are largely absent from other grave sites in Huili. What seems to be a local particularity is the yellowish color of the clay in Huili, while the ceramics of other regions have a reddish base color.

In the center of the Anning River Valley, ceramic quality and execution differ considerably by site. At Xichang Xiaohuashan, Xijiao Gongshe, Xixingcun, and Yanjiashan, both decorated and undecorated, high and low fired, red and black, sand-tempered and fine-paste ware occur side by side and in a variety of forms. Other grave sites, such as Xichang Huangshuitang, Hexi Gongshe, and Lizhou, hold only low fired, red, red-brown, or mottled ceramics whose paste was tempered with coarse sand, and which remained largely undecorated. At Xichang Lizhou, only very few vessels of specific types (i.e., vases and ewers) were covered in incised geometric decoration, but they, too, are of similar ceramic quality and only somewhat less coarse in execution. Later Han graves at the same site are then characterized by decorated gray fine-past ware, but about 40 % of the ceramics are still sand-tempered and undecorated; however, all of them are high fired and thrown on a fast wheel.

The ceramics from the graves at Xichang Ma'anshan and Qimugou are mostly high fired, thrown on a fast wheel, of gray and black color, sometimes with black slip, but mostly undecorated. The assemblage at Xichang Qimugou is characterized by goblets, ewers, and vases, while the grave at Xichang Ma'anshan contained fu cauldrons and a stout urn with a wide flat bottom, both of them typical for Han objects, while the Qimugou assemblage is rather different, indicating a difference in date and possibly cultural tradition. The assemblage from the graves at Dayangdui is very special as well. The ceramics are of a black high-fired fine-paste ware of very high quality, most of them burnished and all hand-thrown. The handled jars from Dayangdui, in particular, are rather different in from other objects found in the research area, and their high quality and firing temperature additionally sets them apart, indicating either a foreign origin or a discontinued local tradition.

High-fired ceramics of high quality have been reported from the megalithic graves of Miyi Wanqiu in the southern part of the Anning River Valley as well, but they were mostly formed on a fast wheel, are largely red, only rarely burnished or slipped, and mostly decorated (130 out of 171 vessels). Most of them are single- or double-handled jars, beakers, cups, ewers, or vases, while bowls are rare and jars without handles never occur. Vessels from the northern part of the Anning River Valley around Mianning tend to be undecorated and devoid of handles; some vessels from the megalithic graves of Puge Xiaoxingchang slightly east of the Anning River Valley are decorated, gray-black, high-fired vessels thrown on a fast wheel, thus being rather different from the usual ceramic ware found in megalithic graves in close-by Xichang. Zhaojue in the Northeast, on the other hand, i.e., a place rather close to Puge, is characterized by low-fired undecorated ceramics with the sole exception of Zhaojue Pusu Bohuang whose graves held some high fired but hand-thrown sand-tempered ceramics, both with and without decoration.

Most areas in the western part of the research area are characterized by coarse, sand-tempered, low-fired, hand-thrown undecorated vessels; only the few ceramics retrieved from graves in Yanyuan and Ninglang, which are otherwise characterized by a considerable number of bronze objects, are mostly of fine past, high fired, burnished or sometimes slipped, and can have elaborate large-patterned decoration, mostly on shoulders and body of double-handled jars. Double-handled vessels are overall very common in graves in the Northwest while in the Southwest in Yongsheng low-fired undecorated bowls and vases are more common. The megalithic graves of the Anning River Valley also contain many double-handled vessels, but these are mostly of red color, sand-tempered, and rather coarse in execution; only the ceramics from Miyi Wanqiu in the southernmost part of the Anning River Valley have a fine paste, are gray in color, and can have a black slip, making them rather similar to finds from nonmegalithic graves in the Northwest. Ceramic quality, forms, and overall execution thus differ markedly both between and within regions and sites, indicating spatial, chronological, and potentially cultural variation in the ceramic assemblages that do not always coincide with specific grave forms or other burial customs. This issue will be discussed further in Chap. 7.

6.2.1.2 Organic Material

Wood and other types of organic material are likewise widely accessible throughout the research area, but they hardly ever occur in graves. This, naturally, says less about burial customs and more about preservation conditions, which are poor throughout most of the research area. Arrowheads and containers made of wood or tree bark were found only in one specific corner of the Northwest (parts of Ninglang and Yanyuan), where preservation conditions are favorable, and calcinated ropes, wooden bracelets, organic beads, and unspecified cloth remains wrapped around a vessel came to light at a single burial site in the Northeast, Zhaojue Pusu Bohuang, where the soil climate must likewise have been favorable. In a number of other graves at other sites in the Northeast and in the Anning River Valley, arrowheads, small stone and metal tools, and coins were found in the pelvis area of skeletons, indicating that they were either worn on the belt or carried in pouches. Organic containers might thus have been rather common, but they are difficult to trace in the archaeological record.

6.2.1.3 Metal

Unlike organic material, objects made of metal or stone naturally preserve well. In the research area, especially metal objects are very common in graves, second in number only to ceramics, but they hardly ever occur in settlement contexts. The most common categories are ornaments, followed by metal weapons and tools (Table 6.17). Armor, horse gear, coins, seals, metal vessels, and various kinds of ritual objects are significantly more rare. The majority of metal ornaments was made of bronze (96 %); only very few consist of iron, silver, or gold.

Metal objects occur by far the most often in graves in the western part of the research area, especially Yanyuan, mostly in the form of weapons and to a lesser extent clothing applications; in Xichang in the central Anning River Valley, metal is very common as well, but it occurs mostly in the form of hair and body ornaments while metal weapons are rare. The graves in the Southeast, especially in Huili, are poor in metal objects, with only a small number of bronze weapons and bracelets, but no iron, composite objects, silver, or gold. This is especially remarkable as Huili is rich in metal resources, and archaeological evidence shows that bronze was produced locally at least since the Han period. Yanyuan, on the other hand, has only limited copper sources and no known tin sources, making it impossible to produce bronze only from local material, yet, bronze

Table 6.17 Frequency of main metal object types in graves

Metal object types	*Count*	*Percentage* (%)
Ornaments	725	59.28
Weapons and tools	374	30.58
Ritual objects	36	2.94
Coins	36	2.94
Vessels	23	1.88
Armor	17	1.39
Horse gear	10	0.82
Seals	2	0.16
Sum	*1223*	*100.00*

objects are ample in the local graves. The availability of certain types of raw material is thus clearly not the main *movens* behind their use as grave goods.

In spite of the common occurrence of metal objects in graves, so far hardly any metal production facilities are known. The earliest evidence for local bronze production apart from the bronze objects themselves is the open stone molds from Huili Washitian in the Southeast, a site that has been dated to the time period between Warring States and Western Han (481 BC–AD 9). These remains include one mold for a *ge* dagger-axe, one for 14 arrowheads accompanied by an arrowhead of the same type as would have been produced by said mold, and one mold for a *mao* spearhead. Surface-finds include a bronze *yue* battle-axe and a bronze *guan* bead. The site did not reveal any furnaces or other evidence for local bronze production such as significant amounts of ash or slag; it is therefore reasonable to assume that any bronze production at this site was not extensive.

Nevertheless, some amount of local bronze production must have taken place, not only in Huili but also in Xichang in the Anning River Valley, as the lump of bronze slag from Xichang Wanao M2 testifies. All specialized smelting sites in the research area are fairly late, most of them dating to the Ming or Qing period. Only four smelting sites can be attributed to the time of the Wang Mang interregnum (AD 9–220), three of them in the central Anning River Valley and one in Yanyuan in the Northwest.[21] All four sites show clear Han cultural affiliation through numerous moulds for Han coins, weapons, tools, and the Han style ceramics. Furnaces have been found at all sites, but most of them consisted only of simple round pits accompanied by a few refuse pits with limited amounts of ash. Only Xichang Dongping revealed large amounts of charcoal and red-baked earth in connection with 16 furnaces of various, in some case rather complex construction, seven refuse pits, four sand pits, five ditches, three workshops, and five houses that likely served as living quarters for the workmen. All of these features were embedded in layers 3–13 of 13 cultural layers extending over an area of 4000 × 250 m. The forms of the numerous

[21] Xichang Dongping held several molds for *wuzhu* and *huaquan* coins, molds for arrowheads, knives, spades, *wuzhu* coins, and *guan* jars like they are known from Wang Meng period graves in Guizhou, Guangzhou, and Chengdu. Xichang Majialin also revealed five coin molds, 17 bronze nails, and two small hammers. Xichang Nantan held a bronze *xi* basin, 1 *fu* pot, 1 *gui* tureen of distinct Eastern Han style, and Yanyuan Meiyuzhan revealed 600 *daquan wushi* coins from the Wang Mang reign period.

molds and waste products show that Xichang Dongping likely was a specialized bronze smelting site producing mainly Han coins. As the bricks and ceramics found in the living quarters furthermore were of Han manufacture, it is reasonable to assume that this production site was not run by or for local people, but established by the Han. The mode of production observed here probably does not reflect traditional ways of metal working in the area, but techniques transferred from Han-inhabited areas. The composition of the coins produced here does nevertheless differ from similar objects found in Shaanxi or Shanxi, indicating a local source of raw material. The bronze nails retrieved from the earlier bronze production site in Huili were similar in composition to the locally produced Han coins, but much coarser in execution, indicating production from local material but for local use and not for wider distribution.[22]

Composition analyses also have been conducted for three objects from Huili and 52 objects from Yanyuan.[23] The *bianzhong* bells found in an object pit in Huili, for example, consist largely of copper (92.49 %) with only 7 % tin, indicating an only rudimentary or nonexistent mastery of alloying techniques (Tao Mingkuan 1982: 217). The bronzes from Yanyuan, on the other hand, vary widely in quality and composition. They vary from objects with 85 % copper to objects with large amounts of tin and lead, but only around 67 % copper. As has been shown elsewhere, most of the variability in both composition and quality is due to differences in object origin (Hein 2014). The few high-quality objects—most remarkably a three-dimensional staff head and two bronze drums—are very likely imports, in this case from the Dian-cultural realm; additionally, there are some weapons and a few ritual objects from Yanyuan and Huili that resemble objects from Yunnan or Northwest China but are of considerably lower quality and of a metal composition that makes them unfit to use, among them the *bianzhong* bells from Huili mentioned earlier. In the case of this bell, the trace elements show that the mining source was local (Tao Mingkuan 1982), and the low tin content and lack of deliberate alloying suggest that these objects cannot have been meant for actual use as musical instruments. The same applies to the single bell from Yanyuan Laolongtou which was alloyed with a high percentage of tin that would have given it a beautiful shine and would have made production easier, but would have made it too brittle to play (Falkenhausen 1988: 225).

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[22] The coins from Huili have the following composition: 81.3 % Cu, 1.9 % Sn, 15.8 % Pb. For sites around Xi'an, for example, they are usually around 77.6 % Cu, 8.1 % Sn, 7.33 % Pb (Sichuan and Xichang 1994: 39).

[23] The results of these analyses are all somewhat problematic. For Huili, only the relative amounts of copper, tin, and lead are given without listing other trace elements or mentioning how many samples were taken from which part of the object (i.e., from the surface or the core). In this respect, the samples from Yanyuan are more reliable as we know that they were taken from breakages so as to reach some of the core material and to avoid contamination through corrosion products or tin segregation on the surface. Three samples were taken from each Yanyuan object, testing for a larger range of elements than was done for the objects from Huili. However, the correlation of the samples analyzed with specific objects from the published assemblage remains unclear for 24 out of 49 analyzed objects, making it impossible to relate them to specific object types or subtypes. The usefulness of the results for the present study is therefore somewhat limited.

Most weapons found in Yanyuan—both typical local forms and types that appear throughout most of Southwest China—are relatively homogenous in composition, but of considerably lower quality than similar objects from surrounding regions. Many of these weapons were furthermore often produced in single-sided molds, making them *mingqi* (objects produced solely for the grave and/or symbolic purposes) rather than objects meant for actual use. Even the few objects that would have been fit for use both by material composition and quality of workmanship, mostly show no signs of having been used; only for one sword and one knife from Yanyuan use-wear has been reported. It is therefore likely that most of the weapons found in graves in Yanyuan were meant for representation and/or use in burial contexts but not as weapons in an actual fight. The three projectile points that have been analyzed so far and also some short knives are of a considerable more sturdy composition and fully formed but carry hardly any decoration; these might thus have been objects of actual use—in case of the knives potentially objects used by the deceased during his life time—and not objects produced specifically for the burial.

The same may apply to the small *ling* bells likely worn on belts; such objects are very common in graves in Southwest China, especially in northern Yunnan, but the specimens found in Yanyuan differ in composition from those found in other areas, identifying them as likely local products. These bells are furthermore sturdy due to the addition of larger amounts of lead (2.0–3.6 %) in combination with copper and tin. If they were indeed worn at the belt during the lifetime of the deceased, such properties would have been desirable so that the bells could resist the stress of constant movement and friction. Sturdiness was clearly not a consideration in the production of the staff heads that are so typical for Yanyuan but hardly ever occur anywhere else in Southwest China. They are all similar in composition (ca. 85 % copper, 10 % tin, 5 % lead), very brittle, made in single-side molds in a coarse fashion and barely reworked, indicating both their local origin and their production for single use in a grave context.

But even most tools and weapons from Yanyuan are of low quality, reflecting a limited mastery of metal technology. Overall, in Yanyuan mold casting is by far the most common technique and occurs in combination with all other kinds of techniques including hot forging, cold-working, reheating after casting, and plating (Cui et al. 2010: Table 2). Many ornaments, such as bracelets and other rings, but also some clothing applications, were forged, either as the only production technique applied or in order to refine their shape after casting. Some of the button-shaped ornaments might even have been hammered into a form in a heated state rather than as completely liquefied metal.

On a small number of ornaments (bracelets, head ornaments, belt applications, button-shaped fittings) gilding has been observed. Some staff heads from Yanyuan were silvered at temperatures below 350°, which is very different from the silvering techniques common with Dian objects from Yunnan. In China, silvering first occurs with Ordos bronzes but at a much earlier date, and its later occurrence in Southwest China has been attributed to northern influence (Cui et al. 2010). Iron and composite objects are rare throughout the research area, occurring mainly in the western part of the research area (Yanyuan and Yongsheng), and in the center of the Anning River

Valley around Xichang. Composite weapons have been found only at a small number of graves located at opposite ends of the research area, i.e., in Yuexi in the Northeast in one case, and in various parts of the western mountains (Ninglang, Yongsheng, and Yanyuan) in all other cases.[24] Given the occurrence of iron, these graves are probably of a relatively late date (Western Han at the earliest). As the technique of joining different metals is unlikely to have been a local development, foreign influence is very likely, albeit from different directions, in the Northeast probably from the Han in the Chengdu Basin, and in the West either from northwest Yunnan or from Northern Sichuan or the Northern Steppe. The single composite sword found in Yuexi may have been an import, but the composite weapons in the West show particular local forms, suggesting local production, even if the techniques may have been of foreign origin (Hein 2014).

As the quality of most of these objects is low, the question arises why metal was chosen in their production over the cheaper and sturdier stone or bone. It is of course unclear how regularly metal was employed in the production of weapons and tools used in daily life or how high their quality was, but the limited mastery of alloying reflected in the metal objects found in graves and their crude execution suggests that local production can overall not have been of particularly high quality. The few arrowheads and knives found in graves that show signs of use-wear were nevertheless of sufficient quality for actual use and would have had certain advantages over stone specimens, especially the knives with their thinner blades. Most other weapons and tools found in graves are of a quality that is not very desirable for actual use but appropriate for display, especially as many of the weapons were highly decorated.

How often metal knives or other tools were used in everyday life remains uncertain, but in representative grave contexts and possibly as part of the personal attire they clearly outweigh stone tools; weapons such as swords, furthermore, are unthinkable unless made of metal. For decorative, representational, or ritual purposes, metal is very attractive. Furthermore, metal is comparatively easy to bend into bracelets and other rings and easy to work into decorative applications or buttons. Complex zoomorphic or anthropomorphic forms are likewise easier to attain through casting than through stone working. For beads and pendants, on the other hand, colorful stones such as agate and turquoise, and even plain bone, tooth, and shell, seem to have been more attractive choices. In the case of bone and tooth, furthermore, the raw material would have been more readily available and easier to work than stone. Nevertheless, from a technical point of view, beads are still relatively easy to whittle out of small pieces of stone, even though semiprecious stones such as agate or nephrite might not have been as readily available. On the other hand, their greater scarcity and special color would have made them just as attractive as metal, or maybe even more so, at least for personal ornaments.

[24] These graves are Ninglang Daxingzhen M4, Yanyuan Laolongtou M6 and M9, Yanyuan Maojiaba M2, Yuexi Liaojiashan M1, Yongsheng Duizi M91 and M106.

Table 6.18 Relationship between ornaments and raw material

	Stone	Bone	Tooth	Shell	Frit/ceramic	Organic	Sum
Pendant	3	1	48+130	67+	2	0	**150+130**
Slit ring	1	32	0	0	0	0	**33**
Bracelet	1	13	0	0	0	3	**26**
Ring segment	2	11	0	0	0	0	**13**
Closed ring	2	4	0	0	0	0	**6**
Hair needle	0	12	0	0	0	0	**12**
Bead	217	76+392	0	0	40	1	**334+392**
Sum	**226**	**148+392**	**48+130**	**67+**	**42**	**4**	**557+522**

6.2.1.4 Stone, Bone, Shell, and Frit

Beads of various kinds of material such as different types of semiprecious stone (agate, turquoise, and nephrite), bone, or shell are one of the most common types of decoration found in graves throughout the research area, but their distribution is uneven (Table 6.18). Both agate and turquoise were used nearly exclusively in the production of beads found sometimes in large number in megalithic graves in the Anning River Valley but also in stone-construction graves in Yongsheng and Yanyuan in the West. In the Southeast, only Huili Guojiabao M2 contained large numbers of turquoise and some agate beads. Agate mostly occurs in small nodules in volcanic rock, which is widely found throughout the research area; it is therefore possible that the raw material was extracted and worked locally, but it might just as easily have come from somewhere else. Yunnan has known rich sources of turquoise, as do Sichuan, eastern Tibet, and various other parts East and Southeast Asia; the material can be easily retrieved as it forms very close to the earth's surface through weathering and oxidation of preexisting minerals, mostly in cavities in volcanic rocks as they appear throughout all of the area. Although physically attractive, both types of raw material were likely not very rare and could have been widely used for decorative items; the choice of either material for personal ornaments to be worn in life and/or death thus likely depended on cultural preferences rather than on questions of material availability.

Bone beads have a very similar geographic distribution and do not vary much in shape; only in Puge in the northeastern mountains do bone beads outnumber agate or turquoise beads. Remarkably, Puge is the only place where perforated tusk ornaments occur in great number, showing a clear local preference for bone and tooth. Puge is until today densely wooded and arrowheads of bone, metal, and stone are common at sites in the area, indicating an economy at least partially relying on hunting, hence the cultural importance of boar tusks, be it as ornaments, talismans, or other kinds of symbols. Bones and animal teeth naturally are available everywhere and were widely used for ornament production. Only Huili in the Southeast is remarkably devoid of bone ornaments; here nephrite was used to make beads and flat rings. Similar small and larger flat rings as well as pendants have been found in small numbers in megalithic graves in the central Anning River Valley (Xichang and Xide), but also in the West (Yanyuan and Yongsheng), and in the Northeast (Zhaojue). In most graves, a single flat nephrite ring was accompanied by a number of beads of bone, turquoise, or agate, together building a complex chain. Overall, nephrite is extremely rare, occurring in only 13 graves. There is no known local source of nephrite, but its place of origin is likewise unclear. In some cases, bone might have been used to imitate this rare material. Similarly, snail shells were perforated and strung in similar ways to cowrie shells, possibly substituting these rare items. In Puge Wadaluo M1 and Huili Xiaoyingpan M21 perforated shells were combined with bone beads; all other cowrie and snail arrangements (all of them without accompanying bone beads) come from Yongsheng Duizi in the utmost Southwest of the research area, i.e., in Yunnan, where cowrie shells originating from the Indian Ocean have been found in great number in Dian culture burials. At the opposite end of the research area, i.e., in the Northern mountains, cowrie shells are extremely rare. Only Zhaojue Erba Keku M11 held only a single perforated shell highlighting its special value. How this single salt-water item came into this remote mountain region, however, remains unclear.

Where frit objects or knowledge of frit-production techniques might have come from is unclear as well. Frit objects occur only rarely in graves throughout the research area; Xichang Xijiao Gongshe M1 in the central Anning River Valley contained 25 frit beads, and Zhaojue Erba Keku M3 in the Northeast revealed four blue beads that might have been made of frit or some kind of other blue stone (the report is not entirely clear here and the artifacts themselves were lost). These objects might thus be the outcome of a local experiment or single instances of probably indirect trade or exchange with Southeast Asia where such beads are more common.

While ornaments of stone, bone, and shell are rather common in graves throughout the research area, stone or bone tools are very rare. The numerous stone tools found at settlement sites throughout the research area are largely rather coarse in execution and mostly made of igneous rock or fine serpentinite, which are locally available but not ideal for stone production (Appendix Tables B.11 and B.12). Obsidian, quartzite, or chert, which is more ideal for tool production, was only rarely employed. Many of the few adzes, axes, and arrowheads found in graves, on the other hand, were made of semiprecious material such as nephrite (Yongsheng), or particularly fine green igneous rock (Zhaojue), and these objects are finely ground and well polished. Most arrowheads found in graves consist of fine dark-gray slate or shale, a material hardly ever used for arrowheads found at settlement sites. There, fine slate is usually reserved for half-moon shaped harvesting knives that hardly ever occur in graves. Instead, graves hold bronze and sometimes iron or composite knives with a long handle that were clearly weapons and tools for personal usage with a decorative and probably symbolic component. Only a single D-shaped double-perforated bronze knife clearly imitating stone specimens found in Xichang Xiaohuashan M1, a megalithic grave that also contained two half-moon shaped knives made of fine igneous rock, as well as bronze axes and sickles, i.e., an assemblage that emphasizes the importance of agriculture. The harvesting knife in bronze thus likely had a symbolic rather than a practical function.

Stone grinding rollers are the most common type of stone tools found in graves but they hardly ever occur at settlement sites. They are mostly made of slate/shale and sometimes from sedimentary or igneous rock and are mostly found in the hip area of the deceased. It is therefore likely that grinding rollers were part of the personal equipment of the interred, possibly tools for sharpening blades worn on the belt or in a pouch that accompanied the dead into the grave as *Mitgaben*. Larger grinding or pounding tools, clear agricultural tools, various production tools, and stone tool production debris as well as net weights made of stone or clay were rarely interred in graves but occurred often in settlement sites. This shows clearly that most production activities did not have a symbolic value or were deemed necessary to be conducted in the afterlife. The only exception was presumably the production of clothes, as ceramic spindle whorls were commonly interred in graves while they are rare in settlements. One type of objects that occurs exclusively in graves are smooth river pebbles interred with the deceased in many graves in Huili and in a few graves in Yanyuan; as most of these pebbles were placed under the hip and a few in the head area, a ritual/cultural significance (potentially with a connection to the near-by rivers) can be assumed.

When considering the employment of various material types employed in tool production separate by region (Appendix Tables B.13 and B.14), the picture is rather unclear. Graves in the central Anning River Valley around Xichang hold more objects made of igneous rock than graves sites in other areas. Nearly all artifacts made of fine slate or shale found in graves are from Yongsheng Duizi in the utmost Southwest; the majority of bronze arrowheads were retrieved from graves in the western mountains (Yanyuan and Yongsheng), but a considerable number of specimens was also found in Huili in the Southeast and in Xichang in the central Anning River Valley. Metal arrowheads are thus common throughout most of the research area, but the metal-rich graves in the Northwest hold a larger overall number of metal arrowheads. Yanyuan in the Northwest is generally very rich in arrowheads of various materials, as are Huili and Zhaojue in the East, while grinding rods are most common in Xichang in the Anning River Valley and Yanyuan in the Northwest. Tools made of sedimentary rock and other types of stone material are particularly common at the large cemetery of Huili Fenjiwan in the Southeast, which also holds a large number of fine-paste ceramic spindle whorls. The picture for settlement sites throughout the research area is rather different. Metal objects do naturally not occur there, but there are local preferences in the use of specific types of stone material. Settlement sites in Dechang in the southern part of the Anning River Valley are particularly rich in serpentinite, as well as various types of igneous rock and slate; even rare materials such as chert and obsidian occur there. Chert and obsidian also have been reported from settlement sites in Huili. Huili as well as Xichang is likewise very rich in various kinds of stone tools made of igneous rock and to a lesser extent slate; both types of material can be found in sites throughout the research area but in lesser numbers than in Huili or Xichang. It needs to be kept in mind, however, that archaeological research in Xichang and Huili has been more extensive than in other parts of the Liangshan Region, so the great number of stone objects from these areas might reflect a research bias rather than an actual preponderance of these objects in Xichang and Huili.

At least for burial objects, there is no strong regional bias for the employment of specific kinds of stone material, but a noticeable preference for both metal and higher quality, nicely colored stone worked into smooth, evenly shaped objects, highlighting the symbolic value of these objects. Many of these items may thus have been made especially for their use as *Beigaben* in the burial ritual. Only grinding rods were made of the usual kind of igneous rock suitable for grinding; as many of them furthermore show signs of striation and were found in the hip area, it is likely that they were part of the attire of the deceased, i.e., *Mitgaben*. It is also remarkable that the interment of spindle whorls is much more common in the Southeast, especially in Huili, than in other areas, and smooth river pebbles placed in significant places occur nearly only there. These finds thus reflect local particularities in burial ritual more than limitations in raw material availability.

6.2.2 Object Placement and Burial Ritual

As has become clear earlier, object placement is very important for the interpretation of the cultural and ritual significance of objects found in graves. The placement within the grave is known for 288 assemblages from 19 sites.[25] The locations are as follows:

1. **Between the bones (26)**;
2. **Throughout the whole grave (31)** [i.e., distributed throughout the whole grave without separation by object types (26), or ceramic vessels at both ends and more objects along the walls (1), or ceramics at both ends and personal ornaments and weapons in middle (1), or ceramics at head, weapons in middle, and personal ornaments at foot (1), or ceramics at rear end and sides, some smaller vessels and ornaments in larger ones, personal ornaments and weapons between bones (2)] (Fig. 6.2);
3. **In the middle (39)** [i.e., in the middle (36), hip area (1), at the knees (1), or in the coffin (3)];
4. **At the head and in the middle (19)** [i.e., at the head and in middle (8), or ceramics in the head compartment and weapons in the coffin (3), or ceramics and stone tools at head and personal ornaments and weapons between bones (1), or ceramics at head und personal ornaments and weapons in middle (6), ceramics in head compartment, personal ornaments in middle (1)];
5. **At the feet and in the middle (2)** [i.e., ceramics at door and personal ornaments and weapons throughout (1), in the middle and at the feet (1)];
6. **At the head (97)** [i.e., at the head (89), or in the head compartment (7), ceramics in head compartment (1) (Fig. 6.4);

[25] This includes all excavated graves from Huili Fenjiwan, Guojiabao, Xiaoyingpan, Luquan Yingpanbao, Miyi Wanqiu, Ninlang Daxingzhen, Puge Xiaoxingchang, Xichang Bahe Baozi, Hexi Longshe, Tianwangshan, Tuanbao, Wanao, Xijiao Gongshe, Xide Guluqiao, Lake Sihe, Yanyuan Laolongtou, as well as some of the graves at Yongsheng Duizi and Zhaojue Chike Boxixian.

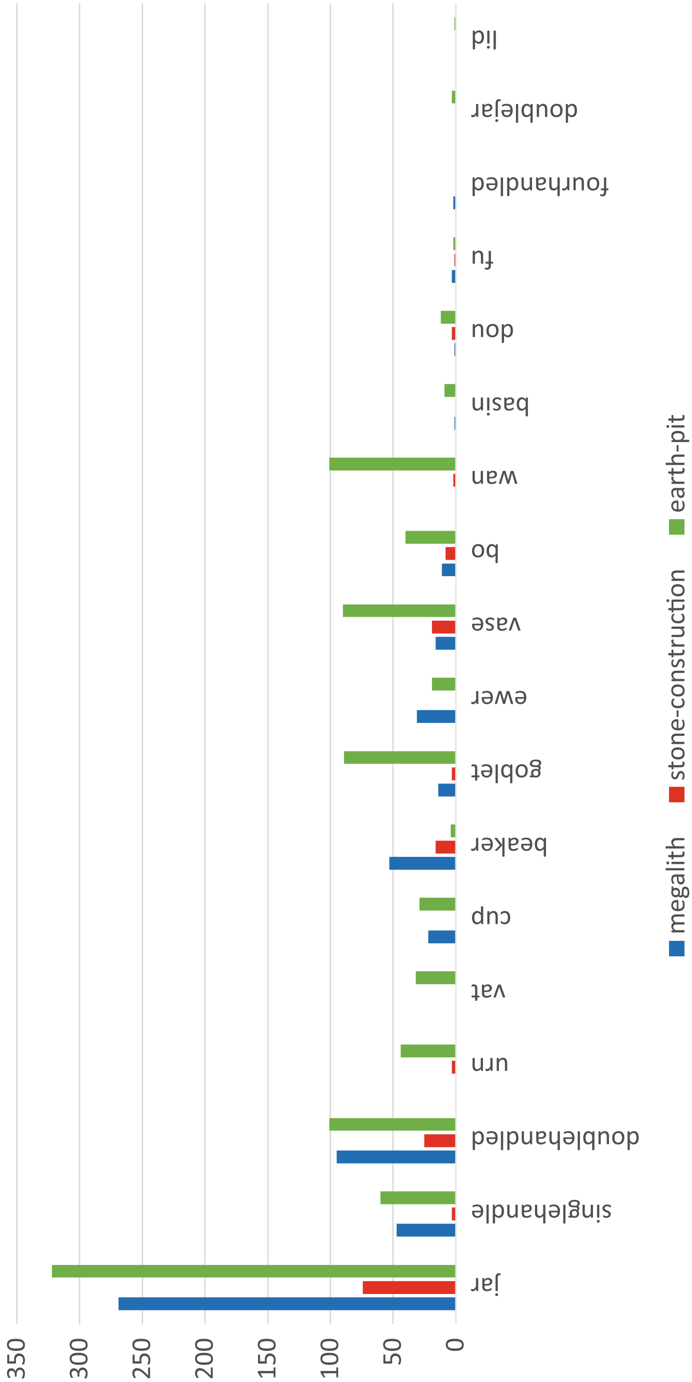

Fig. 6.4 Frequency of occurrence of various functional ceramic types in graves

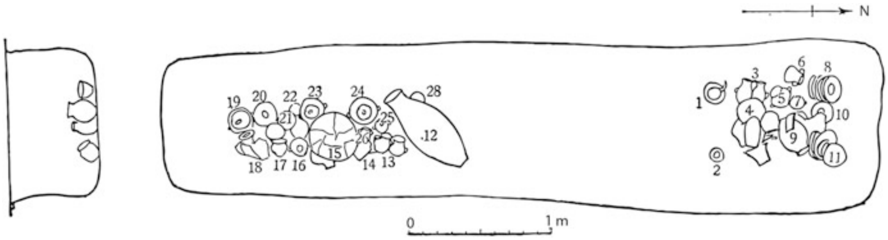

Fig. 6.5 Xichang Lizhou BM3 (after Lizhou Yizhi 1980: Fig. 6 bottom)

7. **At the feet (10)** [i.e., at the foot (9), or in the foot compartment (1)];
8. **On one end (2)**;
9. **On both ends (25)** [i.e., on both ends (24), or ceramics at head and weapons at head and foot (1)] (Fig. 6.5); and
10. **Outside the grave (1)**.

Personal ornaments and clothing application appear mainly on and around the bones (~78 %), more rarely at one end of the grave pit (~9 %), or even outside the grave chamber (~13 %) (Table 6.19). Weapons and tools—some of them possibly part of the personal attire or belongings of the deceased (i.e., *Mitgaben* rather than *Beigaben*)—are mostly placed on or alongside the body (~56 %), and less frequently on either end of the grave (~20 %) or outside the main grave chamber (~24 %). Body armor and horse gear are too rare for a meaningful statistical evaluation, but most of the known pieces of armor were worn by the deceased or placed close to his body; only rarely was armor deposited at the foot of the grave or on the second-level ledge, likely to be used in the afterlife but not part of the burial attire of the deceased. Horse gear was mostly found in the leg area, usually in association with a horse skull and sometimes horse long bones, reflecting the horsemanship of the deceased and/or his ownership of horses.

Ceramics most often appear at either end of the grave pit or in the head- or foot compartment (~82 %), thus likely serving as *Beigaben* or holding food offerings. This likely also applies to the few graves in which ceramics flanked the corpse on both sides. In graves where the vessels were intermingled with the bones (~17 %), sometimes in broken condition, however, the ceramics may have served in the burial ritual, entering the grave as *Nachgaben*, or it may be a case of multiple successive interments in which previously deposited bones and ceramics with food offerings were pushed back or to the side. Vessels placed outside the grave (two cases) are clearly *Nachgaben* deposited during postinterment rituals outside the grave.

Metal vessels are rare and have been reported exclusively from the foot compartment and from within the grave chamber; it is unclear if they contained food offerings or if they had special ritual function, but considering their location and perfect preservation condition they were likely *Beigaben* similar to the ceramic vessels.

Table 6.19 Main object categories and their placement within the grave

Ceramic vessels			**Horse equipment**			**Ling bells**		
On one end	377	21.04	At horse head	5	10.42 %	Between bones	6	54.55 %
Above head	140	7.81 %	Unclear	10	20.83 %	In middle	4	36.36 %
At feet	29	1.61 %	Foot compartment	3	6.25 %	On second-level ledge	1	9.09 %
Head compartment	19	1.06 %	Unclear	30	62.50 %	*Sum*	*11*	
Foot compartment	7	0.39 %	*Sum*	*48*	*100 %*	**Staff heads**		
Between bones	36	2.00 %	**Personal ornaments and applications**			Unclear	9	*100 %*
Middle	65	3.63 %	Between or on bones/head	364	28.79 %	**Metal stands**		
On left side	5	0.28 %	Middle	74	6.06 %	Unclear	8	*100 %*
On right side	2	0.11 %	On one side	4	0.33 %	**Mirrors**		
Outside grave	10	0.56 %	On one end	51	4.17 %	Unclear	1	*100 %*
Unclear	1102	61.50 %	In front chamber	4	0.33 %	**Seals**		
Sum	*1792*	*100 %*	On second-level ledge	1	0.08 %	Unclear	1	*100 %*
Metal vessels			Outside coffin	43	3.52 %	**Coins**		
Foot compartment	2	4.35 %	Outside grave	29	2.37 %	Between bones	11	18.97 %
Unclear	44	95.65 %	Unclear	652	53.36 %	On left side	3	5.17 %
Sum	*46*	*100 %*	*Sum*	*1222*	*100 %*	Unclear	44	75.86 %
Weapons and Tools			**Other ornaments**			*Sum*	*58*	*100 %*
Between bones	59	5.09 %	Unclear	40	100 %	**Smooth flat oval cobbles**		
Middle	27	2.33 %	**Cowry shells**			At head	34	62.96 %
On right side	5	0.43 %	Middle	1	25 %	At feet	1	1.85 %
On left side	4	0.35 %	Placement unclear	3	75 %	Middle	5	12.50 %
Above head	31	2.67 %	*Sum*	*4*	*100 %*	On top of vessel	3	5.56 %
On one end	3	0.26 %	**Drums**			Unclear	14	25.93 %
Foot compartment	21	1.81 %	Foot compartment	1	8.33 %	*Sum*	*54*	*100 %*

On second-level ledge	2	0.17 %	On second-level ledge	1	8.33 %	**Stone balls**		
On divider	2	0.17 %	Unclear	10	83.33 %	Legs	3	42.86 %
Outside coffin	5	0.43 %	*Sum*	*12*	*100 %*	Feet	3	42.86 %
Outside grave	10	0.86 %	**Bianzhong bells**			Unclear	1	14.28 %
Unclear	989	85.41 %	Foot compartment	1	8.33 %	*Sum*	*7*	*100 %*
Sum	*1158*	*100 %*	In object pit	6	50 %	**Carbonized Ropes**		
Armor			Unclear	5	41.66 %	In burial chamber	6	100 %
On body	11	40.74 %	*Sum*	*12*	*100 %*			
On one end	1	3.70 %						
On second-level ledge	1	3.70 %						
Unclear	14	51.85 %						
Sum	*27*	*100 %*						

In 49 graves at Huili Fenjiwan and in Huili Leijiashan M1, smooth flat oval cobbles were placed under the head or more rarely under the hip or lower abdomen of the deceased, indicating a ritual function. In three cases, similar stones were placed on ceramic vessels, giving them a completely different meaning; they may simply have functioned as lids with no special ritual or religious implication. Stone balls were reported from three graves, one from Huili Leijiashan and three each from Yanyuan Laolongtou M4 and M9; in Yanyuan, these stones were always placed next to the lower legs or at the feet of the deceased; in case of Huili Leijiashan the placement has not been reported.

Another unusual type of burial goods are carbonized ropes appearing in six graves in Zhaojue; they were always placed in the main grave chamber, sometimes close to the head, sometimes in the middle or by the feet (Zhaojue Erba Keku M2, M4; Zhaojue Pusu Bohuang M3, M4; Zhaojue Wazhaishan M1, M2). Their function is unclear, but their limited distribution makes them an interesting indicator for possible local burial customs.

Traces of ritual acts conducted in graves such as ash and other signs of fire or deposition of animal bones and other food offerings have already been discussed in Chap. 5.2. What bears a second mentioning here are the objects carrying burn marks found in a few graves, mostly together with calcinated bones, wood, and red-burned soil showing acts of burning inside the grave. Yanyuan Laolongtou M9, for instance, contained a stone frame with a human skull, stones, animal bones, ceramics, and bronze objects, all of them with burn marks identifying them as object of special ritual treatment. As everything in this stone frame was burned, it is not clear if the bronze objects were *Beigaben* or if some of them may have been *Mitgaben*, i.e., personal belongings of the deceased. In either case, the stone frame and its content seem to have been deposited in a ritual act separate from the main interment in the burial chamber; Laolongtou M9 might thus contain the remains of two instances of interment.

All other cases of fire treatment of objects, all of them ceramics, have been observed in megalithic graves containing multiple burials (Puge Xiaoxingchang AM1, Xichang Xijiao Gongshe M1 on 10 separate vessels, Miyi Wanqiu M1). These vessels may have been used during the burial ritual, thus entering the grave as *Nachgaben* rather than *Beigabe*.

Another potential case of object treatment in burial context is the butts of dagger-axes that have entered graves without a blade. They may have been interred as *pars pro toto*, symbolizing the complete weapon that was supposed to serve the dead in the afterlife, or they may have been a symbol for a position that he or she had in this world. How these parts differ in function and meaning from the full dagger-axes likewise interred in graves is not clear.

A singular case of object treatment is the wrapping of a high-quality bronze basin in fine cloth in Zhaojue Eba Buji M1. This likely Han import is thus marked as a *Beigabe* of special value. Special are also the few bronze drums and bronze *fu* vessels resembling inverted drums in form[26]; they were generally placed in a separate foot

[26] The drums were found in Yanyuan Laolongtou M4, Yanyuan Maojiaba M4, and Yongsheng Yanjiaqing; the *fu* vessels were excavated from Yanyuan Laolongtou M4, Yuexi Huayang, and Zhaojue Erba Keku M4.

compartment, showing their special status; however, if they were used in the burial ritual, thus having entered the grave as *Nachgaben*, or if they were meant for the use of the deceased in afterlife (as *Beigaben*), or if they were simply a sign of his/her elevated status (possibly as *Mitgaben*), remains unclear.

6.3 Combining the Objects: Artifact Sets

So far, all objects types have been discussed separately, however, mostly they do not appear alone but in combination with other objects. The analysis of object co-occurrence is riddled with problems. One of them is the great diversity of artifacts, many of which appear too infrequently to allow for statistical analysis (Online Material: Assemblages). Furthermore, several kinds of objects such as beads or arrowheads occur in a variety of different materials while ceramic vessels such as jars and cups appear in a wide range of different types and subtypes, which could have been used interchangeably or in various combinations with different meanings attached to them. There is also much regional diversity, and patterns that exist on the local level may become indistinguishable when the material from all subregions is viewed together. Another major problem is differences in the reliability of observations made for different graves: some have been reopened and/or contain multiple burials and thus mixed assemblages, others were severely disturbed or insufficiently reported.

To cope with the large number of objects, I first analyze the most common object categories (ceramic vessels; weapons and tools; ornaments and clothing decoration) separately before investigating recurring object combinations across these boundaries. Nonceramic containers, body armor, horse gear, potential ritual object, and other special items such as coins and seals are too rare to allow for meaningful statistical evaluation of their co-occurrence with other objects; they will therefore only be discussed when comparing complete assemblages. To take into account variability in preservation and observational detail, I analyze different subsets of the material separately: unopened and sufficiently preserved and reported graves (172); unopened graves of varying degree of preservation and state of publication (172+97); multiple and/or reopened burials potentially containing several sets of artifacts (38); I furthermore compare these different subset with each other and with the whole body of data (307 graves).

As detailed in Chap. 3.1.3, the main methods employed are multivariate techniques of statistical analysis that have proven very useful tools for pattern recognition in large bodies of data with many variables (e.g., correlation coefficients, factor analysis, principal component analysis, and correspondence analysis).

6.3.1 Sets of Ceramic Vessels

Ceramic vessels are the most common kind of burial object found throughout the research area. Of all 393 graves containing object, 86 did not hold any ceramics, but 21 of these graves were not properly published and 13 have been severely disturbed;

Table 6.20 Frequency of different functional vessel types in graves

Form type	All ($n=307$)		Multiple/reopened ($n=38$)		Unopened ($n=269$)		Reliable ($n=172$)	
Jar	559	1.82	212	5.58	323	1.2	265	1.54
Single handled	149	0.49	76	2	70	0.26	69	0.4
Double handled	249	0.81	121	3.18	126	0.47	35	0.2
Four handled	2	0.01	2	0.05	0	0	0	0
Double jar	3	0.01	0	0	3	0.01	3	0.02
Urn	52	0.17	5	0.13	47	0.17	35	0.2
Vat	32	0.1	0	0	32	0.12	32	0.19
Fu	6	0.02	3	0.08	3	0.01	3	0.02
Cup	52	0.17	23	0.61	29	0.11	29	0.17
Beaker	73	0.24	53	1.39	20	0.07	2	0.01
Goblet	132	0.43	14	0.37	104	0.39	115	0.67
Ewer	50	0.16	31	0.82	19	0.07	19	0.11
Vase	125	0.41	16	0.42	109	0.41	95	0.55
Basin	10	0.03	1	0.03	9	0.03	9	0.05
Bo	59	0.19	11	0.29	48	0.18	29	0.17
Wan	103	0.34	0	0	103	0.38	98	0.57
Dou	16	0.05	1	0.03	15	0.06	13	0.08
Lid	1	0	0	0	1	0	1	0.01
Sum	*1673*	*5.45*	*569*	*14.98*	*1061*	*3.94*	*852*	*4.96*

we can therefore only be certain that at least 52 out of 393 graves (i.e., 13.23 % of all observed and 14.84 % of all well-preserved and well-published graves) did not contain ceramics. Overall, pottery vessels were thus very common in graves, but they were unevenly distributed. On average, each grave contained 5–6 ceramic vessels, but the majority held only one or two (198 graves) and three graves contained over 100 ceramic vessels each (Dechang Arong M1, Xichang Wanao M1, Huili Leijiashan M1).

The most common vessel forms appearing in all kinds of graves are jars without handles followed by vessels with two handles or a single handle, but there are significant differences between different graves (Table 6.20; Fig. 6.4). Graves that had been reopened and/or were used for multiple burial had a much higher number of ceramic vessels (15 on average, with a range of 0–130 per grave), mostly decorated medium-sized jars and double-handled vessels, while large urns hardly ever occur, and different bowl types tend to be rare as well.

When considering reopened burials separately, it becomes clear that there is much variety in their assemblages (Appendix Table B.15). Four of them (Dechang Arong M1, Xichang Wanao M1, Miyi Wanqiu M1 and M2) held particularly large assemblages, but they all consist of different ranges of artifact types. Miyi Wanqiu M1 and M2 contained a combination of double-handled and single-handled jars, together with small drinking vessels (cups/beakers) and pouring vessels (ewer/vases); Wanao M1 was characterized by jars without handles as well as beakers combined with only a few bowls; and Arong M1 held a large number of medium-sized decorated jars with or without handles. Indeed, nearly all double-handled vessels retrieved from graves with multiple burials above ground (i.e., megalithic graves) came from these few very rich graves. Ewers/vases, small and medium-sized beakers, and cups, on the other hand, are common throughout all megalithic graves, but bowls are not; instead, they often occur in earth-pit or stone-construction graves.

When conducting combination statistics and correspondence analyses, it becomes clear that there is a noticeable correlation between vases/ewers and cups/beakers in graves with multiple successive interments (Online Material: Correlation—Multiple). The correlation is not strong enough to treat these objects as fixed sets, but it is reasonable to suggest that vases/ewers were used to pour liquids into cups for consumption. The co-occurrence of a large number of cups/beakers and a few vases/ewers furthermore suggests that communal drinking practices were part of mortuary rituals in and around communal graves. Traces of similar ritual acts can be seen in objects pits associated with megalithic graves, such as Xichang Maliucun H1, which contained a number of goblets, beakers, stemmed *dou* bowls, and ewers; the stone frame outside of Xichang Tianwangshan M10 contained a vase and three jars with outward-flaring rims useful in pouring liquids; and the two pits at Xichang Dayangdui held similar jars, stemmed bowls, and cups. Beakers/cups and ewers/vases occur with single or multiple unopened interments as well, but in relatively small numbers and usually not in combination, indicating differences in burial ritual.

The correlation tables for the multiple reopened interments also show a frequent association between beakers and double-handled vessels as well as double-handled vessels and ewers, and double- and single-handled jars; vases and ewers, on the other hand, are hardly ever combined with handled ceramics. Here, a chronological component seems more likely than a functional explanation.

Graves that were not reopened generally contain much fewer artifacts than those with multiple instances of interment, with an average of four ceramic vessels each; about 2/3 of the graves contained only one or two vessels, a few held 10–50 ceramic objects, and only the single grave of Huili Leijiashan M1 revealed 102 ceramic vessels. Most common by far in such graves are various kinds of jars, followed by goblets, vases, and bowls, but the differences between graves are considerable (Appendix Table B.16). Indeed, the differences are so great that correspondence analyses and combination statistics conducted over all single interments—either excluding or including the less reliable ones—provide no useful results. The reasons become clear when comparing the assemblages manually. Huili Leijiashan M1, for example, does not only hold by far the largest number of ceramics but also the most peculiar ones, mostly highly decorated goblets, and a few vases that do not resemble any other finds from the research area. Large assemblages of 15–50 vessels have also been reported from other sites, among them Xichang Qimugou M1 and M2 and 9 of the 21 graves in Xichang Lizhou, both in the Anning River Valley. The graves at Qimugou are furthermore remarkable for the very fine quality of the ceramics they contain, all of them black or gray fine-ware fired at very high temperatures and embellished with a black slip. The assemblage is furthermore characterized by tulip-shaped high-stemmed goblets rarely seen in other contexts. The large assemblages from Lizhou are very different, consisting mainly of coarse sand-tempered red-brown ceramics fired at low temperatures and formed mostly into simple jars or bowls. Even though the assemblages from Lizhou are relatively similar to each other judging by functional form, there are considerable differences in details such as execution, decoration, and additions such as handles and spouts. While some graves (AM2, AM6, AM10, BM4) are characterized by highly decorated vases and ewers, others (AM9, BM3, BM8) have instead double-handled vessels, combined with large numbers of bowls but no spouted or decorated vessels. These differences seem to cross-cut the contrast between graves with 20–50 vessels and those less richly equipped, indicating temporal as well as social differentiation.

Among the 156 graves of Huili Fenjiwan in the Southeast, which make up a large part of all graves below ground, there is no such clear grouping. Most graves hold 1–4 small to medium-sized jars or urns, sometimes in combination with probable drinking vessels such as bowls, stemmed bowls, or goblets. Single- and double-handled vessels occur in only four (M26, M144, M148) and two graves, respectively (M6, M33), but on vessels that otherwise look identical to jars without such applications. It is remarkable, however, that the only two spouted vessels and two of the three ewers reported from Fenjiwan were associated with single- or double-handled vessels, types that are otherwise rare in Huili. Furthermore, all of the graves just mentioned were located in the lower part of the hill slope. As M26 furthermore contained a bronze sword/dagger fragments, it is not unlikely that the graves with handled vessels are of a slightly later date. The only other grave site in Huili, where handled vessels have been found, is Huili Guojiabao, a site otherwise known for its large number of metal weapons and ornaments. Furthermore, among single and multiple unopened interments, there is a considerable regional bias in the distribution of single- and especially double-handled vessels; most of them were found at Ninglang Daxingzhen or various sites in Yanyuan in the Northwest, where nearly all graves held one or two of these vessels.

The graves in Zhaojue in the Northeast were mostly devoid of ceramics or held only coarse small jars without handles or decoration. Remarkable is only Zhaojue Chike Boxixian M1, which held a Han-style ceramic *fu* vessel combined with an iron knife and Han coins showing clear Han connections. The only other grave with such vessels is Xichang Ma'anshan in the Anning River Valley, where two *fu* were combined with a flat-bottomed urn that reminds of Han forms as well. The graves at Xichang Dayangdui stand apart as well; they were equipped with high-quality high-fired black fine-ware, some with unusually thin and overly long handles, very different from the coarse, red, sand-tempered ceramics without handles or with broad band handles otherwise common in the Anning River Valley and other parts of the research area. Vessels similar to those in the earth-pit graves of Xichang Dayangdui have only been found in the later megalithic graves and ceramic pits at the same site, setting Dayangdui apart from everything else know in the research area.

Overall, the ceramic assemblages associated with graves used for multiple instances of burial (all of them megalithic graves) and those used for a single instance of interment are very different. The former mostly are associated with vessels used in drinking rituals and were not always deposited in the graves themselves but sometimes discarded outside in special pits. A number of megalithic graves did not contain any ceramics at all, reaffirming that such vessels were probably not intended for the use of the deceased but for the burying group. The kinds of ceramic object found in graves used for single instances of interment probably had a different function, serving as offerings and gifts for the deceased more so than the mourners. The ceramics forms differ very much from region to region, site to site, and even grave to grave, indicating cultural as well as temporal and social differentiation. Nevertheless, we always have to bear in mind that graves devoid of ceramics might have contained vessels made of wood or tree bark that were not preserved. The few wooden vessels found in the Southwest remind of this possibility.

6.3.2 Sets of Weapons and Tools

When conducting correspondence analysis for weapons and tools found in graves, the resultant picture is not very clear (Appendix Figs. B.7 and B.8). Many object types such as scabbard tips, iron points, or spades are too rare to be used for statistical calculations and can only be evaluated manually (Appendix Table B.17). It is not surprising that the only observed scabbard tip would be found in a grave containing two swords (Yanyuan Gesa M1). The very few bronze *ge* discovered so far are all from Yanyuan in the Southwest and they are all associated with at least one sword/dagger and a considerable number of other metal, mostly bronze arrowheads and other metal weapons, but also a few stone weapons or tools. All of these graves in Yanyuan are exceptionally rich in metal objects, especially weapons, as are most of the graves containing spear heads, the majority of them likewise located in the Southwest (Yanyuan, Yongsheng, and Ninglang). Here, the spearheads do not appear on their own either, but usually in combination with metal swords/daggers, knives, arrowheads, sometimes axes, but only rarely with stone weapons or tools.

In other subregions, however, spear heads can be associated with nonweapon objects. In two megalithic graves with multiple interments in the Anning River Valley (Xichang Xixingcun M1 and Xijiao Gongshe M1), spear heads were associated with spindle whorls, stone knives, and agricultural tools; but as these are multiple burials containing a considerable number of skeletons, the spear heads and the domestic tools may have belonged to different people. Nevertheless, the assemblages between the Southwest and the Anning River Valley with regards to metal weapons seem to differ markedly. In the Southeast, in the earth-pit grave M3 at Huili Fenjiwan, a spear head of relatively high quality and elaborate decoration was associated with two bracelets (one of bronze, the other of nephrite), and a single-handled ceramic vessel. The graves in Fenjiwan are generally very poor not only in metal objects but also in stone tools or weapons; apparently the local burial ritual generally did not require the interment of such items.

Spindle whorls have been found throughout most of the research are but in uneven numbers. In archaeological research, spindle whorls are often seen as a female attribute or at least as an object category associated with the domestic sphere as opposed to hunting or combat. The majority of spindle whorls found in the research area do indeed occur in graves that do not hold any weapons. Most graves in which spindle whorls were associated with stone arrowheads and/or other weapons are multiple successive burials in megalithic graves in the Anning River Valley that might have held both male and female interments.[27] The only single graves combining spindle whorls and weapons are Yongsheng Duizi M106, which has not been reported in sufficient detail to be sure about the actual composition of grave goods, and Huili Leijiashan M1, which was only partially excavated, making it difficult to judge the nature of these finds.[28]

What remains remarkable for most single graves is the separation of spheres between clothes production and hunting/armed combat. Bronze arrowheads and spearheads often occur in the same grave, while arrowheads of metal and other material only rarely are found together; there the explanation might be differences in date rather than a functional, cultural, or social cause. On the other hand, no clear correlation can be seen between arrowheads and other weapons/tools. Metal knives can occur with all kinds of weapons, but hardly ever with woodworking tools, grinders, or production tools, and rarely with spindle whorls; metal knives were thus likely personal weapon/tool rather than part of a tool set used in object production or food procurement. Half-moon shaped stone knives are very rare in graves and are often combined with food processing or procurement tools, identifying them as harvesting knives rather than multipurpose personal tools/weapons.

Both food procurement tools and woodworking tools are rare in graves but common in settlements. In graves, woodworking tools are usually associated with grinding equipment and sometimes arrowheads, but hardly ever with spindle whorls or metal weapons, indicating separate spheres of occupation. Somewhat puzzling are grinding rods; they mostly occur in multiple burials, making it difficult to judge their association with other object types; however, they were often placed in the hip area of the deceased, suggesting a function as personal tools. In most graves, grinding rods are associated with metal knives, sometimes with swords, daggers, or arrowheads, indicating that they may have served as sharpening tools for weapons; nevertheless, in three graves they were not accompanied by any weapons or tools but only by spindle whorls, ceramics, or personal ornaments.[29] These rods might thus have served as a personal tool fulfilling a variety of functions not limited to sharpening weapons.

6.3.3 Sets of Personal Ornaments and Clothing Applications

The number and types of personal ornaments varies widely between different regions and even between different graves, and many ornament types appear so infrequently that statistical analysis does not show any significant results (Appendix

[27] These graves are Xichang Bahe Baozi M1, Side Lake Sihe M6 and M8, Xichang Xixingcun M1, Xijiao Gongshe M1, and Yuanjiashan M1.

[28] Yongsheng Duizi M106 is a stone-construction grave containing 1 composite knife, 2 bronze arrowheads, 1 bronze spear-head, 1 spindle whorl. Huili Leijiashan M1 is an earth-pit grave containing 114 ceramic vessels, 13 stone arrowheads, 5 grinding rods, 1 stone axe, 12 handstones, 4 pestles, 2 flake tools, and 22 spindle whorls.

[29] These graves are Dechang Arong M4, Huili Miaozi Laobao M1, Xichang Hexi Gongshe M4, and Wanao M2.

Fig. B.9); here, again, manual evaluation is the only possible alternative (Appendix Table B.18). Bracelets—usually made of metal—are the most common type of personal ornament throughout the whole research area and they often appear alone without any other type of decoration. Where finger rings or earrings were found, they usually were combined with other ornaments, and they are mostly restricted to graves containing a large number of decorative elements.

By mere object count, ornaments worn around the neck are even more common than rings; these numbers, however, are somewhat misleading; beads, pendants, and perforated tusks or shells often occur together and sometimes in large numbers, which suggests that they were originally assembled in one single ensemble. As many ornaments were found in multiple burials in between the bones, it is impossible to tell how many ornaments belonged to each individual. If beads and pendants indeed belonged only to a few separate ensembles, then many of those buried in multiple consecutive interments would not have worn any personal ornaments. This suggests that there either was no rule governing who could wear what kind of "jewelry" or—more likely—that people of different social functions and different rank could be buried in the same grave; in graves used over a longer period of time, another option would be a gradual change of burial customs. This question will have to be discussed below when considering grave form, body treatment, and object assemblages in concert.

Clothing applications tend to occur in sets as well, mostly multiples of the same forms, but they are overall relatively rare. Buttons and other clothing applications were mostly found in rich graves, mostly in the Northwest (Yanyuan and Ninglang) as well as in the exceptional grave of Huili Guojiabao, and with a few multiple successive interments in the Anning River Valley. In the Anning River Valley, however, each grave held only a few clothing ornaments, while the graves in the Northwest each contained large sets. Nevertheless, in both areas, clothing applications were often associated with hair ornaments.

Belt hooks and belt ornaments likewise occur only in a small number of graves and always in combination with belt applications, buttons, and/or other clothing applications, again mostly in the Northwest (Yanyuan Laolongtou M6 and M9) and in one case in the central Anning River Valley (Xichang Xijiao Gongshe M1). The rarity of belt hooks in combination with belt applications suggests that clothing requiring nonorganic belts was probably not very common throughout the research area or that they were at least not common as attire for the grave. Indeed, we need to keep in mind that differences in the occurrence or nonoccurrence of personal ornaments and clothing applications at different sites throughout the research area are not necessarily a direct reflection of a difference in dress, but might only show differences in burial customs. At least for the majority of the multiple successive interments in the Anning River Valley, it seems fairly certain that the deceased were interred there fully clothed and ornamented—be it in their daily attire, in festive clothes, or in an outfit only meant to be worn in death; for other types of burials, however, the situation is far from clear. In case of the nearly object-free graves of Huili in the Southeast, for example, it might have been customary only to wrap the deceased in cloth or bury them in plain clothes without any jewelry or personal belongings. The same might apply to the single interments at Xichang Lizhou, Yingpanshan, and Mianning Xiaogoudi. Remarkable is Huili Fenjiwan, where only five of the over 150 graves held ornaments, mostly single bracelets or rings of metal or stone, in some cases combined with a single ceramic vessel or a metal weapon. None of these graves had any special features, installations, or other artifacts that would explain the presence of these ornaments. They might of course be of a different date than the other graves, or the ornaments might have entered the graves for individual reasons, as objects requested by the deceased before death or given by the mourners as *Liebesgabe*.

6.3.4 Combining the Object Groups

When considering complete assemblages, it is particularly important to keep in mind that not all graves can be treated as closed finds. Some have been reopened, others contained more than one body and thus potentially held several separate sets of burial goods. I therefore analyze different subsets of graves separately, starting from graves with multiple successive interments where separate layers/assemblages could be distinguished, then comparing the results with multiple interments where these distinctions could not be made. In a next step, I turn to small-group interments in graves that have not been reopened, before considering single interments. In all cases, I start from the well-preserved and well-published material, analyzing it separately from less well-documented examples before comparing the two subsets. As has become clear earlier, there are furthermore considerable regional differences in object assemblages. In many cases, the material from the various subregions therefore has to be considered separately as well. Throughout this process, the comparative analysis of different subgroups of the material will help to attain well-founded results.

6.3.4.1 Object Assemblages in Graves with Multiple Successive Interments

As all known multiple successive interments were observed in megalithic graves and all megalithic graves are located in the Anning River Valley and the mountains slightly further east, the discussion of this kind of graves naturally has a regional component and takes place within a specific grave-form category. References to location and grave form already at this point of the overall analysis are therefore unavoidable.

Although it is clear that many of these graves have been reopened several times, only very few excavation teams have recorded and reported the grave content separate by layer. Sufficiently detailed accounts are available only for Dechang Arong M1, M3, and M4; Xide Guluqiao M1; Xichang Hexi Gongshe M2 and M3; and Wanao M1 and M2. All of these graves contained ceramics, personal ornaments/clothing applications, weapons/tools, and sometimes other kinds of artifacts such as coins or *ling* bells, but these objects are unevenly distributed between the different layers (Online Material: Assemblages—Multiple Interments). At Xichang Wanao, Hexi Gongshe, and Xide Guluqiao the ceramics are highly fragmented and located in separate layers above the other object and human bones and some even outside the main grave chamber. This shows that the ceramics were not belongings of the deceased but objects used in rituals associated with the grave. They are thus *Nachgaben* and not actual *Beigaben* or *Mitgaben*.

At Xichang Wanao, the ceramic assemblage consists of large sets of medium-sized jars and drinking vessels such as cups, beakers, or bowls; by contrast, at Hexi Gongshe and Guluqiao only single jars and goblets were placed into the grave. At Dechang Arong, on the other hand, the vast majority of vessels were located in the lower layers of the grave, both in the front and in the back, while only a few were found in the top layers; other kinds of objects such as personal ornaments or weapons/tools occurred in various layers in relatively small numbers. In the graves at Dechang Arong, the ceramic assemblages were richer and more diverse than those at the other sites; they always combine a number of jars without handles, some handled vessels, beakers, and sometimes even ewers within the same layer.

Especially remarkable is the large number of highly fragmented ceramics close to the door of Dechang Arong M1 and the about equally large number of slightly better preserved vessels. The ceramics from the other graves at Arong are mostly broken as well, but not as severely damaged as those in the front part of M1. As there is evidence of burning within these fairly large graves, it is likely that the ceramics were deposited in rituals conducted both deep within and in the front part of the grave, both during and after the actual burial(s). These rituals likely involved the consumption or at least libation of liquids, as the vessel forms indicate. Similar rituals took place in connection with the other graves as well, but likely after the actual interment and/or outside the grave. Nevertheless, all graves at Wanao and Arong M1 and M4 show scorch-marks and other instances of burning inside the grave, and the bones at Guluqiao were rearranged and piled in the back, indicating that all the graves were actually reentered and not just reopened. Furthermore, all of these graves are rather large and have a height of 1.7–2 m, i.e., of a height that would allow a person to stand upright; even at the point of construction, these graves were therefore likely meant to be accessed.

As the bones are too heavily deteriorated, it is not possible to ascertain how many individuals each of the graves with known layering held and which objects may actually have belonged to which person. Nearly all layers contained more than one ornament (mostly various types of rings, beads, and hair ornaments with no discernable preference in the combination of elements); weapons and tools (metal knives, arrowheads, grinding rods) can occur with or without ornaments. The largest number of ornaments was found within the rearranged stack of bones in Xichang Guluqiao M1 (38); considering their considerable number, the various types of rings and beads in combination with several bronze knives probably belonged to several individuals. The large number of ornaments in the lowest layer of Wanao M2 (36) is somewhat problematic as they encompass a large number of very small bone beads of similar shape and size, which may have belonged to one necklace adorning one person or to several assemblages worn by a number of individuals. As most of the ornaments from this and other megalithic graves are small, they may easily have become dislocated and their position in specific layers might not reflect their original placement.

More useful than a description of the vertical distribution is therefore information on the horizontal arrangement of objects in megalithic graves; such observations are available for Xichang Hexi Gongshe M2 and M3, Xijiao Gongshe M1 and M6, all excavated graves at Xichang Guoyuancun, Tuanbao, and Tianwangshan, as well as Xide Lake Sihe, Puge Xiaoxingchang, and Miyi Wanqiu. At both Xichang Tianwangshan and Xichang Tuanbao, a number of ceramic vessels occur outside the grave instead of within, identifying them as *Nachgaben*. In all graves at Xide Lake Sihe and Xiaoxingchang, on the other hand, the ceramics were found inside the graves in between the bones, but mostly in a fragmented state; these vessels might thus have been used in burial-related drinking or libation rituals, and were then destroyed and deposited in the grave as *Nachgaben*.

Miyi Wanqiu M1 and M2 are the only known megalithic graves that contained large numbers of intact vessels; here, both objects and human skeletons were neatly arranged in the back of the grave. Several large vessels furthermore contained smaller vessels and personal ornaments such as beads, showing that these objects were likely intended for the use of the deceased in the afterlife, i.e., *Beigaben* rather than *Nachgaben* used in the burial ritual. It is interesting to note that the objects were stacked in each other, meaning that they could not have contained food or drink offerings, but that the actual *Beigaben* were the vessels themselves. The grave assemblages at Wanqiu are overall rather different from what we see at most other sites; they consist of a large number of decorated double-handled and single-handled vessels, some cups, beakers, ewers, and vases, and a very small number of personal ornaments or weapons. Most other megalithic graves contain mostly multiples of a limited range of personal ornament types, some weapons, only a few ceramics, usually in a highly fragmented state. Only Dechang Arong M3 contained handled ceramic jars very similar to those found at Wanqiu (Types C and D), likewise deposited intact and clustered along one wall. Miyi Wanqiu M1 and M2 and Dechang Arong M3 thus seem to share similar burial rituals and ceramic assemblages somewhat different from what is seen in most other graves.

The majority of personal ornaments found in megalithic graves were scattered in between or even on the human bones,[30] indicating that they were still worn by the deceased when they were interred. From Xichang Xijiao Gongshe, it was even reported that most of the head ornaments were located around the skulls, the earrings next to the necks, and the bracelets and fingerings on arms and hands. These bodies thus clearly were interred as primary burials with personal ornaments remaining in place. Other objects found between the bones at this site are bone needles, which might have served as tools or dress pins. In other graves metal weapons, especially knives,[31] stone weapons, and/or ceramic spindle whorls were found in between the

[30] This was reported from all excavated graves at Xide Guluqiao, Xichang Bahe Baozi, Lake Sihe, and Xijiao Gongshe. For most other graves, the reports are not detailed enough to infer on the position of ornaments in relation to bones, if preserved.

[31] The placement of knives in the pelvis area of skeletons was observed in all graves at Xide Lake Sihe and Guluqiao, Miyi Wanqiu, Xichang Xiaoxingchang, and Miyi Wanqiu.

human bones.[32] Where they occurred, small *ling* bronze bells were usually found in the pelvis area; they were thus part of the personal attire of the deceased and not separate ritual objects like the large bells placed at the foot of some single or multiple interments.[33] In megalithic graves, only very few Han coins have been found but then always between the bones; they may thus have been kept in a bag attached to the clothes or a belt, on a chain as a talisman, or placed with the deceased in some kind of ritual act.

Only very few megalithic graves held nonceramic items that were deposited separate from the human bones. At Puge Xiaoxingchang BM1, a bronze sword/dagger together with three perforated boar's fangs had been deposited next to the door, identifying the assemblage as a ritual offering rather than a *Mitgabe*. In Puge, which is located in the thickly forested mountains slightly east of the Anning River Valley, perforated tusks are very common in megalithic graves, but they are usually found between the human bones as personal ornaments of possible talismanic function; indeed, even Xiaoxingchang BM1 contained a few more perforated boar tusks that were found in between the human skeletons. This serves to show that the same kind of object can be used differently, even within the same grave.

In Xichang Hexi Gongshe M2, several different groups of objects could be identified: one pile of ceramic fragments was deposited in the front part and six separate piles of several object in the rear; this separation indicates that each of these piles is the outcome of a separate instance of deposition and that each of them even may have belonged to a different individual. This grave therefore provides the clearest evidence currently available for object sets within megalithic graves. The following assemblages can be distinguished:

(a) 2 bronze bracelets, 2 bronze knives, 1 bronze bracelet, 1 bone bead (in one pile at the rear wall);
(b) 2 bronze knives, 2 bells, 1 grinding rod (separate pile toward the back);
(c) 1 bell, 1 bracelet (on the side);
(d) 2 knives;
(e) 1 bell; and
(f) 1 grinding rod (each on the opposite wall in separate piles).

If these sets indeed belonged to one individual each, then a single person apparently was equipped only with a limited number of ornaments and personal weapons/tools, while many individuals might not have had any objects of imperishable material on their person. This impression is confirmed by the uneven but usually rather small number of nonceramic objects found in graves with large number of skeletons. In Puge Xiaoxingchang BM4, 125 skeletons were accompanied by only 35 ornaments and no weapons/tools; in Xide Lake Sihe M1 and M7, over 10 people were accompanied by 2 ornaments and 1 weapon each (Online Material: Assemblages—

[32] Various types of stone weapons and spindle whorls were found in between the human bones in Xide Lake Sihe M5, M6, and M8.

[33] *Ling* bells were observed in between the human bones in Xide Lake Sihe M8, Guluqiao M1, Xichang Bahe Baozi M1, and Hexi Gongshe M2.

Megalithic object groups). Some graves, on the other hand, held more ornaments than people, showing that one person could indeed have more than one ornament (e.g., Puge Xiaoxingchang M1, Xide Guluqiao M1). Weapons and tools, however, are generally rare and it is unlikely that anyone interred in a megalithic grave had more than a maximum of three, while many had only one and others neither weapons nor tools and some not even ornaments of metal, stone, bone, or any other material that would have been preserved in the soil of the Liangshan Region.

It is also remarkable that there is a considerable difference in assemblage between graves even within the same site, some holding only ceramics, some only personal ornaments and/or weapons/tools, others a combination of both. No clear correlation can be discerned between the presence/absence of these different object groups, the number of people interred, the grave form, and the location. It is remarkable that the graves at Xichang Wanao and Dechang Arong as well as Miyi Wanqiu are considerably richer in ceramic vessels than those at other sites; at the same time these graves also hold a considerable number of personal ornaments and weapons. It is noteworthy, that all graves with particularly large numbers of ornaments were found next to graves with very few or no ornaments at all, but both graves with many and those with few ornaments housed a considerable number of skeletons.[34] This discrepancy suggests that either different subgroups of the same population were buried in separate graves within the same site, or that there is a chronological difference between graves with few and graves with many objects. If it was different subgroups of the same population, then these groups were likely socially/culturally defined rather than by sex/gender, simply because anthropological analysis shows that men and women were interred in the same graves.

As there is hardly any overlap in object types between these graves, their relationship is difficult to ascertain; it is noteworthy, however, that at Puge Xiaoxingchang the graves with large number of ornaments but few weapons were located slightly apart from those containing mainly weapons and tools. Those graves containing ornaments also held swords/daggers, arrowheads, and grinding rods, but not knives, while the graves without ornaments mainly contained knives and arrowheads as well as spindle whorls and various stone tools; this shows that the stereotypical split between "warrior" and "craftsperson" or "male" and "female" spheres of life expressed in a combination of jewelry and spindle whorls on the one hand and weapons and tools on the other is not applicable here. The sword/dagger and the bracelets in Xiaoxingchang BM1 of course might have belonged to different people, but the spatially separated assemblages at Hexi Gongshe show that ornaments and weapons/tools could be part of the same object set.

When creating cross-tabulations and conducting correspondence analysis, it becomes clear that nearly all kinds artifacts in megalithic grave can occur together; nevertheless, a few regular co-occurrences are discernible (Online Material: Correlation—Megalithic ceramics/Megalithic other; Appendix Figs. B.10 and B.11). As shown earlier (Chap. 6.3.1), vases/ewers and cups/beakers often occur together,

[34] Examples of this phenomenon are the sites Puge Xiaoxingchang, Xichang Bahe Baozi, Xichang Xijiao Gongshe, and Xide Guluqiao.

indicating a functional set for drinking. The regular co-occurrence of *fu* vessels and coins—both of them Han-type objects—are hardly happenstance, but a chronological marker that indicates contact with the Han cultural sphere[35]; the same applies to the bronze seal found in Xide Lake Sihe M8 together with a bronze coin.

Grinding rods always appear next to metal one or several weapons/tools, but with no special preference for knife, sword/dagger, or axe, reaffirming the function of personal sharpening tool suggested by their location in the hip area.

It is not surprising that the only grave containing pieces of body armor (Xichang Xixingcun M1) additionally held a considerable number of weapons, but body armor also always was associated with metal bracelets, showing that ornaments and weapons did not exclude each other. Indeed, bronze knives usually occur next to various rings as well as *ling* bells, while swords/daggers are more commonly combined with clothing application, hair ornaments, bracelets, and beads. It is therefore not unlikely that swords/daggers and knives had different functions and meanings, one being a weapon carried by a small number of people with richer clothes and more elaborate hair-do, the other a personal tool used by a larger number of people who only wore a few rings for decoration or as talismans or symbols of unknown meaning.

Arrowheads occur in various different combinations and have no strong link to any other object group. Coarse stone tools and wood-working tools are often associated with arrowheads , but they are overall too rare for these co-occurrences to have statistical significance. The same applies to spindle whorls, which have been found in small numbers in about 20 % of the megalithic graves and co-occur with all common object types. More significant is the fact that buttons and other clothing applications are always associated with a considerable number of personal ornaments of all types, especially hair combs and needles, but also different kinds of beads and rings, indicating that clothing ornaments were reserved for overall more richly equipped individuals. Many of these object-rich graves furthermore contained flat or collard discs and disc segments usually made of bone or sometimes bronze; these objects are very rare throughout the research area; as they remind of objects known from the Sichuan Basin and the Central Plains, it is likely that they are either imported or imitating foreign objects (the graves are Xide Guluqiao M1, Xichang Bahe Baozi M1, Xiaohuashan M1, Puge Xiaoxingchang BM1).

In contrast, bracelets, mostly made of bronze and likely of local production, are the most common type of personal ornament, occurring in 22 graves, some holding only one, others as many as 10–30. Beads are a very common type of ornament as well, but there are differences in the preference for different kinds of raw material; for example, turquoise and agate hardly ever appeared in the same grave but nevertheless often at the same site, indicating a difference in meaning or association with different local subgroups. As beads usually occur in groups of 3–30 specimens of nearly identical form within the same grave, it is reasonable to assume that they were usually strung in chains with a preference for a homogenous appearance of the resulting ornament. It is therefore very likely that in most graves only one or two people were equipped with such an ensemble.

[35] These object combinations were observed at Miyi Tianba M1 and M2, Xichang Hexi Gongshe M3, Xide Lake Sihe M1 and M8.

In summary, this great variability in material remains associated with graves used for several instances of interment and associated rituals allows for a number of conclusions. In general, megalithic burials were used for multiple successive interments of larger or smaller numbers of people that involved a great amount of ritual, both during and after the actual burial, consisting of communal drinking practices and ritual acts involving fire and sometimes a reentering of the grave and/or a rearrangement of the bones of previous interments. Only in very few instances were ceramic vessels used as containers for *Beigaben* for the deceased. Instead, ceramics were mostly employed in related rituals, entering the grave as *Nachgaben*. While the burial ritual might have been involved and possibly even strict, there seem to have been no definite rules as to the *Mitgaben* accompanying the dead in multiple interments.

As no clear object sets are identifiable, and as personal ornaments as well as clothing applications and small amounts of weapons and tools were found in between or still on the bones, it is very likely that the deceased were simply buried in their usual attire. Different social or other groups might have been buried in different graves—hence the difference in assemblages between neighboring graves—but men and women were buried together. All objects addressed here as ornaments might of course just as well have a talismanic function protecting the deceased in this life and the next, but judging from the sets of one or two knives and bracelets at Hexi Gongshe, it is very likely that people went to their grave equipped in similar fashion as in life. Certain amounts of use-wear have been observed on some weapons and tools, while some of the beads are unevenly flattened on one side, indicating wear through friction on clothes over extended periods of time, thus supporting the assumption that these were objects that had belonged to the deceased in life, making them true Mitgaben rather than *Beigaben*. Less clear is the case of the sword/dagger deposited close to the door of Puge Xiaoxingchang BM1 together with three boar tusks, clearly not objects worn by a person in the grave, but possibly belonging to them all the same. Nevertheless, this assemblage might just as well be a magical bundle or other kind of offering or even a spontaneous gift (*Liebesgabe*) given in a single case without following specific rules or customs.

Overall, the assemblages in the megalithic graves thus reflect communal rituals that reaffirmed bonds within a certain group by burying its members together, while leaving a certain freedom for expression of individuality in personal attire and possibly spontaneous gifts. Only the megalithic graves at Xichang Dayangdui deviate from this pattern; they were probably used for a single instance of interment and only contained very few skeletons and no objects except for ceramic urns. The burial ritual in this case was therefore rather different in nature to what we see in other megalithic graves, but more similar to the small-group interments in graves that were not reopened. These will be discussed in the next two sections.

6.3.4.2 Object Assemblages Associated with Small-Group Interments

Only very few graves used for a single instance of burial contained more than one skeleton, all of them stone-construction graves in Zhaojue in the Northeast, Yanyuan in the Northwest, and Yongsheng in the Southwest. The numbers are too small to allow for statistical analysis, but manual comparison is possible. The object assemblages associated with these graves furthermore differ significantly by subregion and potentially also by chronological position. These graves therefore are best discussed separately by geographic location. The same applies to the single-interment graves analyzed at the end of this chapter (Sect. 6.3.4.3).

The Graves of Zhaojue

The graves in Zhaojue are coarsely made stone-construction graves with hardly any objects, but details of grave forms, burial ritual, and content differ markedly between sites. Chike Boxixian M3 held at least nine skeletons interred in one instance as secondary burial, the long bones arranged in several piles throughout the grave. The object assemblage is limited to nine Han bronze coins, one silver ring and some iron fragments of unclear nature found in between the bones. Pusu Bohuang M2 and M3 each contained three human skulls and several long bones stacked in one pile as a secondary burial; M9 held enough long bones to allow for inferring the presence of three separate bodies, but it is unclear if they were primary or secondary interments. Just as all other graves with single interments or unclear interment practices at Pusu Bohuang, these three graves with multiple interments contained 1–3 vessels (vases with high narrow necks or small jars with outward-flaring rims) placed on one of the long sides close to one end; considering their deliberate deposition and complete preservation, these objects probably served as *Beigaben*. M3 additionally contained four wooden bracelets in a pile in the head area of the grave, probably belongings of the deceased that had been deposited separately from the bones during the process of secondary burial. While the other graves at the site were devoid of nonceramic artifacts, M3 and M4 contained calcinated ropes placed next to the bones, reflecting unknown ritual acts. When comparing these graves to other stone-construction graves in Zhaojue, it becomes clear that graves with multiple interments do not stand out from those holding only remains of a single individual, but are largely identical in construction, content, and associated rituals.

The graves in Zhaojue are generally too severely disturbed and contain too few objects to allow for a statistical evaluation, but the same kinds of objects—ceramic vases and jars, stone arrowheads and woodworking tools, spindle whorls, and various kinds of small personal ornaments as well as bronze vessel and coins of Han origin and calcinated ropes—seem to occur throughout all sites in various combinations.

The Special Case of Yanyuan

The multiple graves in Yanyuan are rather different, both from those in Zhaojue and from most single interments in Yanyuan. Only three of the eight graves excavated at Yanyuan Laolongtou contained more than one skeleton, M6 and M9 housing each four and M4 containing remains of two individuals, and in both cases, various individual were associated with separate sets of objects (Online Material:

Assemblages—Yanyuan). M6 and M9 are the largest graves in the cemetery and have the most complex structures with grave partitioning and internal installations, and they have the largest number of objects; the two graves are furthermore similar to each other in assemblage. The skeletons in M6 were all interred in extended supine position, all of them with their head in the West. One individual (S1) was placed on the second-level ledge without any accompanying objects but next to a horse skull and horse long bones; it has therefore been interpreted as human sacrifice next to the sacrifice of a special animal (Liangshan and Chengdu 2009: 19). For each of the other skeletons, separate artifact assemblages and signs of body treatment can be identified. One skeleton (S2) showed carmine-red soil in the head and chest area, probably a kind of beautification or ritual treatment, and it was decorated with bronze earrings and a bronze bracelet; an unperforated long oval grinding stone in the hip area (probably originally in a pouch) completed the set of *Mitgaben*; the double-handled jar at the feet was likely a *Beigabe*, possibly containing grain or another type of food or drink offering. One of the other skeletons (S3) had a similar vessel at its feet and a *ling* bell in the pelvis area, while the ceramic vessel associated with the fourth individual (S4) was placed at the left shoulder. S3 was more richly equipped than the others, with bronze tubes around the head (probably hair ornaments), agate beads at the neck, a belt ornament in the pelvis area, a composite knife and a bronze dagger-axe on the upper part of the left femur. Additionally traces of carmine-red soil were observed around the head and on the body. The fifth individual (S5) had a slightly different assemblage consisting of a belt with belt hook and belt applications applied on cloth, a bronze box on its right side, and some unidentified animal bones with carmine-red soil in the foot area, probably from food offerings. The western part of the northern coffin chamber was severely disturbed, and round and butterfly shaped bronze clothing-applications, bracelets, arrowheads, and agate beads were concentrated here that probably once had been part of the *Mitgaben* for S5.

Apart from the object directly associated with one of the skeletons, a tree-bark container with several worked stones (one large and one small round reddish stone of unreported size, over ten quartz stones of different size, and a black shiny stone—probably obsidian), one perforated stone cutter, a small bronze axe, a bronze knife, a bronze chisel, and two bronze cones had been placed on the divider. The foot compartment held a hairpin, ten stone arrowheads, and three horse long bones. Who of the interred people was supposed to make use of which of the objects placed in these two places is not entirely clear, but the arrowheads match those associated with S5, which—judging from the assemblages associated with each skeleton and the overall arrangement—is probably the main interment. Overall, the combination of a variety of personal ornaments, hunting and processing tools, and food offerings, as well as traces of ritual acts such as the application of red substance, the offering of horse head and long bones, and possibly even human sacrifice is fairly unique, but in some aspects similar to Laolongtou M9.

Both M6 and M9 had a wooden coffin and a stone cover and contained four skeletons each, but for M9 it is much more difficult to distinguish separate assemblages as the grave was disturbed and the objects were scattered throughout the grave. A single human rib bone was found in the western part of the stone coffin together with a bronze arrowhead, small bronze ornaments below, three stone balls on the southern side, and a complete pig skeleton in the East. West of the stone cist there are scattered bronze belt ornaments and a bronze *ge* halberd, which might originally have been placed inside the coffin or in the area south of the coffin. Outside of the wooden coffin in the southwest, there were a few human long bones but without any objects. In the southern part of the wooden coffin there were some ash remains, scattered pieces of a human palate and teeth, horse long bones, small bronze ornaments, ceramic sherds, fragments of bronze weapons, and two sets of round belt ornaments. The assemblage is thus not unlike that of M6, but there are traces of unique ritual acts; outside of the stone-cist on the southwestern end an ash-layer of $1.4 \times 1.35 \times 0.1$ m was observed, which was surrounded by small stone slabs on four sides, and contained ash remains, fragments of a human skull, ceramic sherds, *ling* bells, small clothing-applications, bronze arrowheads, chicken bones, pieces of antler, and other animal bones, all of them with burning marks. This assemblage is therefore likely a separate set of *Beigaben* and *Mitgaben* for another person, whose remains received fire treatment inside the grave. The composite sword and the belt ornaments placed between this assemblage and the stone coffin could have belonged to either of these interments. The combination of clothing applications and a sword/dagger or other weapon, sometimes combined with personal ornaments and handled vessels, is very common in Yanyuan and has been observed in Yongsheng as well. At Laolongtou itself, similar assemblages can be seen in M4 and M11, but associated with a slightly different set of burial rituals.

M4 is a double burial, but it is unclear if both are primary interments, as only one of the skeletons was found complete in extended-supine position on the second-level ledge, while the main grave chamber contained only a single human mandible with cinnabar on the teeth. It is conceivable that the more richly equipped interment in the main chamber had been reburied together with the person on the second-level ledge, or that the corpse went through a rather special ritual leaving only the mandible to be interred. The secondary interment is in this case thus probably the main person in this grave and not the primary interment as is usually the case. It is unlikely to be a case of human sacrifice or suttee, though, as both bodies were accompanied by a considerable number of objects as well as one stone ball in the foot area each, reflecting a similar ritual conducted for both. The primary interment on the second-level ledge was accompanied by a triangular bronze *ge* dagger-axe on the right side of the head, a set of armor plates on the right arm, a small double-handled ceramic beaker, and a horse head with horse harness made of gilded bronze at the lower legs, an assemblage identifying the person as a warrior or at least a person associated with combative skills or military power. The standing and function of the person interred in the main chamber is less easy to ascertain; he or she was associated with a necklace made of turquoise and agate beads worn around the neck, small bronze ornaments in the chest area (probably clothing applications), and a bronze chicken-shaped staff head above (probably a ritual offering or tool, rather than a personal ornament), an iron spear, a bronze halberd, and some body armor in the foot area, next to another horse skull and the lower palate of a third horse, likewise accompanied by bronze horse harness. Both interments therefore share a similar basic equipment (body armor, weapons, horse bones, horse harness), identifying them both as people who knew how to handle weapons but probably were of different standing;

considering the lack of elaborate ornaments and the placement, the person on the second-level ledge was likely in a serving or assisting function to the person in the main grave compartment for whom the burial was mainly intended.

The objects in the foot compartment (1 bronze drum, 2 bronze *fu* cauldrons of inverted drum shape, 1 *bianzhong* bell, 2 single- and two double-handled ceramic jars, 1 bronze knife, 3 pieces of horse harness, and a number of bone beads) and those on the southern part of the second-level ledge (1 horse head, 2 horse long bones, 1 bronze sword/dagger, and 1 bronze staff) might be more than additional *Beigaben*. The combination of horse bones and a bronze staff suggest a ritual offering; the drum and bells probably had a ritual function as well and the vessels likely contained further food offerings; knife and beads would be additional personal attire and horse harness might be interpreted as additional equipment for the deceased. Interestingly, the horse skull placed with the first skeleton faces east, while the other two are oriented toward the West, i.e., the horse heads were facing in the same direction as the human skeletons they were placed next to. As the ceramic vessels are complete, they likely contained food *Beigaben*, a smaller amount for the person placed on the second-level ledge, and considerably more for the person in the main chamber.

A fairly similar assemblage combining bronze arrowheads, a knife, sword or other weapon, a grinding rod and other tools, as well as some clothing applications and personal ornaments have been observed at Laolongtou M11 as well, albeit in a single interment in a simple wooden coffin with stone cover on the grave. The skeleton was placed with the head in the South as extended-supine interment with bronze spirals around the head (probably originally wound around strands of hair, similar to S4 in M6), turquoise and jade ornaments for the ears, a chain of agate pearls around the neck, a set of 20 thin bracelets on the right arm, a set of eight bronze weapons (1 sword/dagger, 1 halberd, 2 axes, 2 knives, 2 spears) left of the body together with a ceramic vessel and three sharpening/polishing stones, another polishing stone on the right together with metal fragment in a tree-bark container, and a half-moon shaped stone knife or sharpener on the right side of the neck, next to it a heap of animal bones resting on a lump of carmine-red soil. We can therefore distinguish between: (1) a ritual meat offering and a *Beigabe* of another type of food in a ceramic container framing the head on both sides; (2) personal ornaments for hair and body (*Mitgaben*); and (3) a considerable range of weapons, and the tools to keep maintain them, some of them in a separate container (either *Mitgaben* or *Beigaben*, depending on if they had already been used in life or had been especially produced for the burial).

Combining metal weapons, stone tools for maintaining the weapons and other tasks, meat and other food offerings, usage of carmine-red soil, with a necklace of agate beads and bronze ornaments wound around strands of hair, the assemblage of M11 is indeed very similar to the objects accompanying S4 in M6. The assemblage consisting of the objects associated with the probable main interment in M6 (S5) combined with the artifacts in the foot compartment and on the second-level ledge, on the other hand, bears greater resemblance to the assemblage associated with the interment in the main grave pit in M4, as well as to the assemblage of Yanyuan Maojiaba M2, and to the object combinations in the ten earth-pit graves with wooden coffins in Ninglang Daxingzhen, all of them single interments to be discussed later

(Chap. 6.3.4.3). Even the most richly equipped multiple interments at Yanyuan Laolongtou thus contain the same standard object sets as the modest single interments observed throughout the western mountains (Yanyuan and Ninglang); only quality and number of objects differ and a few special items, additional grave installations, and particular body treatment and other rituals are added.

It is remarkable that nearly all separate object sets in the multiple interments and nearly all assemblages in single interments in Yanyuan contain weapons, and often a large number of them. Knives, which might have been personal tools rather than weapons, never occur without unequivocal weapons. These rich burials from Laolongtou and Maojiaba therefore probably held people of high standing engaged in combat, horse-riding, and/or hunting. Only one of the multiple burials, Laolongtou M4, might have contained two "warriors" and two people concerned with domestic affairs, but the main interment was likely a warrior. It is usually assumed that warriors would be male and people concerned with domestic affairs female, but given the lack of bioanthropological work, we cannot really be sure. If this interpretation is correct, however, then it is noteworthy that elaborate hair decoration as well as chains of semiprecious beads and bracelets were worn by warriors and cannot be seen as signifying female burials. Overall, it has thus become clear that the small-group interments in Yanyuan seem to be a marker of elite burials associated with many special rituals, while the range of artifacts they contained is not considerably different from those found in local single interments characterized by less elaborate assemblages and burial proceedings.

The Graves of Yongsheng

The situation in Yongsheng, although reasonably close-by, seems to be rather different from what has been observed in Yanyuan. At least six graves at the site of Yongsheng Duizi contained several skeletons, all of them secondary interments in irregular placement, deposited in stone-construction graves below ground (Online Material: Assemblages). Aside from one large grave of kitchen-knife shaped form (M1), all other graves were very similar in construction to those observed in Zhaojue holding similar multiple secondary interments, i.e., they had layered walls consisting of coarse roughly brick sized stones for the walls with large stone slabs for the cover (Type 5.1.2). Due to the pending publication, the complete assemblages are unknown, but all of the multiple interments at Yongsheng Duizi contained one or several bronze arrows, combined with bronze knives or other weapons, as well as a range of different ornaments (metal bracelets, finger rings, turquoise or bone beads, perforated cowrie and snail shells, bone hair pins); some graves additionally held double-handled jars, and one grave furnished a spindle whorl. At least one part of the assemblage (weapons, tools, and some of the personal ornaments) therefore reminds of what is observed in Yanyuan, but the other part (spindle whorls, hair pins, shells, specific subtypes of double-handled vessels) is very different; strangely, grave form and burial mode are rather different from the complex burials at Yanyuan Laolongtou or the simpler single interments in Ninglang; instead, they somewhat remind more of the multiple interments in Zhaojue or even of the smaller versions of megalithic graves in the Anning River Valley.

Given the sad state of preservation of the graves from Zhaojue and the lack of publication for the site of Yongsheng Duizi, the relationship between the graves from these two regions remains unclear. Nevertheless, it is remarkable that the association of round-headed knives, bronze bracelets, and *ling* bells in several of the multiple interments at Duizi reminds strongly of the sets identified for megalithic graves in the Anning River Valley, while shells, grave construction, and mode of interment show a strong link to Zhaojue, and much of the assemblage reflects connections with Yanyuan and Ninglang. This combination indicates at least the possibility of a vivid network of different kinds of linkages, some of them simple exchange, others possibly the movement of people (reflected, e.g., in sets of personal tools and ornaments otherwise known from the Anning River Valley), and either strong connections or simply parallel developments in belief systems and their expression in burial ritual and grave construction. In any case, given the occurrence of so many kinds of burials and object types in successive layers, Yongsheng Duizi promises to be a major key to the understanding of the cultural and chronological development of the research area—once the material has been published properly.

6.3.4.3 Object Assemblages in Single-Interment Graves

The Northwest: Yanyuan and Ninglang

The object assemblages observed in single-interment graves in Yanyuan and Ninglang bear strong resemblance in object types and combination associated with the local multiple interments just discussed. Only the number of objects is smaller and some special items such as ritual objects or rare personal ornaments are missing (Online Material: Assemblages).

Yanyuan Maojiaba M2 contained a single primary interment wearing a bronze wrist and arm guard; it was accompanied by a set of five metal weapons and a bronze drum, combined with a horse skull and horse long bones. M1 at the same site held two bronze drums, one sword/dagger, and one bronze arrowhead, but interred in a grave without stone installations, while M2 is marked by a complete stone cist; however, the site has not been published in sufficient detail for a proper evaluation.

The ten earth-pit graves at Ninglang Daxingzhen are more fully published, but they have only modest assemblages. The graves are all of medium size, oriented toward the north, have a wooden coffin but no human bones, and are each equipped with one or several single- and double-handled vessels and a combination of one or several weapons, and sometimes turquoise beads or metal ornaments. They are therefore a modest version of what can be seen in Yanyuan Laolongtou M4 or M6, but with artifacts that are fairly similar in form and execution. Interestingly, in nearly all of the known graves in the Southwest, the vessels were mostly found in the head area, and at least in Ninglang outside of the wooden coffin the body was placed in, showing clearly a separation in function and meaning from the other artifacts in the grave. Weapons and tools were either placed on the right side or in the hip area of the deceased, that is, where they would have been worn in life; the ornaments were likewise still on the limbs of the deceased.

Throughout Yanyuan and neighboring areas in Yunnan, we can thus see a similar burial custom of interring the dead with a small number of handled vessels—probably containing food offerings—and a set of personal ornaments and weapons on their person. Common sets are as follows:

(a) Armor, one sword, and one or all of a range of weapons (dagger, dagger-axe, spear-head, axe), in richer graves combined with hair ornaments and/or a chain of agate or turquoise beads;
(b) One sword/dagger and one or several other weapons (spear, axe, knife, arrowhead);
(c) Arrowhead(s), grinding/polishing equipment and/or other tools, and ornaments (agate beads, bracelets, *ling* bells);
(d) One knife, one other weapon, and/or tools to maintain them, and ornaments; and
(e) Ornaments and/or *ling* bell(s), sometimes with a grinding rod.

Horse skulls and bones occur only in graves holding a sword/dagger and at least one other weapon; horse skulls are mostly found in very rich graves with a complex construction holding several skeletons dressed in richly decorated clothes, a belt, hair decoration, chains of beads, and other ornaments. Some of these graves furthermore held bones of other kinds of animals and traces of red colorant, but these last two elements can also occur with equally rich graves not holding horse skulls. All other elements such as the burning of human bones or the interment of drums, bells, or other objects with a clear ritual function are too rare to draw further conclusions.

The Southwest: Yongsheng

Multiple interments in stone-construction graves observed at Yongsheng Duizi hold assemblages very similar to those observed in the Northwest—albeit with a smaller number of weapons or special items—the assemblages of single interments in earth-pit graves or cremation burials are rather different. Considering the lack of proper publication, the full assemblages are unknown, but at least minimal assemblages can be ascertained and evaluated (Online Material: Assemblages). The cremation burials in urns interred in oval earth-pit graves matching the size of the urn are rather peculiar, reflecting a custom not observed in other parts of the research area. The artifact assemblages in these graves, which contained child burials, are significantly different from the interments of adults; they consist only of 1–4 ceramic vessels, rarely combined with a few personal ornaments or a small stone tool or spindle whorl. The single-interment earth-pit graves are different in assemblages again. They contain a few ceramic vessels as well, mostly bowls and some vases and jars, most of them without handles, sometimes combined with a few personal ornaments (mostly beads, also some bracelets, other rings, hair ornaments, shells, or *ling* bells), but weapons/tools are rare and usually limited to arrowheads and occasionally a small knife, but no swords/daggers or other larger weapons. This is striking, considering how prominent weapons are at other gravesites in the western mountains, indicating that life at Duizi might have been very different from what was customary in the surrounding mountains and especially in Yanyuan and Ninglang.

The Northeast: Zhaojue and Meigu, Puge, Xide, and Yuexi

Similar to the situation throughout the western mountains, the graves with single interments in Zhaojue and Meigu are similar in content to the multiple interments. The local stone-construction graves hold only very few objects and some are even completely empty (Online Material: Assemblages). The most common burial objects are simple stout ceramics jars or vases resembling objects from the Southeast (Huili and Luquan), more rarely a bowl or a Han-style ceramic *fu* vessel, as well as a wide variety of small ornaments, various kinds of weapons and tools, and special objects such as fine metal vessels or bronze coins. At least the metal vessels are likely imported goods of Han origin, while the Han coins and ceramic *fu* might have been produced locally, but imitating Han forms. Petrographic and chemical analyses might provide further insight here. Considering their rarity and foreign origin, Han metal vessels are very likely a sign of a certain wealth and/or elevated social status of the individuals buried with them; however, these items were neither found in particularly large nor otherwise particularly lavishly equipped graves. Some of these graves but also interments with a humbler assemblage or without any other objects nevertheless contain calcinated ropes, a special feature of clear local origin with ritual significance. Calcinated ropes are not regularly associated with any specific grave form, interment type, other objects, or remains of other ritual acts. Their concrete meaning and the reasons for their employment in some but not in all graves therefore remains unclear.

Overall, in Zhaojue and Meigu there is thus no clear correlation between grave size, construction, number and kind of objects, and number of interments. There is a clear preference for the use of coarse stone in grave construction, secondary burial, and other peculiar local burial customs such as the burning of ropes, but no signs for large-scale consumption of food or drink as seen with megalithic graves. The artifact assemblage combines a limited amount of food provisions for the dead with a few personal ornaments, tools, and more rarely special objects, indicating very little regulation but much flexibility, possibly leaving room for individual choices.

The earth-pit and stone-construction graves from Puge, Xide, and Yuexi—all of them poorly preserved and insufficiently published—are not easy to fit into the overall picture (Online Material: Assemblages). The bone arrowheads and chains of bone beads and shells discovered in the three earth-pit graves at Puge Wadaluo remind of finds from Zhaojue, but the graves lack the stone construction parts that all graves in Zhaojue and Meigu have in common; Wadaluo furthermore held two megalithic graves, a type of burial that can contain bone beads and arrowheads as well, but usually no shells. The earth-pit graves at Wadaluo were found in the upper layer of the site and their relationship with the megalithic graves is not entirely clear; they could be contemporaneous—possibly holding two socially or ethnically different parts of the local population—or belong to two separate phases. The majority of graves observed in Puge are megalithic graves containing a considerable number of perforated boar tusks, bone ornaments, and bronze bracelets, some metal arrowheads and knives, a few grinding rods, and a number of beads and bead necklaces, all of them made of agate or turquoise, and only rarely ceramic vessels. These assemblages differ from what is found in megalithic graves in the Anning River

Valley, but they are rather homogenous among themselves. The assemblages of the earth-pit graves at Wadaluo, on the other hand, are very different from local megalithic graves but similar to assemblages from stone-construction graves in Zhaojue or Meigu. It is therefore not unlikely that the earth-pit graves at Wadaluo held a separate, nonlocal part of the population that had relocated to Puge from areas further north, possibly through marriage; these immigrants were then buried in a fashion reflecting at least some of their own customs.

Xide is characterized by megalithic graves as well, but the settlement sites of Wuhe and Wadegu additionally held a small number of small stone graves that local archaeologists termed stone-cist graves. Both sites are only known through surface survey and no complete object assemblages could be retrieved; from two of the five large graves at Wadegu considerable numbers of coarse ceramic fragments protruded, mainly jar and bowl forms too heavily fragmented to assess the similarity or dissimilarity with material from other sites. The interment of large numbers of ceramics in itself is uncommon for stone-construction graves but not unknown from megalithic graves. The so-called stone-cist graves of Wadegu might thus have been small megalithic graves.

For Yuexi Que'ershan, another site that held both megalithic and stone-construction graves, it is unclear which objects belonged to which grave, making the evaluation difficult. The surface finds from the disturbed graves include plain medium-sized coarse ceramic jars and bowls, stone and bronze axes, a perforated grinding rod, and three bronze bracelets, i.e., an object combination more commonly found in megalithic graves than in stone-construction or earth-pit graves. The earth-pit graves of Yuexi Huayang and Liaojiashan held assemblages dominated by Han-style metal weapons and vessels, as well as ornaments reminding of finds from megalithic graves, and weapons that strangely find their closest parallel in objects from Yanyuan and Yunnan. Indeed, the association between a considerable number of metal vessels, several metal weapons, and a small number of metal ornaments has otherwise only been observed in stone-construction graves in Yanyuan at the opposite end of the research area. What distinguishes the earth-pit graves in Yuexi from the stone-construction graves in the West, however, is the lack of ceramics, and the graves in Yanyuan, Ninglang, and Yongsheng did only rarely contain metal vessels. Metal and ceramic vessels may of course fulfill the same practical function in burial rituals, i.e., holding food offerings or serving as equipment for the dead in the afterlife. Nevertheless, the grave forms and especially the associated body treatment and other rituals as well as the range of special objects differ markedly between the utmost Northeast and the West. The parallels in object assemblages between the two areas may thus be mere coincidence rather than a sign of an actual connection.

The Central Anning River Valley: Graves in Xichang

Even more so than Puge and Yuexi, the Anning River Valles is dominated by megalithic graves containing multiple successive interments. Nevertheless, excavations in and around Xichang revealed a number of earth-pit grave cemeteries, most importantly the large cemetery of Lizhou, and the grave groups of Dayangdui, Qimugou, and Yingpanshan. Interestingly, the object assemblages differ markedly between these four sites and to a certain extent between various graves within the same site. The sites therefore have to be discussed separately before comparing them to each other.

Statistical analysis (two-way tables, seriation matrixes, and correspondence analysis) conducted on the grave material from Lizhou reveals the presence of a standard set of one or several ceramic jars/vats, vases/ewers, and bowl, i.e., vessels suitable for holding and distributing food (Online Material: Assemblages—Xichang Lizhou and Lizhou sereation; Correlation: Lizhou; Appendix Fig. B.12). Ewers always occur in combination with vases, but judging by their form, both vessel types likely had the same function of holding and pouring liquid. *Bo* bowls and basins have been found only in graves that also held jars, both object types that likely were meant to hold food; vats and jars which are nearly identical in form can occur together or substitute each other. Some types of *dou* are essentially *bo* with a hollow foot, while others are wide outward-flaring just like *wan* bowls; considering their relatively small size, all three types of bowls probably served for consumption rather than holding or serving food or liquids. Double jars and lids are special forms occurring only in the richest graves. The double-handled jars are also rare. These vessels fall into two main categories, one with a vat- or jar-like body and handles usually located above the not very far outward-flaring rim, and one with a vase-shaped body, wide outward-flaring opening ideal for pouring liquids, and small handles on the shoulders. All these vessels come from the same grave BM3 (one of the richest graves) and were probably a variation of the usual jars and vases.

Interestingly, all graves with particularly large assemblages of 31–51 ceramics (AM11, BM3, BM7, BM4) held a few unique objects together with a large number of common vessel forms such as jars, vases, and cups and outward-flaring bowls (Fig. 6.5). Middle-sized graves with 12–28 vessels always contained several specimens of each functional category but no special vessels; somewhat less well-equipped graves with 8–10 vessels held ewers or cups, and graves with only 5–6 vessels always miss entire categories such as vessels for the food consumption (AM3), vessels for holding and serving of liquids (AM8), or even both functional categories (AM12). Another pattern that cross-cuts this ranking by size is the difference between assemblages of highly decorated vases and ewers on the one side (e.g., AM2, AM6, AM10, BM4), and graves holding double-handled vessels, combined with large numbers of bowls but no spouted or decorated vessels on the other (e.g., AM9, BM3, BM8). If there is indeed a chronological difference between these two kinds of assemblages, as many scholars assume, only decoration and details of execution changes, but the basic functional sets as well as the differentiation between more and less richly equipped graves remained over time.

Turning to other graves in the Xichang area, the vessel form and assemblages of Yangjiashan M1 and M3 closely resemble the poorer graves at Lizhou, suggesting that they were culturally and chronologically close and the two sites are located rather close to each other, at a distance of only 22 km.

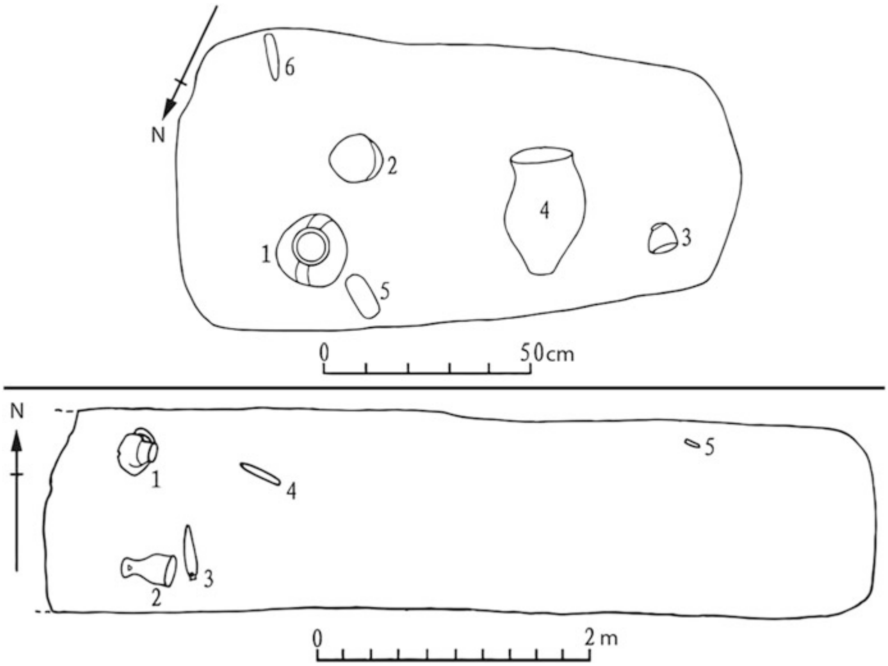

Fig. 6.6 Xichang Dayangdui M2 (*top*) and M3 (*bottom*) (after Xichangshi et al. 2004: Figs. 5 and 6)

The assemblages from other nonmegalithic graves in the Xichang area are rather different both from Lizhou and Yangjiashan and from each other. The particular ceramic assemblages from the graves of Dayangdui with their high-fired fine gray and black ware build a particularly stark contrast to the coarse sand-tempered ceramics otherwise typical for the Xichang region. The graves are all of similar size, orientation, and form, but there is some variation in the assemblages (Fig. 6.6); three graves contained vessels with long band handles, in one case combined with small jars, a bowl, a stone axe, and a grinding rod (M2), in the other with a footed *dou* bowl, another grinding rod, a stone arrow, and a bronze sword/dagger (M3); in the third case the assemblage consisted of two single- and two double-handled vessels (M9); the remaining two graves contained stemmed goblets, in one case combined with a small jar similar to the one in M2, and with a bowl similar to the one in M3 (M8), but handled vessels were not present. If the presence/absence of handled jars and goblets denotes a chronological difference or a difference in social group, age, or gender of the interred is not clear. Regardless, the actual vessel forms and ceramic quality are so different between the assemblages from Lizhou and Dayangdui that a cultural connection seems unlikely, even though the two sites are less than 7 km apart from each other and the graves furnished similar functional vessel types, albeit in very different execution.

The three earth-pit graves at Qimugou contained ceramic assemblages similar to those known from Lizhou, at least in functional types: a combination of jars, goblets, and ewers or vases; however, again stylistic type and execution are very different. The jars from Qimugou are rather small and stout, the ewers have long spouts, the goblets are high stemmed and mostly tulip shaped, and all the ceramics are of high-fired black or gray fine-ware pottery. In M1 and M2, large numbers of such goblets and jars were associated with one or two vases/ewers each, possibly as equipment for liquid consumption by a group of people combined with jars containing food for the deceased. The object types and combinations at Qimugou thus resemble closely those observed in megalithic graves, suggesting a closer connection to them than to other earth-pit graves. It is therefore conceivable that not all members of the communities using such vessels were interred in the same graves, but that some found their last resting place in megaliths and others in earth-pit graves.

Finally, the single grave at Ma'anshan was square, very large, oriented toward the south, and contained one small Han-style urn and two ceramic *fu*, all traits that clearly identify it as a Han grave; the grave will therefore not be treated in detail here, but it serves as a *terminus ante quem* for the settlement layers below. Less easy to interpret are the two earth-pit graves excavated at Yingpanshan, one of them devoid of objects, the other containing fragments of a stemmed bowl or goblet, two jars with outward-flaring rim, one of them with a fingertip-impressed application band around the rim, as well as one axe and one adze made of stone, both finely polished. The jars and stone tools are similar to objects known from local Neolithic settlement sites; the bowl seems to be somewhat different from local settlement material, but it is too poorly preserved to make any inferences on original form or function. In spite of the overall diversity in forms, decorations, and quality, the majority of earth-pit graves in the Xichang area are thus characterized by ceramic assemblages, only sometimes associated with a few stone tools or very rarely metal tools. This is very similar to what can be observed in Huili.

The Southeast: Huili and Luquan

The majority of the material retrieved from graves in the Southeast comes from Huili Fenjiwan (Online Material: Assemblages; Fig. 6.7). Of the 150 graves excavated at this site, 108 contained objects; 90 % of them held one or several ceramic vessels, mostly plain medium-sized jars or urns, in about 60 % of all cases accompanied by no further objects except for 1–4 flat river cobbles placed in the head- or stomach area. There is no clear correlation between the number of stones and grave size, location, orientation, or kind or number of artifacts interred; conceivable reasons for the presence/absence would thus be age, gender, or social status of the deceased, as well as season or special circumstances of death.

Only a few graves held other types of ceramic vessels additional to or instead of the jars or urns. These include middle-sized jars with one or two small ring handles, ewers and/or vases, a number of globular goblets with a small foot, a few bowls, two of them with small stems, and a single cup. The ceramic forms suggest the provision of medium quantities of food or drink for the deceased, only rarely accompanied by small vessels for individual consumption. Nine graves furthermore con-

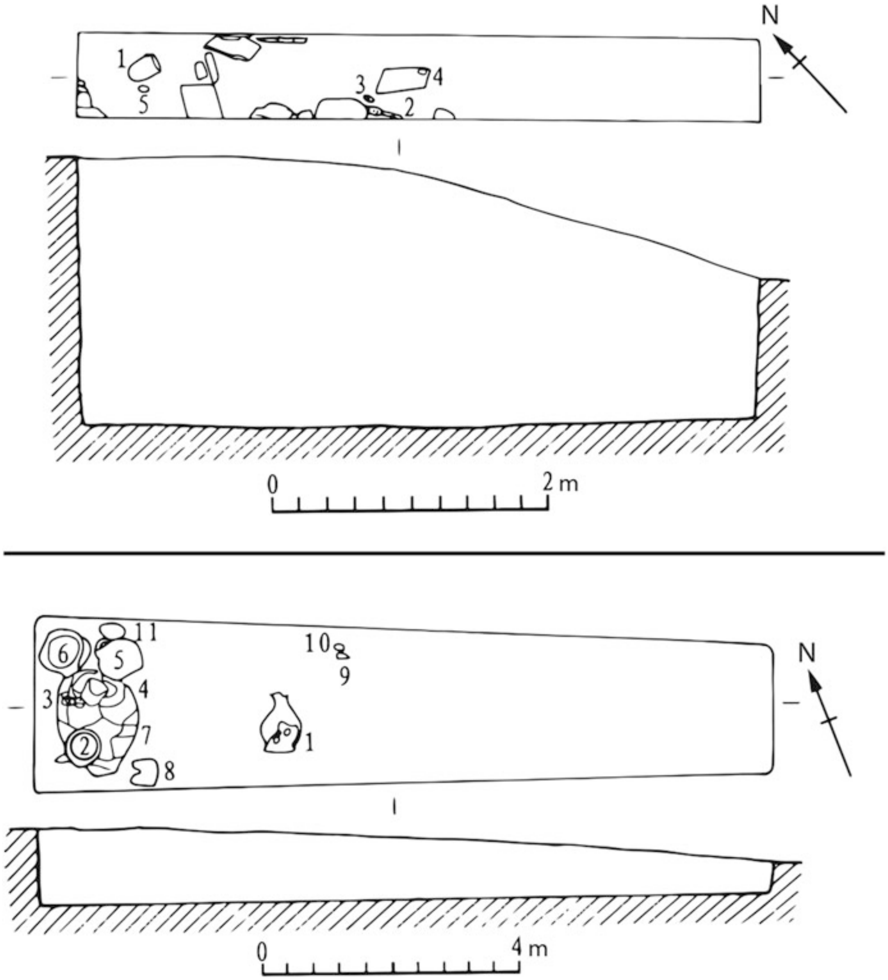

Fig. 6.7 Huili Fenjiwan M3 (*top*) and M26 (*bottom*) (Huilixian et al. 2004: Figs. 3 and 4)

tained one or two spindle whorls, occurring in combination with all kinds of vessels, but never with weapons/tools or ornaments, possibly indicating a differentiation by gender or occupation. Aside from one grave which contained a bronze *yue* axe as well as a stone arrowhead, metal and stone tools do not occur in the same grave; however, the overall number of nonceramic object is too low to infer on a set rule. Personal ornaments were rather rare as well, comprising seven bracelets and one finger ring, all made of bronze concentrated in only three graves. Overall, only 15 graves at Fenjiwan contained objects other than ceramic vessels and/or flat stones, marking them as special. These 15 comprise graves with few, many, and no ceramics and/or flat stones, so wealth was likely not the main criterion of differentiation. The two main possible explanations are chronological differences and/or a personal note or special circumstances concerning the death or life of the interred, rather than specific sumptuary rules.

The five earth-pit graves at Huili Washitian all contained extended-supine primary burials (at Fenjiwan no human bones were preserved), all oriented following the direction of the mountain slope just as at Fenjiwan, but the graves at Washitian had a head compartment and none of them contained flat river cobbles. The two sites of Washitian and Fenjiwan are furthermore located in two different river valleys but still only 15 km apart from each other and in a very similar environment. The ceramics found at Washitian are nearly identical in form with those from Fenjiwan, but the number of spindle whorls is considerably higher (mostly 3–4 in each grave). Most graves contained only ceramics, except for M1 which held stone tool fragments and a considerable number of jars and bowls but no spindle whorls; spindle whorls and other tools/weapons thus seem to exclude each other. The surface finds at Washitian are more problematic as they cannot be attributed to specific graves. Theoretically, these finds could also have dome from settlement layers, but as stone and bronze arrowheads, and especially bronze axes and bronze beads are usually not found are settlement sites, the objects are more likely to have come from local earth-pit graves similar in assemblage to those found at Huili Guojiabao (Online Material: Assemblages).

The graves at Huili Guojiabao were severely disturbed and the objects remaining in each of the excavated earth-pit graves (each one single- and double-handled jar in M1, a spindle whorls, 2 bronze bracelets, 2 agate beads, 41 turquoise beads, and 1 nephrite bead in M2, and one bronze axe in M29) are completely different from each other. The surface finds included a large number of bronze axes, swords/daggers, knives, arrowheads, belt and clothing application, hair ornaments, as well as some perforated grinding rods, fragments of highly decorated goblets, and even horse gear. Both ornaments and armor are highly decorated and very different from the simple coarse objects found at Fenjiwan, but instead bear a close resemblance to objects known from Yanyuan and to a lesser extent objects found in megalithic graves in the Anning River Valley. The grinding rods and goblets, on the other hand, are virtually identical with artifacts found in the single disturbed grave of Huili Leijiashan, which held large amounts of such goblets and other lavishly decorated ceramics, metal arrowheads, grinding rods and other stone tools as well as a large number of spindle whorls, and a single one of the flat river pebbles found in so many graves at Fenjiwan.

Given that grave M1 at Huili Leijiashan was disturbed and only a part could be excavated, it is difficult to interpret the picture. A possible explanation would be a chronological development, Fenjiwan standing at the beginning, with local traditions of food in ceramic vessels for the deceased and river pebbles as ritual objects. In a later phase of Fenjiwan, spindle whorls and metal objects might have occurred in some graves, increasing in number at even later sites such as Washitian; metal weapons and ornaments then may have increased in importance at Leijiashan and Guojiabao, which furthermore witnessed a shift in ceramic vessels from medium-sized containers to highly decorated vessels used in the consumption of liquids.

Apart from the graves from Huili discussed so far, excavations in the Southeast also revealed a number of small to medium-sized graves lined with thin slates and containing a very different assemblage. These graves are Huili Xiaoyingpan and

Xiaotuanshan, as well as Luquan Yingpanbao, located on the other side of the Jinsha River at a distance of about 40 km. All graves were located on a mountainside, their orientation following the direction of the slope with the feet of the deceased pointing toward the river. The majority of graves at all these sites were devoid of objects, but some contained one or two plain jars and vases not dissimilar from those known from Fenjiwan, but also some very peculiar specimens with a wide belly and extremely narrow opening, resembling ceramic vessels from similar small stone-cist graves in Zhaojue. Xiaoyingpan M21 contained one of these vases as well as a chain made of a large number of cowries and other seashells, not unlike what was found in similar contexts in Zhaojue. The burial ritual associated with these graves, however, has some unique features. The majority of graves held one extended-supine primary burial, but the skeletons in Luquan Yingpanbao M5 and Huili Xiaoyingpan M14 and M18 were missing, while in M13 and M16 the skull was present but had been placed in the stomach area. A similar placement has never been reported from elsewhere in the research area, but as the bones are mostly not preserved, this lack of similar observations is not necessarily conclusive. The skeletons buried in this way did not have a richer or significantly different assemblage from that seen in other graves in the area, and the reason for their special treatment remains unclear.

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Chapter 7
Time and Space: Connecting the Parts

From the separate examinations of grave, body, and objects, it has become clear that all three components vary considerably by location and date. There are two aspects each to time and space. The first spatial parameter relates to placement or **location choice** for a burial site or a specific grave within a cemetery; the second aspect concerns **regional differences** in burial customs which may denote the presence of different cultures or regional groups. The two aspects of time comprise the **sequence of events** during the burial on the one hand and **chronology**, via relative and absolute dates of graves, sites, and other archaeological phenomena, on the other. The preceding chapters make it abundantly clear that regional and chronological differences are important determinants of variation in the material record. In the present chapter, data from the preceding chapters are collectively analyzed according to these factors of time and space, discussing first the sequence of events forming the burial record, then considering site placement and cemetery structure, and finally identifying inter- and intraregional differences and developments over time.

7.1 The Sequence of Events: Making and Using the Grave

The material remains throw only limited light on the sequence of events during the burial process and other associated acts. According to the model suggested in Chap. 2, the general sequence is likely as follows:

1. Choice of cemetery location (if applicable);
2. Choice of grave location;
3. Choice of grave form and orientation;
4. Procurement and preparation of construction material;
5. Preparation of locale, body, and objects;
6. Transportation of body and objects toward the grave;
7. Placement into the grave;
8. Closing of the grave.

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Many of these actions may take place simultaneously while others may be spaced many years apart; all actions furthermore may be interspersed by instances of transportation and various ritual acts not leaving any trace in the material record. The actual burial may be followed by one or several instances of reopening, reentering, or reusage as they have been observed for megalithic graves (described in Chap. 5.2.4).

The condition of the body and the traces of ritual acts in the grave—likewise described in Chap. 5—as well as the placement of objects within the grave—discussed in Chap. 6.2.2—and certain details of grave construction (described in Chap. 4), allow for some inferences on the actions proceeding the final closure of the grave.

The overall burial procedure differs markedly by subregion, grave type, and to a certain extent also by site and thus likely time period or cultural/social group. As most earth-pit graves of the Anning River Valley and the adjacent mountains were devoid of human remains, here details of body treatment are largely unknown. None of the burial objects showed any signs of fire treatment or destruction either, and traces of other special rituals are likewise lacking. The general sequence of events is therefore likely as follows:

1. Choice and preparation of the locale, preparation of body and objects;
2. Digging of an earth pit, in a few cases construction of a second-level ledge;
3. Transportation of body and objects to the grave;
4. Placement of the body/bodies into the pit (possibly only wrapped in a sheet or clad in simple clothes without any personal ornaments);
5. Placement of ceramic vessels into the grave, likely containing offers of food or drink (in the case of Lizhou in separate sets at the head and the foot of the deceased, at other sites distributed throughout the grave);
6. Rarely placement of a few tools next to the body;
7. Sometimes instances of burning of organic substances inside the grave;
8. Closing of the grave with earth.

These graves were not reopened or reused; neither were the graves in the Southeast. The sequence of events there, however, was a little more complex. Oftentimes, a smooth river cobble was placed under the pelvis or under the head of the deceased, and the dead were adorned with simple ornaments. In some graves, the floor was additionally paved with stones, reminding of the stone-construction graves found at the same sites.

The stone-construction graves of the Southeast came about in the following manner:

1. Choice and preparation of locale, body, and objects;
2. Procurement of stone material for the grave, either from the Anning River Valley or from the Yanyuan area;
3. Preparation of the stone material for the grave;
4. Digging of an earth pit, in a few cases construction of a second-level ledge;
5. Lining of the floor and/or walls of the grave with stone, sometimes also separation of a head or foot compartment;

6. Transportation of body and objects to the grave;
7. Placement of the clothed and ornated body into the pit, often with a smoothed river cobble underneath the pelvis or under the head; in rare cases head detached and placed in the stomach area or disposed of separately in a different location;
8. Placement of ceramic vessels into the grave, likely containing offers of food or drink; sometimes deposition of thin, small stone slabs at various places in the grave;
9. Sometimes placement of a few tools next to the body;
10. Sometimes instances of burning of organic substances inside the grave;
11. Covering the grave with earth and/or stone slates.

The stone graves of the Northeast are even more complicated in construction; the sequence of events was likely as follows:

1. Primary burial of several bodies in other locations;
2. Exhumation of selected bones;
3. Preparation of objects and choice and preparation of locale (in a few cases by cutting a grave into the face of the mountain);
4. Procurement of stone material for the graves, mostly from the surrounding mountains;
5. Preparation of the stone material (sometimes only rough forming into slabs, sometimes working into regular brick-like stones);
6. Digging of an earth pit;
7. In one case placement of pig mandible on the floor;
8. Lining of the floor and/or walls of the grave with stone, sometimes including a head or foot compartment;
9. Transportation of bodies and objects to grave;
10. Arrangement of long bones and skulls as secondary interments in the grave;
11. Sometimes placement of small number of personal ornaments, weapons, tools, coins, ceramics, and/or metal vessels (at least in one case carefully wrapped in fine cloth) in the grave;
12. Burning of ropes in or outside the grave (either before or after placing body and objects inside the grave);
13. Covering of the grave with earth and/or stone slabs.

These graves were likewise not reopened. Neither were the graves in the Southwest. The primary interments in graves with or without stone-construction parts in Yongsheng are likely the outcome of a similar line of events as the graves in the Southeast—minus instances of burning of organic objects and the detachment of body parts. The multiple secondary interments in Yongsheng, on the other hand (most of them in stone-construction graves) closely resemble the graves from the Northeast and likely came about through a similar sequence of events (minus the interment of coins or metal vessels or the burning of ropes). The cremation burials in Yongsheng are very different from graves in other parts of the research area; they most probably went through the following sequence of events:

1. Choice and preparation of locale, one ceramic urn, and sometimes other ceramic objects;
2. Digging of a small oval earth pit, slightly larger than the urn;
3. Cremation of the body in another place;
4. Placement of long bones and ash into the urn, either in another locale or at the grave site;
5. Transportation of cremation remains and objects to burial site;
6. Placement of urn and sometimes additional ceramic vessels into the pit;
7. Covering of the grave with earth.

In Yanyuan and Ninglang, at least for some of the graves, the burial ritual is significantly more complicated than any of those suggested earlier. The sequence can be reconstructed as follows:

1. In some cases primary burial(s) in other location(s);
2. Exhumation of the selected bones (if applicable);
3. In some cases cremation of clothed and ornated human body with animal bones and ceramic and metal objects outside the grave;
4. Choice and preparation of locale and preparation of objects;
5. Procurement of stone material for the grave (if applicable), mostly from the surrounding mountains; procurement of wood for coffin (if applicable);
6. Preparation of the stone-construction parts (if applicable); construction of coffin (if applicable);
7. Digging of an earth pit, in some cases construction of partitioning, second-level ledge, head compartment, foot compartment, and/or side compartment;
8. Lining of bottom and/or sides with stone slabs (if applicable);
9. Construction of stone coffin within the grave (if applicable);
10. Adornment of the dead with clothes, ornaments, armor, weapons and/or tools; in some cases decoration of the dead with cinnabar/carmine-red substance;
11. Transportation of body/bodies, objects, and offerings to the burial site;
12. Placement of the main interment into a wooden coffin (if applicable);
13. Placement of the main interment/coffin into the grave;
14. Sometimes killing and cutting up of horses outside the grave; placement of horse head and long bones and horse gear in grave chamber or on second-level ledge;
15. Placement of weapons, armor, additional ornaments, ceramics (likely containing food or drink offerings), and/or meat offerings next to the dead or into one of the compartments or on the second-level ledge (if applicable);
16. Placement of additional interments outside the coffin, in other part of the grave, or on second-level ledge (if applicable); in case of cremations placement of cremation remains in separate stone frame;
17. Sometimes burning of sheep shoulder blades outside the grave and their placement into the grave;
18. Sometimes use of ritual objects; then placement of these objects into one of the compartments or into the grave fill;
19. Covering of the grave with earth and/or stone slabs.

For all graves below ground, be they stone-construction or earth-pit graves, it is usually not possible to ascertain the exact sequence of these different acts in and around the grave; for example, it remains questionable if the body was first placed into the grave or if the objects preceded them; if one or the other interment (in case of group burials) was first deposited; if instances of burning inside the grave took place before or after placing body/bodies and objects. It seems logical that the prime interment was placed into the grave before the second or third interments, especially in cases where one body was found down below in the main grave chamber and the other(s) were placed on a higher level on the second-level ledge; but there is no absolute proof for this hypothesis. It is likewise unclear, how long the whole burial procedure may have taken, only a few hours, several days, weeks, or even months or years. In the case of secondary burials, it is likely that at least a few months passed between the primary interment and the final deposition. Objects worn or used in life would have been made months or years prior to their interment in the grave. Also the grave location may have been chosen long before the death of the person who came to rest there.

The same applies of course to graves below ground, i.e., the megalithic graves of the Anning River Valley and the surrounding mountains; especially graves containing a large number of skeletons and showing signs of various instances of interment and reopening were likely used over many years or even decades, if not longer. For the megalithic graves, the following sequence can be reconstructed:

1. Choice and preparation of locale; preparation of objects; preparation of body/bodies (clothing and adornment with simple ornaments and personal tools); in one case cremation of body and placing of long bones and ash in urn;
2. Procurement of stone material for the grave, mostly from a medium distance;
3. Preparation of the stone material and transportation toward grave;
4. Sometimes digging of ditch to place stones for walls into them;
5. Covering of ground with stone layer, pebble layer, and/or additional soil layer (if applicable);
6. Sometimes building of tail to help move stones into place;
7. Raising of stone boulders for walls or layering of stones for walls, filling of gaps with smaller stones;
8. Transportation of objects and body/bodies (sometimes wrapped in clothes) to the grave site;
9. Placement of body into the grave;
10. Sometimes burning of organic material in grave;
11. Using of ceramics in ritual drinking or libation rituals;
12. Placement of used ceramics into the grave filling;
13. Closing of grave with stone(s) as door and covering with cover stone;
14. In some cases reopening;

    (a) Complete reentering → complete entering → rearranging of previously interred bodies, making space for new interments → new primary or secondary interments and/or rituals → reclosing of door;
    (b) Partial entering → pushing previously interred bodies to the rear → new primary or secondary interments and/or rituals → reclosing of door;

(c) No entering → pushing previously interred bodies to the rear → new primary or secondary interments and/or offerings → pushing related bones and objects inside → reclosing of door;

15. Final closing and covering with tumulus and/or stone package;
16. Potential addition of other stone-construction elements (pile of stones, *ba*-shaped or screen-shaped construction);
17. Sometimes later rituals around the graves involving drinking or libation rituals, followed by the burying of the used ceramics in a pit.

The material evidence from megalithic graves provides a few indicators as to the sequence of events. The superimposition of various layers of bones, objects, and closing stones shows that the bodies were placed into the grave first, followed by ceramics, and only then the grave door was installed. If the cover stone(s) were put in place before or after the actual interment is less clear. It is also clear that the tumulus (made of stone or earth or both) can only have been built after the closure of the grave, and external additions were likely installed last. Object pits were likely made and filled during later rituals, especially Tianwangshan M10 in the center of the Anning River Valley where one of the object deposit pits was dug into the earthen tumulus while the other was located in the immediate vicinity of the grave. It is remarkable that the grave itself did not contain any objects; the ceramic vessels found in the two object deposits may thus have been used during the actual burial ritual and had to be discarded as unfit for the use of the living or, indeed, the interred. These objects were thus *Nachgaben* discarded after usage while *Mitgaben* in the form of vessels, tools, weapons, or ornaments for the use of the dead in the afterlife do not seem to have been part of the local burial customs at the time. At the same time, the presence of organic objects that could not be retrieved during excavation of course always remains a possibility to keep in mind.

Overall, we can reconstruct the sequence of events in varying detail and security depending on grave type and subregion. Simple earth-pit graves with a limited number of preserved objects naturally do not provide much evidence for reconstructing the overall burial process; however, this does not mean that the rituals surrounding the creation of these graves were less complex than for stone-construction graves with a large number of objects and well-preserved organic remains; it only means that most rituals took place outside of the grave and/or that they left no traces that could be retrieved archaeologically. The megalithic graves used for many instances of primary interment and further associated rituals furnished the most secure evidence for the sequence of events, but the time elapsed between different acts remains uncertain. Here, not only the graves and their content but also material remains found in the surrounding area provide important clues.

Another crucial indicator for actions taking place around the grave are the geomorphological preconditions and overall landscape. These factors would have influenced—but not completely determined—the choice of cemetery location. The choice of grave location would have been made in relation to both landscape and preexisting graves or other man-made structures. These factors can best be explored through spatial analysis.

7.2 The Locational Component: Site Placement and Cemetery Structure

The main aspects of location choice that can be explored through spatial analysis include the relative position of various graves and grave types to each other as well as their distribution in relation to geomorphological and geographical factors such as elevation, slope, aspect, soil type, distance to the nearest watercourse, and of course the orientation of the graves in relation to the cardinal directions. To ascertain the significance of the identifiable distribution patters, I have conducted various types of spatial analysis in ArcGIS on grave sites as well as on a set of 600 computer-generated random points, and then exported the results into SPSS to conduct statistical analyses. Additionally, I compared the distribution of grave sites and settlement sites.

There are various issues with such analyses in the case of burial data. First of all, the exact coordinates of individual graves are only rarely known; most of the time, publications only provide one set of coordinates for a whole cemetery. Given the great variability of the terrain in the research area, it is questionable whether the measurements for slope at a given site are correct for all graves; some graves could have been located on areas slightly less steep or of a slightly different slope orientation. Additionally, the published information on grave orientation is often imprecise. For unexcavated graves and megalithic graves without a doorway, the exact orientation of the grave is naturally difficult to ascertain, and researchers have often settled on vague ascriptions such as "North–South orientation." In other cases, exact degrees have been published, but where the graves are unexcavated or the bones not preserved, one cannot help but wonder about the accuracy of this number.

To cope with this unevenness in reliability of location data, I have developed an accuracy index. This index assigns numbers from 0 (for location unknown) to 5 (coordinates taken by the author), depending on the reliability of location information, to help evaluate the accuracy of the information and subsequent analyses (Appendix Table B.2). While orientation and exact aspect at the grave site are usually difficult to ascertain, elevation, overall placement within the landscape, distance to the nearest river, and location on a steep vs. a gentle slope vs. flat ground can usually be determined fairly reliably. Nevertheless, given the unevenness of the information, in all cases I consult both the outcome of statistical analyses and the actual maps and site descriptions before venturing to pronounce on the results.

7.2.1 Geomorphological Preconditions and Regional Preferences

The main aspects of location choice that can be evaluated with the help of spatial statistics are location of graves and settlement sites in relation to each other and to nonsites, as well as to geographic factors such as slope, aspect, elevation, and distance to the nearest river, and in relation to the five main subregions identified in Chap. 3 (Northeast, Southeast, Center, Northwest, Southwest). All of these factors can also be used to compare location choice by grave types and subtypes.

7.2.1.1 Settlements vs. Graves vs. Nonsites

Starting from basic statistical observations, it becomes clear that for all grave sites the slope is considerably less steep, the elevation lower, and the distance to river courses considerably closer than for nonsites (Table 7.1). Only the aspect values are largely identical between sites and nonsites, indicating that there was probably no preference for a specific slope direction.

Graves and settlement sites are found in largely identical environments. In a number of cases, both were even found in the exact same location or immediately adjacent to each other (Fig. 7.1, Online Material: Location). About 64 % of all grave sites throughout the research area have been observed within less than 5 km distance of a known settlement and the majority of the remaining sites are within less than 10 km distance (Fig. 7.2).

As far as can be ascertained from the regrettably imprecise soil maps, settlements are preferentially located on land that is favorable for agriculture, such as the alluvial soil in the lacustrine basins along the Anning River, as well as in the river valleys of Huili in the Southeast, and the Yanyuan Basin in the Southwest (Hein 2015). Nevertheless, settlement sites can be found in high mountains, on steep slopes, and on forested land as well, but nearly exclusively in areas lacking flat land such as the Northeast and the western mountains. The contrast in geomorphological characteristics between the places chosen for settlements and graves is particularly strong in the Northeast with its narrow river valleys and steep slopes. In the Southeast, on the other hand, where the river valleys are wide and fertile, graves often occur right next to settlement sites, albeit usually a little further up the slope. It is therefore likely that in the East the location choice on steep slopes that are unsuitable for agriculture has practical reasons (e.g., reserving flat areas for agricultural activities). In the mountainous parts of the Southwest and Northwest, both settlement and grave sites are located on similarly steep slopes and on the flat expanses of the Yanyuan Basin and around the lakes and rivers of Yongsheng both types of sites occur close to a water source but on slightly elevated ground safe from flooding. In most of the western part of the research area, similar locations were thus chosen for both settlements and grave sites, disregarding any potential concerns about scarce arable soil. As argued elsewhere, the reason may lie in the subsistence patterns in the western part of the research area where agricultural activities seem to have been of little importance (Hein 2014b, 2015).

Table 7.1 Descriptive statistics for settlements, grave sites, and nonsites

	Slope			Aspect			Elevation			Distance to river		
	Settlements	Grave sites	Nonsites	Settlements	Grave sites	Nonsites	Settlements	Grave sites	Nonsites	Settlements	Grave sites	Nonsites
Mean	8.73	8.95	21.37	174.93	181.92	181.38	1693.36	1797.8	2492.74	1.96	1.83	4.39
Standard Error	0.81	0.54	0.42	8.48	6.66	3.91	42.8	26.05	33.01	0.22	0.13	0.12
Median	5.7	6.26	20.93	173.19	187.94	180.76	1620	1779.5	2412.5	1.16	0.96	3.7
Mode	#N/A	0.82	#N/A	#N/A	270	#N/A	1809	2341	2016	#N/A	3.41	#N/A
Standard deviation	8.43	8.13	10.19	88.15	100.15	95.86	444.78	391.57	808.57	2.32	1.94	3.02
Kurtosis	1.37	1.18	0.38	−0.99	−1.2	−1.24	4.71	−0.37	0.2	5.67	0.93	−0.15
Skewedness	1.35	1.32	0.52	−0.11	−0.06	0.03	1.61	0.31	0.42	2.25	1.37	0.7
Range	39.1	33.89	61.67	345.08	356.93	347.8	2793	1866	4351	11.77	8.64	14.28
Minimum	0.34	0.16	0.97	2.98	0	2.05	982	933	578	0	0	0.01
Maximum	39.44	34.05	62.64	348.06	356.93	349.85	3775	2799	4929	11.78	8.64	14.29
Count	108	226	600	108	226	600	108	226	600	108	226	600

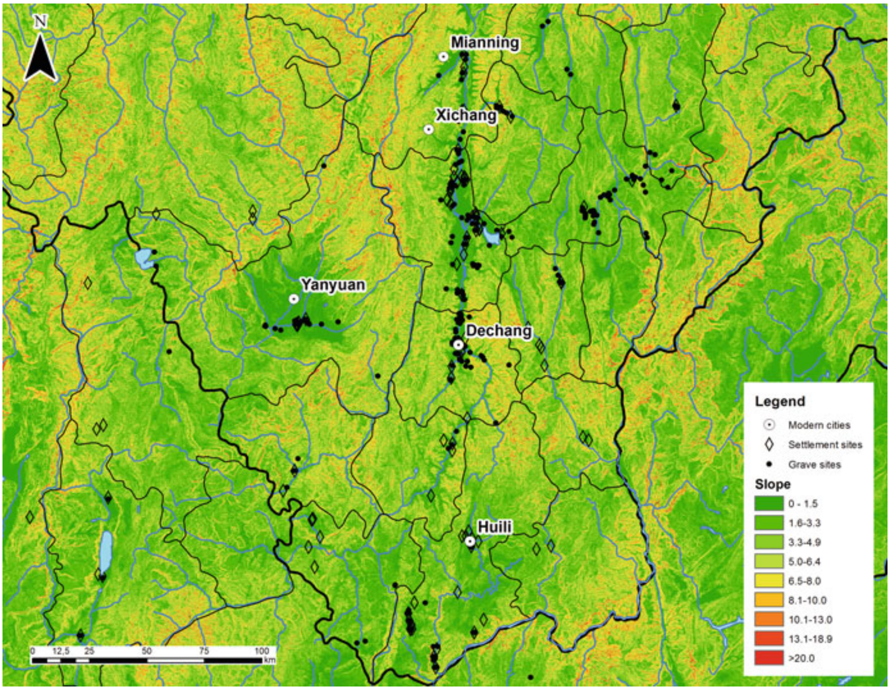

Fig. 7.1 Distribution of graves and settlement sites in relation to slope

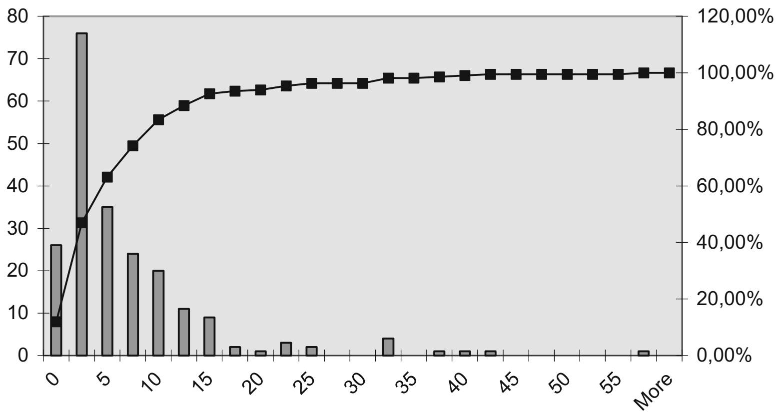

Fig. 7.2 Distance between grave sites and nearest settlement site

7.2.1.2 Megalithic Graves vs. Stone-Construction Graves vs. Earth-Pit Graves

In spite of the general trends just described, there are considerable discrepancies in distribution between the different grave types, in relation to both subregions and geomorphological characteristics (Tables 7.2 and 7.3). The elevation at megalithic-grave sites is on average about 500 m lower than at the locations of other grave types. This may largely be due to regional difference in distribution and site morphology: megalithic graves are mostly located in the Anning River Valley which is low in elevation, and stone-construction graves as well as earth-pit graves are mostly found in the western and eastern mountains, i.e., in areas of higher average elevation compared to the Anning River Valley (Appendix Fig. B.2). It is therefore not surprising that the elevation at earth-pit and stone-construction grave sites is very similar, while megalithic graves stand apart. Nevertheless, the standard deviation for elevation at earth-pit grave sites is considerably higher than for sites characterized by megalithic or stone-construction graves, indicating the presence of several different populations within the group of earth-pit graves.

It is furthermore noteworthy that both slope and distance to the nearest river are considerably greater for stone-construction graves than for other grave types, but that the range in slope is the greatest for megalithic graves. Less than 1/3 of all megalithic graves are located on a noticeable slope, and the majority was built on level ground within the wide valley of the Anning River. Considering the local geomorphology, it comes as no surprise that many of the megalithic graves reported from the mountainous area east of the Anning River Valley are located on steep slopes; however, a small number of megalithic graves in the immediate Anning River Valley were built on steep slopes as well, so there is some variability within the main grave categories, some of it correlated with geographic location some with grave subtype or both.

In general, megalithic graves tend to occur nearly exclusively in the Anning River Valley with a few examples appearing slightly further east in the mountains; stone-construction graves have been reported from valleys and mountains outside the Anning River Valley; and earth-pit graves are common throughout the whole region with the sole exception of the Northeast; nevertheless, their form and content differs markedly by geographic location and even between sites within the same subregion. The earth-pit graves in the Southeast and in the Southwest are all associated with stone-construction graves, but in the Anning River Valley, the earth-pit graves are often adjacent to megalithic graves located on even ground at low elevations, so there may have been a connection between the two burial customs.

In contrast to most megalithic and some earth-pit graves, stone-construction graves usually are found in extremely mountainous areas, in the Northeast mostly on steep slopes, in the Southeast either in river valleys or on slightly sloped ground but usually not in particularly steep or inaccessible locations. For the Southwest, the case is a little different: in the Yanyuan Basin and around the lakes and rivers of Yongsheng, i.e., in places with wider expanses of even ground albeit at elevations of above

Table 7.2 Descriptive statistics for grave sites by type vs. nonsite sample of 600 random points

	Slope					**Aspect**				
	All sites	*Nonsites*	*Earth-pit graves*	*Megalithic graves*	*Stone-construction graves*	*All sites*	*Nonsites*	*Earth-pit graves*	*Megalithic graves*	*Stone-construction graves*
Mean	8.95	21.37	5.79	8.44	11.68	181.92	181.38	206.22	168.87	187.96
St. error	0.54	0.42	0.79	0.80	0.98	6.66	3.91	13.76	9.59	12.00
Median	6.26	20.93	4.37	5.32	9.48	187.94	180.76	217.73	162.53	213.84
Mode	0.82	#N/A	0.82	3.22	4.82	270.00	#N/A	#N/A	270.00	107.24
St. dev.	8.13	10.19	5.24	8.36	8.43	100.15	95.86	91.28	100.12	103.21
Kurtosis	1.18	0.38	2.65	1.56	0.13	−1.20	−1.24	−1.04	−1.17	−1.22
Skew.	1.32	0.52	1.55	1.46	0.94	−0.06	0.03	−0.20	0.14	−0.25
Range	33.89	61.67	22.95	33.89	32.78	356.93	347.80	321.32	356.93	351.73
Min.	0.16	0.97	0.36	0.16	0.68	0.00	2.05	27.90	0.00	1.08
Max.	34.05	62.64	23.31	34.05	33.47	356.93	349.85	349.22	356.93	352.81
Count	*226*	*600*	*44*	*109*	*74*	*226*	*600*	*44*	*109*	*74*
	Elevation					**Distance to river**				
	All sites	*Nonsites*	*Earth-pit graves*	*Megalithic graves*	*Stone-construction graves*	*All sites*	*Nonsites*	*Earth-pit graves*	*Megalithic graves*	*Stone-construction graves*
Mean	1797.80	2492.74	2032.00	1599.26	1960.57	1.84	4.39	1.52	1.60	2.37
St. error	26.05	33.01	69.20	20.60	47.38	0.13	0.12	0.25	0.17	0.26
Median	1779.50	2412.50	2154.50	1556.00	2079.50	0.96	3.70	0.78	0.93	1.50
Mode	2341.00	2016.00	2378.00	1567.00	1907.00	0.00	#N/A	#N/A	#N/A	#N/A
St. Dev.	391.57	808.57	459.02	215.03	407.59	1.95	3.02	1.69	1.74	2.28
Kurtosis	−0.37	0.20	−0.56	3.53	0.71	0.80	−0.15	1.54	2.29	−0.50
Skew.	0.31	0.42	−0.46	1.16	−0.92	1.33	0.70	1.49	1.73	0.83
Range	1866.00	4351.00	1826.00	1453.00	1852.00	8.64	14.28	6.48	8.21	8.64
Min.	933.00	578.00	973.00	1151.00	933.00	0.00	0.01	0.00	0.00	0.00
Max.	2799.00	4929.00	2799.00	2604.00	2785.00	8.64	14.29	6.48	8.21	8.64
Count	*226*	*600*	*44*	*109*	*74*	*226*	*600*	*44*	*109*	*74*

Table 7.3 Slope at grave sites by grave type

Slope (degrees)	20.01–32	10–20	4–9.9	1–3	<1
Megalithic grave	2	55	130	46	34
Stone-construction grave	39	80	125	36	3
Earth-pit graves	0	23	177	41	0

Fig. 7.3 View of Yongsheng Duizi

2000 m asl., earth-pit graves with different amounts of stone construction are found in similar locations, on even or only slightly sloped ground within alluvial plains, close to a river but usually on elevated platforms overlooking the area and protecting the site from flooding (Fig. 7.3). In Ninglang and the mountainous parts of Yanyuan in the Northwest, on the other hand, where the river valleys are extremely narrow and even ground is scarce, both earth-pit and stone-construction graves are found on steep slopes, and at a wide distance from the major rivers, although usually in the vicinity of small seasonal creeks. Settlement sites are found in similar locations, though, so it seems that the few patches of flat land in the high-elevation western mountains were not chosen for any more permanent form of human activity.

There are exceptions to this general pattern of distribution, however, most of them concerning megalithic and stone-construction graves. The relationship between these two types and between the subtypes of both therefore has to be reexamined in light of patterns of location choice. Before doing so, we first have to consider the distribution of subtypes of all grave forms throughout the research area.

7.2.1.3 The Distribution of Grave Subtypes

In most cases, there is no clear correlation between specific subtypes of the different grave categories and geographic factors such as slope or elevation, but there is a clear regional bias. Large megalithic graves of Type 1.1 are widely distributed throughout the Anning River Valley, but also the neighboring eastern mountains of Yuexi and Puge, while Type 1.2 and 1.3 occur throughout an even larger area including all of the Anning River Valley as well as Yuexi, Miyi, and Xide. All graves of Type 1 were likely accessed several times, thus serving as centers of extensive ritual activities. The same is true for the graves of Type 2, which tend to be even larger and consist of a combination of small and large stones. Type 2 graves are rare but regionally not restricted; therefore, there might just be a difference in date between graves of Type 1 and Type 2 rather than a regional distinction.

Among earth-pit graves, there are a few regional particularities such as the trapezoidal graves in the Southeast, rectangular graves with rounded corners at a few sites in the central Anning River Valley, and oval graves in Yongsheng, as well as a tendency toward particularly long graves at Xichang Lizhou. Most earth-pit graves are located on even ground but at varying elevations. Only the graves in Puge, Ninglang, and Luquan were all observed on fairly steep slopes, but as flat ground is rare in these areas, this choice of ground unfavorable for agriculture is not surprising.

For stone-construction graves regional differences are more pronounced. Cist-like constructions made of thin or medium-sized slates or other slabs are widely distributed, but those of finer execution are particularly common in Huili, Luquan, Yanbian, and Yongsheng, i.e., along the southern border of the research area. The Northeast harbors a particularly large variety of small and medium-sized graves made of coarse elements never or rarely seen in other regions (e.g., Types 2.2., 2.4, 3.1, 3.2, 5.1, and 5.2), some of them resembling small subtypes of megalithic graves. The relationship between these two major grave categories therefore needs to be reassessed.

7.2.1.4 Reassessing Stone-Grave Types

Both stone-construction and megalithic graves come in a variety of different forms and the split between the two is not always entirely clear. As discussed in Chap. 4, the main distinguishing characteristic between the two is their location in relation to the surface (above or below ground) and thus differences in the likelihood of reopening, but otherwise some of the subtypes can be very similar in form. Some of these similarities in form seem to be connecting with shared geographic location.

All megalithic graves of Type 4 are located on steep slopes and in the mountains, instead of in the middle of a river valley, and nearly all of them belong to the easternmost cluster of megalithic graves (Xide and Puge Counties), i.e., they are located at the border between the Center with its megalithic graves and the Northeast which is dominated by stone-construction graves. The Type 4 megalithic graves are particularly small and not dissimilar from Type 3 stone-construction graves that are typical to the Northeast. Both types are made of irregular boulders and they differ only by location in relation to the surface (above vs. below ground) and choice of geomorphology (on mountain slopes instead of in the valleys). The Type 4 megalithic graves thus represent a particular local interpretation of the megalithic-grave tradition that is clearly informed by a local stone-construction grave tradition.

A striking example of a stone-construction grave made of large boulders (similar to megalithic graves) is the site of Zhaojue Qianjinshe in the Northeast, which is located at over 80 km linear distance from the Anning River Valley. Even though this site lies far outside the normal distribution area of this grave type, archaeologists have reported 11 megalithic graves from this site, in association with one stone-cist grave, as they called it. All 12 graves are very small; the so-called megalithic graves measure between 3–4 × 1 m and 2 × 1–1.3 m, while the so-called stone-cist grave measures 1 × 0.4 m, so there is hardly any difference in size between the two types. The main distinguishing characteristic is thus size and form of the stones used: the "stone-cist grave" consists of a few stone slabs forming a cist without bottom, and for the "megalithic graves" one or several irregular boulders were used to build cover and sides. The latter are thus an intermediate form between stone-construction and megalithic graves, and could be classified either as Type 3.1 stone-construction graves or as Type 4 megalithic graves. Furthermore, these graves are all sunken into the hill, protruding only partially above the surface, and their classification as megalithic graves (by definition graves located above ground) is thus questionable. Given their small size and peculiar construction, it is therefore reasonable to reclassify them as stone-construction graves.

Another case that requires further scrutiny is Xide Wadegu on the eastern fringes of the Anning River Valley, a site with five very large stone-construction graves of Type 1.1 and 1.2. As the material from this site was never properly published and the graves are now destroyed, it is difficult to test the decision of the excavators to classify them as stone-cist graves (stone-construction graves according to the terminology of this study) rather than megalithic graves. It is interesting to note, however, that the graves were less than 500 m away from the megalithic grave of Xide Wenjiaba, whose measurements and construction resemble those of Wadegu M1. The classification of the Wadegu graves as below-ground stone-construction graves is therefore likely faulty and should be changed to megalithic graves as well.

7.2.1.5 Special Forms of Megalithic Graves and Their Distribution

Not all of the particularly small megalithic graves observed in the Northeast are miss-identified stone-construction graves. The megalithic graves of Xide in the mountains east of the Anning River Valley, for instance, are very special and fairly different from those seen in the immediate Anning River Valley. The graves observed at Xide Lake Sihe, Lanfenba, Liaoniuchang, Guoyuancun, Qingli, and Wuhe are all small, roughly square in form, consist of one coarse boulder for each side and one for the cover, and were built on flat ground in the middle of a valley (Fig. 7.4). Because of their location, they thus have a very high visibility. The graves of Xide

Fig. 7.4 View of Xide Wuhe

Guluqiao, Wadegu, and Wenjiaba are considerably larger, but located on very steep mountain slopes and oriented perpendicular to the direction of the mountain range. The graves in the valley are oriented along the cardinal directions, but as they are roughly square, it is impossible to tell in which direction they are pointing. In any case, the differences between these sites show clearly there are at least two separate local groups of megalithic graves in Xide.

Other megalithic graves remarkable for their location away from the main cluster in the Anning River Valley are the graves of Puge high up in the mountains on the eastern rim of the Center, as well as the four graves of Dechang Cizhuiping, the 13 graves at Dechang Guadi, and the group of graves in Miyi, all of them in the southern part of the Anning River Valley. The graves of Puge were all observed on the relatively steep mountain slopes on the western side of the river valley at elevations of around 1800 m, which is a medium elevation for Puge. The form and orientation of the graves differs considerably both between and within sites. The two graves at Amucun are relatively small (2.9 × 1.5 m), consist of large boulders, and are oriented in southward direction, i.e., at a right angle to the direction of the mountain slope. The single grave at Heping, on the other hand, albeit similar in size and construction to the other graves in Puge, is sloping up the mountain. The graves at Xiaoxingchang are oriented perpendicular to the mountain, even though this arrangement would have made it impossible to slide the large cover stones smoothly onto the graves. Instead the stones would have to be lifted, which meant a considerable increase in labor. These larger graves were long and narrow, made of several layers of irregular cobbles for walls, large boulders as cover, and a door on one short side, as well as pebbles on the floor (Type 3.2).

The graves at Wadaluo were similar in dimensions but made of large boulders and not of small stones, and their orientation is unclear. They have not been excavated and are now destroyed, making it impossible to assess their construction. Judging by survey reports, the Wadaluo graves were probably similar to those at Amucun. Xiaoxingchang AM1, AM2, and Heping M1, on the other hand, belong to a different type. They are very small, made of one regular stone slab for each wall and a large boulder as cover, making them somewhat similar to the graves from Xide. Just as in Xide, Puge thus has two different kinds of megalithic graves that might differ in date, function, or cultural or social affiliation of the builders and/or interred.

The three known megalithic grave sites in Miyi at the southern end of the Anning River, on the other hand, although at a considerable distance from the main site clusters in the middle and upper Anning River Valley, are not much different in construction. Belonging to the very common Types 1.3 and 1.2 and being of medium size, these megalithic graves of Miyi were all found at medium elevations on level ground on the bottom of river valleys, and they are mostly oriented along the North-South axis.

The graves in Dechang Cizhuiping and Dechang Guadi are largely identical in construction, measurements, and orientation to the graves in Miyi. Guadi is even located in a similar environment, i.e., a little apart from the main concentration of megalithic graves, but on nearly level ground in a river valley and at moderate elevations. Dechang Cizhuiping M1, on the other hand, is located on a mountain slope at an elevation of 2600 m and over 8 km distance to the next river. The grave is particularly long and not overly narrow, measuring 10×2.6 m, and it slopes up the mountain. Unfortunately, the grave has only been mentioned in passing, and details of construction and content are unknown. Nevertheless, it seems that the grave is only exceptional in its location but otherwise fairly similar to the majority of known megalithic graves.

In spite of all of these special cases, it can generally be said that megalithic graves cluster most densely in the flat expanses of the Anning River Valley but do appear in mountainous areas as well, in spite of the limited availability of flat land. In both the Anning River Valley and the nearby mountains, megalithic graves were erected closer to river courses than other types of graves or even settlements, indicating that their builders might have been more concerned with visibility than with safety from flooding or with preserving valuable agricultural land. This applies even to the more mountainous parts of the central region where flat ground is scarce. It therefore seems that the placement of megalithic graves followed specific rules that might have included considerations such as visibility and orientation toward specific cardinal direction or landmarks.

7.2.2 Situating the Grave Within the Landscape: Visibility and Orientation

Megalithic graves are largely located on even ground and—due to their size and location—they are clearly visible from afar. Only a small number of graves were observed on the foot of a mountain or on a mountain slope with less clear visibility. In the case of stone-construction graves, at most a covering stone would have been visible regardless of location; this kind of graves can mostly be found on mountain slopes in narrow river valleys in close linear distance to rivers but located high above them, making them less vulnerable to flooding but also less visible than megalithic graves. Earth-pit graves occur mostly on slightly elevated platforms, and more rarely on steep hills, in the latter case often right next to stone-construction graves. This co-occurrence of graves with and without stone installations is particularly common in the Southeast and in the West. The Anning River Valley houses some earth-pit graves as well, but they hardly ever occur in the Northeast.

The Northeast is characterized by a great variety of grave forms comprising small-sized graves built of coarse stone slabs, as well as a few graves cut into the mountain slope and covered by a large boulder, and graves built of worked rectangular stones or rough cobbles arranged into layers to build walls somewhat reminiscent of Han brick graves. All of these types are rare or not at all extant in other regions. These graves are mostly located on very steep slopes overlooking the river.

With very few exceptions, both earth-pit graves and stone-construction graves in the Southeast occur on medium or steep slopes as well, providing them with a wide view of the land without making them inaccessible. Given their sometimes large covers, the graves in the Northeast have a greater visibility than other graves located below ground, but for smaller stone-construction graves, high visibility was apparently not desired.

The relative visibility of various grave types can relatively easily be judged by considering a combination of different factors including:

- Grave height above surface
- Grave size
- Size of stones used in construction (if any)
- Presence/absence of further outside constructions
- Elevation relative to surrounding landscape

Thus, based on grave construction a preliminary scale of visibility can be developed:

0. Graves completely below ground
1. Graves with stone installations protruding slightly on the surface, possibly due to disturbances
2. Graves with large cover stone protruding on the surface, potentially intentionally
3. Megalithic graves without substantial outside stone installations, relatively low, made of medium-sized stones

Table 7.4 Visibility of graves by construction and location

	Visibility by location			
Visibility category by construction	Low	Medium	High	Sum
5	8	11	27	46
	17.39 %	23.91 %	58.70 %	100.00 %
4.5	6	28	61	95
	6.32 %	29.47 %	64.21 %	100.00 %
	62	65	37	164
3	37.80 %	39.63 %	22.56 %	100.00 %
	137	83	20	240
2	57.08 %	34.58 %	8.33 %	100.00 %
	101	26	4	131
1	77.10 %	19.85 %	3.05 %	100.00 %
	260	91	38	389
0	66.84 %	23.39 %	9.77 %	100.00 %

4. Megalithic graves with some outside stone installations, of medium height, made of medium-sized or large stones
5. Megalithic graves with substantial outside stone installations and/or of substantial size and height, made of large stones

When comparing these categories against ease of access (judged by slope, closeness to the mountain, possible obstruction through vegetation), it becomes clear that the vast majority of earth-pit graves and small stone-construction graves would have had a very low visibility or accessibility, while the majority of megalithic graves with additional external features were located on flat ground, making them widely visible and easily accessible (Table 7.4).

As the landscape has changed considerably even during the last decades, let alone since prehistoric times, this assessment is naturally somewhat impressionistic. It is remarkable, however, that even large graves located on mountain slopes at higher elevation are hard to find under present conditions, especially during the summer when the vegetation is particularly lush. Unless these graves were kept free from such overgrowth, they would not have been widely visible in spite of their size. This limited visibility is particular puzzling in the case of the very large graves of Xichang Bahe Baozi that were sloping up steep hills. It therefore remains questionable if they were really as visible as their size and construction suggest.

A further aspect of location choice is the orientation of the grave within the landscape. As mentioned earlier, the information on grave orientation is problematic in the majority of cases. To get at least a general impression, I conducted statistical analysis on both orientation and aspect at the location of the three major grave types, comparing them to settlement sites and randomly generated points (Tables 7.5, 7.6, 7.7, and 7.8). For all graves, where exact coordinates have been reported, I furthermore created schematic circular diagrams showing the orientation of skeletons (Online Material: Figs. 21–23). At first sight, there seems to be no strong correlation

Table 7.5 Aspect (i.e., slope direction) at settlement sites, grave sites, and nonsites

Aspect	Settlements		Graves		Nonsites		Megalithic graves		Stone-construction graves		Earth-pit graves		Nonsites	
N	5	4.63 %	21	10.19 %	36	6.37 %	10	10.10 %	8	12.12 %	3	7.32 %	36	6.37 %
NE	9	8.33 %	28	13.59 %	71	12.57 %	17	17.17 %	8	12.12 %	3	7.32 %	71	12.57 %
E	16	14.81 %	36	17.48 %	100	17.70 %	20	20.20 %	10	15.15 %	6	14.63 %	100	17.70 %
SE	18	16.67 %	25	12.14 %	76	13.45 %	11	11.11 %	7	10.61 %	7	17.07 %	76	13.45 %
S	17	15.74 %	22	10.68 %	75	13.27 %	12	12.12 %	6	9.09 %	4	9.76 %	75	13.27 %
SW	15	13.89 %	30	14.56 %	74	13.10 %	14	14.14 %	9	13.64 %	7	17.07 %	74	13.10 %
W	19	17.59 %	40	19.42 %	89	15.75 %	16	16.16 %	17	25.76 %	7	17.07 %	89	15.75 %
NW	9	8.33 %	25	12.14 %	80	14.16 %	9	9.09 %	9	13.64 %	7	17.07 %	80	14.16 %
SUM	*108*	*100.00 %*	*206*	*100.00 %*	*565*	*100.00 %*	*99*	*100.00 %*	*66*	*100.00 %*	*41*	*100.00 %*	*565*	*100.00 %*

Table 7.6 Grave orientation by grave type

Orientation	Megalithic graves		Stone-construction		Earth-pit graves		All graves	
E	85	30.69 %	37	13.07 %	46	19.09 %	168	20.97 %
W	47	16.97 %	33	11.66 %	21	8.71 %	101	12.61 %
N	68	24.55 %	73	25.80 %	23	9.54 %	164	20.47 %
S	21	7.58 %	34	12.01 %	80	33.20 %	135	16.85 %
NE	12	4.33 %	75	26.50 %	0	0.00 %	87	10.86 %
SW	9	3.25 %	30	10.60 %	9	3.73 %	48	5.99 %
NW	20	7.22 %	1	0.35 %	37	15.35 %	58	7.24 %
SE	15	5.42 %	0	0.00 %	25	10.37 %	40	4.99 %
SUM	*277*	*100.00 %*	*283*	*100.00 %*	*241*	*100.00 %*	*801*	*100.00 %*

Table 7.7 Grave orientation by grave type (modified)

	Megalithic graves		Stone-construction graves		Earth-pit graves	
E or W	132	47.65 %	70	24.73 %	67	27.80 %
N or S	89	32.13 %	107	37.81 %	113	46.89 %
NE or SW	21	7.58 %	105	37.10 %	9	3.73 %
NW or SE	35	12.64 %	1	0.35 %	62	25.73 %

Table 7.8 Correlation between aspect and grave orientation

	Megalithic graves		Stone-construction graves		Earth-pit graves		All graves	
Right angle	60	21.66 %	49	17.31 %	21	8.71 %	130	16.23 %
Angle	96	34.66 %	162	57.24 %	147	61.00 %	405	50.56 %
Same	121	43.68 %	72	25.44 %	73	30.29 %	266	33.21 %
Sum	*277*	*100.00 %*	*283*	*100.00 %*	*241*	*100.00 %*	*801*	*100.00 %*

between the choice of slope direction, orientation, and grave type. There is a greater tendency for graves to be oriented along the cardinal directions than at angles, but as the mountain ridges and rivers are generally north–south aligned, this might reflect an orientation toward geographic markers rather than toward the stars and planets.

Both Pearson's and Spearman' Correlation Coefficient indicate a statistically significant positive correlation between grave orientation and aspect when tested over all graves (Appendix Table B.19—A). A cross-tabulation of smoothed values for grave orientation and aspect connected with tests of significance shows a very strong correlation of a southward grave orientation with southeastern slopes, as well as a general tendency for graves to be aligned in the same direction with the orientation of the slope. The opposite alignment, i.e., perpendicular to the slope, is less common but it does occur occasionally (Appendix Table B.19—B).

When conducting the same calculations separate by grave type, the picture is somewhat different. For megalithic graves the correlation is rather weak, either because the majority of graves is not located on a significant slope, or because for this type of graves the orientation is notoriously difficult to assess (Appendix Tables B.19—C and D). For earth-pit graves the correlation is slightly stronger, but not as strong as for stone-construction graves. For stone-construction graves, a general preference for southwestern or southern orientation is coupled with westward slopes; northern orientation is more commonly associated with northern or southern slopes (Appendix Tables B.19—E and F). For earth-pit graves, a location on south-eastern slopes is prevalent, combined with a slight preference for a southern orientation. Overall, it thus becomes clear that stone-construction and earth-pit graves, which are preferentially located on hills or mountain sides, follow the direction of the slope in orientation. Especially in Southeast, cemeteries often hold both stone-construction and earth-pit graves that are oriented in regular rows following the direction of the mountain slope. In cases where the original location of the head could be ascertained, it was mostly placed in the direction of the mountain, with the feet and face pointing toward the river.

For megalithic graves, the picture is less clear and requires further analysis. To attain a visual impression of what this distribution of grave orientations may mean, I have created maps displaying the graves with arrows indicating their orientation (Online Material: Figs. 14–20). From a comparison of wide-lens and close-up views it becomes clear that megalithic graves located in the river valleys are usually aligned with the river, while megalithic graves built on mountain slopes have a tendency to either follow the direction of the slope or be located exactly perpendicular to it. No clear correlation can be seen between specific grave subtypes and orientation, but the potential of regional differences has to be investigated further. It is apparent that there are close similarities both in the choice of slope aspect and grave orientation between adjacent areas characterized by the same grave types (e.g., Dechang and Xichang, Huili and Zhaojue, Yanyuan and Yongsheng), but overall the picture is inconclusive (Tables 7.9 and 7.10).

Table 7.9 Grave orientation by county

County	N	NE	E	SE	S	SW	W	NW	Sum
Dechang	15	1	19	4	6	4	34	9	92
Xichang	33	7	51	6	5	5	13	4	124
Mianning	2		27		1				30
Yuexi	1		6		7		1		15
Puge	1	3			2			1	7
Xide	16		12	6				5	39
Meigu	7						13		20
Zhaojue	30	32	12		34	30	15		153
Huili	39	19	21	21	75	2	19	35	231
Luquan	2	2		2				2	8
Ninglang					4	7			11
Panzhihua	3	23	1				2	2	30
Yanyuan	7		9		1		2		19
Yongsheng	8		10				2		20
Sum	*164*	*87*	*168*	*39*	*135*	*48*	*101*	*58*	*800*

Table 7.10 Aspect at grave sites by county

County	N	NE	E	SE	S	SW	W	NW	Sum
Dechang	3	4	28	7	15	9	8	18	92
Xichang	5	10	21	13	13	19	28	15	124
Mianning		1	4	22	1		2		30
Yuexi	8		4	1		2			15
Puge		5	2						7
Xide	14	19	1		1	5			40
Meigu	5				11	3	1		20
Zhaojue	20	5	16	10	16	2	81	3	153
Huili		21	31	164	6	3	2	4	231
Luquan								8	8
Ninglang							11		11
Panzhihua	14	2		1				14	31
Yanyuan			7				12		19
Yongsheng		1						19	20
Sum	*69*	*68*	*114*	*218*	*63*	*43*	*145*	*81*	*801*

7.2.3 Situating the Grave Within the Site: Cemeteries and Their Structure

Another aspect that needs to be taken into consideration is the relationship of individual graves to their neighbors. The 1674 known graves were attributed to over 200 sites but most of them held only a single grave and only five large cemeteries with over 100 graves each have been reported (Table 7.7). Some sites might originally have held several graves that were not observed or destroyed, but as 47 of all reported single graves are large stone constructions, most of them located on even ground in the Anning River Valley, it is unlikely that similar graves in the vicinity would not have been noticed or removed without leaving any traces. Overall, megalithic graves usually occur single or in small groups of 2–6 graves, while stone-construction and earth-pit graves tend to be grouped in cemeteries that can consist of 10–20 graves (e.g., Xichang Lizhou), or of several hundred graves as is often seen in Huili and Zhaojue (Online Material: Fig. 24) (Table 7.11).

Most graves reported as single are earth-pit (13 sites) or stone-construction graves located below ground (29). As these grave types are difficult to observe, they could have been part of a larger grave group or cemetery that was destroyed or has not been identified correctly.[1] Although some megalithic graves stand alone, most were found within 0.1–2 km of a similar grave, meaning that in most cases megalithic

[1] Five of these sites are located in Huili, three in Mianning, one in Xichang, three in Yanbian, one in Yuexi, 14 in Yanyuan, and 15 in Zhaojue. The graves in Zhaojue are all stone-construction graves protruding at the surface; however, they are heavily disturbed and the covering stones of other graves might have been carried away, leaving only a single grave for archaeologists to discover.

Table 7.11 Grave site sizes

Number of graves	Number of sites
Single-grave sites	89
2–6 grave cemeteries	75
10–20 grave cemeteries	24
20+ grave cemeteries	8
100+ grave cemeteries	5
1674 graves	*201*

graves actually occur in groups of two or three and not alone.[2] The only two megalithic graves located at a considerable distance to all other graves are Dechang Cizhuiping and Mianning Xiangshi, both of them found at relatively high elevations and on mountain slopes, i.e., in rather inaccessible places only rarely chosen as locations for megalithic graves. They can thus be treated as exceptions. Being located nearly exclusively on flat ground and moderate slopes in the Anning River Valley, the megalithic graves stand separate and unified while earth-pit and stone-construction graves are spread throughout the whole research area and occur in a variety of different environments. These two major groups can thus be discussed separately.

7.2.3.1 Megalithic Graves in Context

Megalithic graves only rarely occur at the same site together with other grave forms, or rather—given the visual and spatial dominance any megalithic grave would have—other grave forms hardly ever occur in close vicinity of megalithic graves. The most common exception are sites where a megalithic grave was built later, e.g., Xichang Lizhou, where the deep layering suggests that the builders of the megalithic grave were not aware of the earth-pit grave cemetery below, or the site of Xichang Dayangdui, where the successive use of the site for earth-pit graves, offering pits, and finally megalithic grave indicates that the place remained ritual significance over a long time. As the megalithic graves at Wadaluo have not been excavated, their content cannot be compared with what was found in the earth-pit graves at the same site; their relationship thus remains unclear.

A rather different phenomenon is the reuse of megalithic graves at Xichang Beishan Ba for the placement of urn burials of Dali kingdom date (AD 937–1253). Such a deliberate reuse of earlier graves is unparalleled in the research area. It is not uncommon, however, for Han brick graves to occur at the same sites as earlier earth-pit or stone-construction graves, sometimes disturbing or covering earlier constructions, sometimes honoring the earlier graves. The co-occurrence of local-style graves and Han brick graves is mainly known from the Northeast, mostly Zhaojue,

[2] Dechang Hejiashan, Malilang Zhanbei, and Zhangjiaba, for example, are all within about 0.5 km radius of each other, so are many other sites. This also applies to Dechang Nahuagong and Shaba, Dechang Huangjiaba and Liangshanpo, Dechang Shaorenba and Ganhai, Dechang Dashipai and Wujia, Dechang Maliang and Zhangjiaba, Xichang Dabaozi and Luzuishan, Xichang Reshuitang West, Shangjiaxiang, Shizuizi, and Xixicun, Xichang Beishan and Zhengjiafen.

where the coarse stone-cover graves protruded on the surface and might have been a point of reference for Han burials. Another possible explanation is that the graves were actually built around the same time, the difference in form reflecting a difference in cultural identity. Zhaojue Qianjinshe furthermore provides particularly interesting evidence for Han influence on grave structure: several of the graves discovered there consist of walls built of regular stones in a brick-wall-like fashion and one grave even integrates Han bricks into the construction.

While evidence for Han influence is prevalent throughout the Northeast, a similar conflation and co-occurrence of very different grave types at the same site is uncommon. The only and very important exception is Yongsheng Duizi at the southwestern-most edge of the research area, which combines stone-construction graves, earth-pit graves, urn-graves, and possibly even megalithic graves within the same site but in different layers, promising valuable insight into chronological and cultural questions once the material is published.

The only kinds of graves that routinely occur within the same sites—most frequently in the Southeast but sometimes also in Southwest or Northeast, but never in the Anning River Valley—are stone-constructions and earth-pit graves; they usually occur next to each other in large cemeteries, or in separate cemeteries but at a distance of less than 1 km.[3] Overall, many grave sites are located in close vicinity to each other; as spatial analysis shows; 85 sites occur within clusters of 2–4 located at less than 1 km distance to each other, 30 of them even less than 500 m apart from other sites. Most of these sites are located in Dechang in the southern part of the Anning River Valley where megalithic graves are clustered densely, as well as in the Northeast where the mountain slopes are literally covered in remains of Han brick graves and to a lesser extent stone-construction graves. Further clusters of earth-pit and stone-construction graves can be found at the widest point of the alluvial basin of the Cheng River and a more secluded mountain valley in the Southeast, along the Meiyu River in the Yanyuan Basin in the western mountains, and the megalithic graves within the narrow river valley of the Dadu River in Xide slightly east of the Anning River Valley.

Although Xichang is very rich in grave sites, these are slightly more dispersed than those in Dechang or Xide, but still mostly within 2–5 km of each other. The river valleys in Dechang and Xide are very narrow with high mountains encroaching closely onto the flat land, and sites are thus naturally closer to each other than around Xichang, where the Anning River Valley reaches its widest point of about 12 km. Another reason might be the greater and earlier urbanization and extensive agricultural usage of the area around Xichang, probably leading to the destruction of many sites. Furthermore, in the wider parts of the valley, the river has shifted

[3] Huili Xiaotuanshan, Fenjiwan, and Yunshan are located with in a radius of less than 1 km; Huili Hedongtian, Washitian, and Yingpanshan are located at only 1 km distance to each other, albeit on different sides of the river, so are Huili Yingpanshan and Houzidong, and the majority of grave sites in Yanyuan. Megalithic and earth-pit graves only rarely occur close to each other; some of the few examples are Xichang Qimugou and Lijiacun, Xichang Maliucun and Yingpanshan, and Puge Wadaluo and Xiaoxingchang, which are less than 1 km apart from each other.

significantly, thus covering many sites, while in Xide the valleys are so narrow that the rivers cannot shift much. The amount of level ground is overall very limited throughout the whole research area, leading to a natural clustering of sites.

At the same time, sites located particularly close to each other such as Zhaojue Fuchengqu and Muerguo or Yanyuan Jiaodingshan and Yanyuan Gesa might not be two cemeteries but one, albeit discovered at different times. Especially in the case of Zhaojue and Yanyuan where the graves are particularly densely spaced and often protrude on the surface, it is very likely that graves at various closely adjacent sites were built in reference to each other. The same applies to the megalithic graves, which in most cases could hardly have been overlooked and were probably used over longer periods of time. The sites can therefore often not be seen as separate entities but need to be drawn together in analysis.

Considering these relationships, it is remarkable that there seems to be no unified principle guiding the orientation of megalithic graves toward each other, neither between adjacent sites nor within the same site (Appendix Table B.20). Only the graves in Mianning are all facing the same direction, so are all graves in the very large megalithic grave cemetery of Dechang Wangsuo and most of the graves in the two adjacent grave groups of Dechang Xiaoliusuo and Xiaomiaoshan. The majority of adjacent graves in the Xichang area likewise have a similar orientation (Fig. 7.5), but many do not, while in Xide opposite orientations between adjacent cemeteries

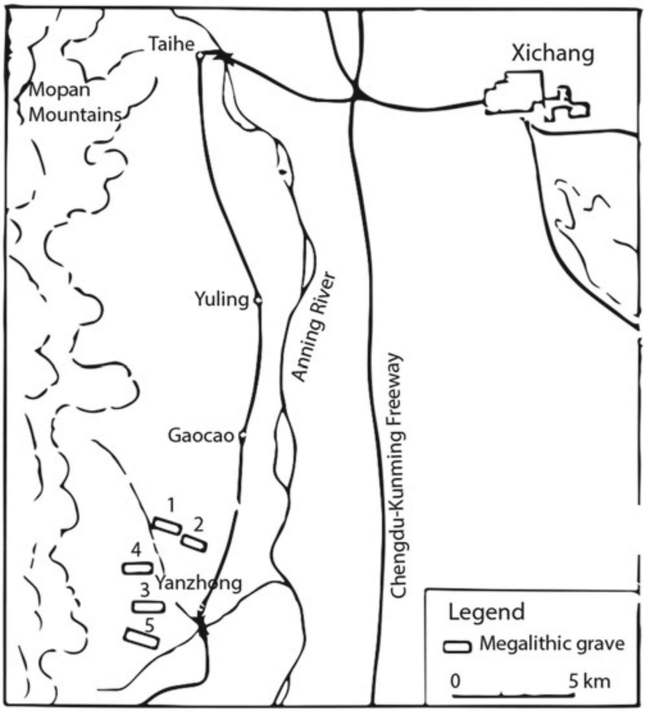

Fig. 7.5 Plan of Xichang Hexi (after Xichang Diqu 1978: Fig. 1)

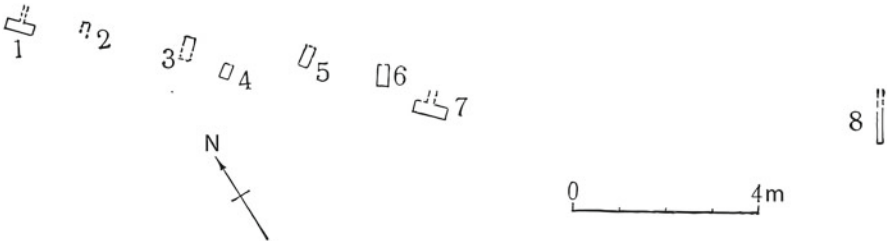

Fig. 7.6 Plan of Xide Lake Sihe (after Liangshan Diqu 1978: Fig. 1)

or graves are common. Nevertheless, the graves in Xide were roughly arranged in one row, setting them into spatial correspondence with each other, even if the orientation differed. The graves at Xide Lake Sihe are particularly remarkable as two of them were exactly perpendicular to five of the others, but had their door on the long side instead of on the short side, meaning that the direction of approach might have been the same for all of them (Fig. 7.6). Only one grave at the site (M8) does not fit this pattern and is furthermore much longer, indicating a different date or function.

Given that most megalithic graves were located close to one or several others, they are in a direct spatial relationship, referencing each other by mere proximity. It is therefore likely that several of them were incorporated in the same ritual and that rules of procession or individual points of reference determined the decision for a specific orientation of the graves to each other and the landscape. Given that both orientation and door placement for the majority of megalithic graves are unknown and the original monuments have often been destroyed, it is currently not possible to answer these questions conclusively, but it is important to keep in mind that the graves were built in reference to each other, creating a ritual landscape.

It is furthermore remarkable that at most sites the graves tend to be similar in form and type, indicating that they were built by the same group, possibly even within a relatively short time frame. Especially remarkable in this context are five graves at Dechang Arong, one of them small, the others very large complex constructions of various types, but all of them oriented in the same direction and at 13–60 m distance of each other. Given their size, it is unlikely that they were built over a short period of time, and the large number of objects and skeletons inside suggest that these graves were used over long periods, but considering the lack of a reliable chronology for the research area, it is currently impossible to suggest a concrete time frame.

7.2.3.2 Earth-Pit Graves with and Without Stone-Construction Parts and Their Cemeteries

For the small earth-pit and stone-construction graves, which had a significantly shorter use-life, were easier to build, and left a less significant impression on the landscape than megalithic graves, the case is less complicated. The majority of

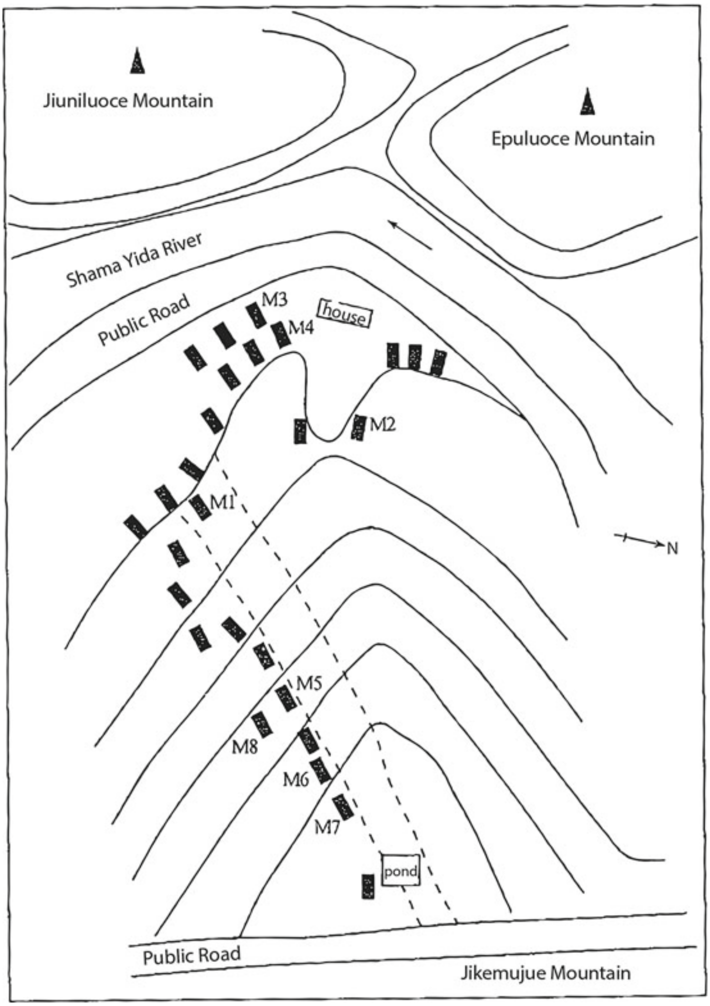

Fig. 7.7 Plan of Zhaojue Layimu (after Liangshan et al. 2010: Fig. 10)

stone-construction graves are arranged in large cemeteries consisting of dozens or sometimes hundreds of graves aligned in more or less neat lines following the orientation of the hill slope. The spacing of the graves can be very dense with hardly a meter between the graves as seen at Yanyuan Laolongtou, Huili Fenjiwan, and many sites in Zhaojue, or 3–4 m as at the majority of other sites. The actual arrangement of the graves differs somewhat from site to site, but there is a general tendency for the graves in Zhaojue to be aligned in a single-file row sloping up the mountain or in parallel rows on plateaus or hilltops, showing deliberate orientation, planning, and the probable presence of grave markings above the ground preventing disturbance of earlier graves (Fig. 7.7).

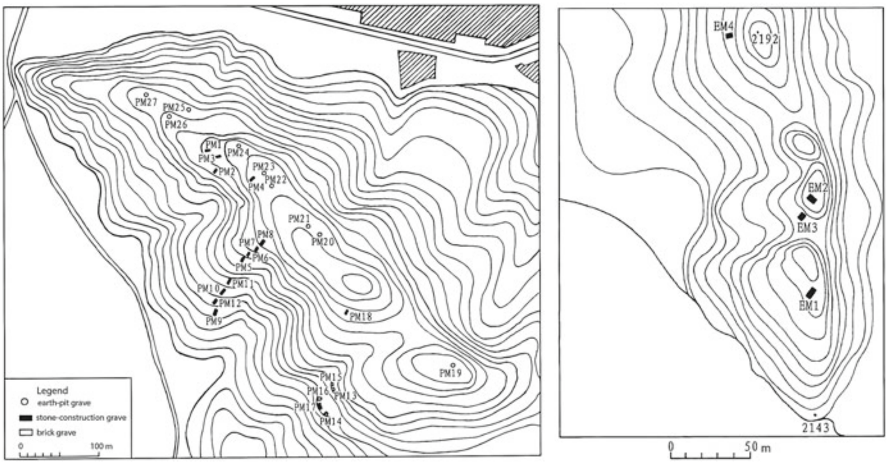

Fig. 7.8 Plans of Zhaojue Pusu Bohuang and Eba Buji (after Liangshan et al. 2009: Fig. 2 and 3)

In some cases clearly separate grave groups can be identified, such as at Zhaojue Pusu Bohuang/Eba Buji (two closely adjacent sites), where tombs of different construction and probably different date are located on different parts of a single hill; nine round grave mounds of late Han or even later date are scattered on the hilltop (PM19-27), so are five cliff tombs cut into the bedrock (PM13-17), while four small stone-construction graves of Type 2.3 and 2.4 are clustered at one end of the hilltop (PM1-4) and one large stone-construction grave (PM18, Type 1.1) is located on the other; a row of seven more stone-construction graves of Type 2.4 (PM5-12) slopes up the hill, and four more stone-construction graves—three likewise of Type 2 and one of the rare small-oval form with a large stone boulder as cover (Type 5.2)—scattered in no clear order on a neighboring hill (Fig. 7.8).

As most of the graves at Zhaojue Pusu Bohuang/Eba Buji are destroyed and the others largely empty, it is difficult to ascertain the exact chronological and cultural relationship between them, but it seems likely that they were built for members of different cultural or social groups or of successive generations using the same sacred space for burial. Similar arrangements with Han brick tombs and stone-construction graves (mainly Types 2.2. and 2.4) sharing the same hills and mostly facing the river, can be seen throughout all of Zhaojue, indicating a diverse pattern of different communities using the same sacred places together and throughout long periods, largely honoring previous grave markings (Fig. 7.9).

The large grave sites in Huili and Luquan are somewhat different in nature. Even though here the graves largely follow the slope of the hill as well and are densely spaced, mostly without disturbing each other, their alignment appears less orderly. Furthermore, the graves at these sites tend to be considerably more homogenous in form, orientation, and content. Although slightly separate groups can be identified, at least by grave size and structure, these differences are slight. Stone-construction and earth-pit graves (some of them with limited amount of stone installations) appear

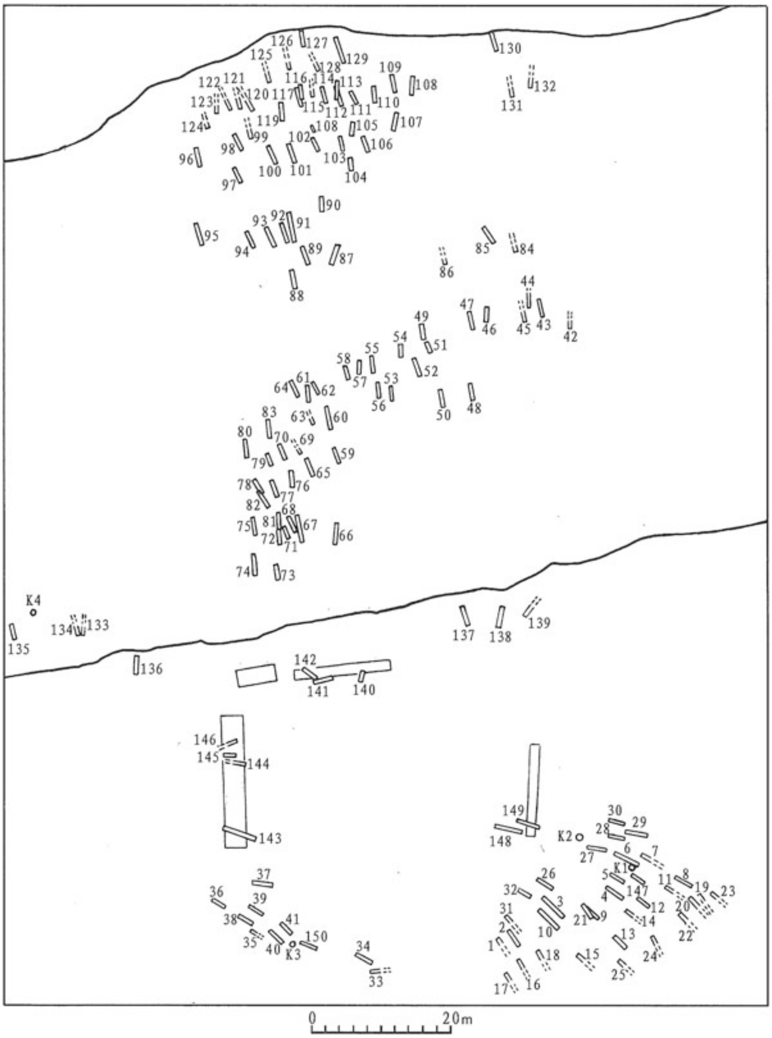

Fig. 7.9 Plan of Huili Fenjiwan (after Huilixian et al. 2004: Fig. 1)

side by side, and they are overall very similar in form, size, and content, indicating a single burying group and temporal continuity (Figs. 7.10 and 7.11). In the West, graves with various amounts of stone installations or without such additions occur side to side as well, mostly aligned in the same direction, but as the only cemetery plan published to date is a very fragmentary view of the site of Yanyuan Laolongtou (Fig. 7.13), it is unclear how orderly the graves were arranged originally.

In the Anning River Valley, earth-pit graves are limited to a small number of sites, namely the single grave of Ma'anshan, two graves at Yingpanshan, and three graves each at Qimugou and Yangjiashan, as well as 21 graves at Lizhou, and nine

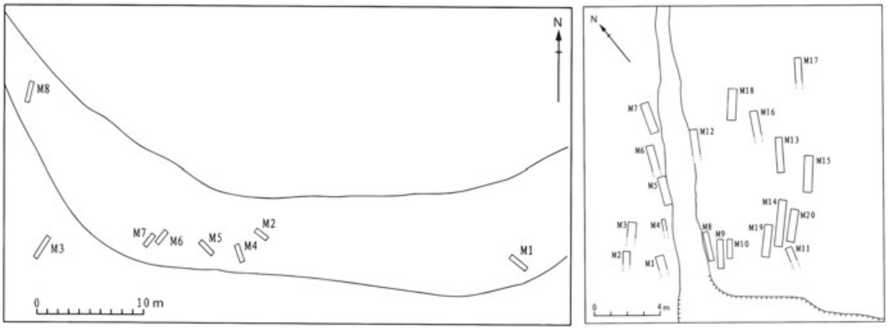

Fig. 7.10 Plans of Luquan Yingpanbao (after Kunmingshi et al. 2007: Fig. 2 and 9)

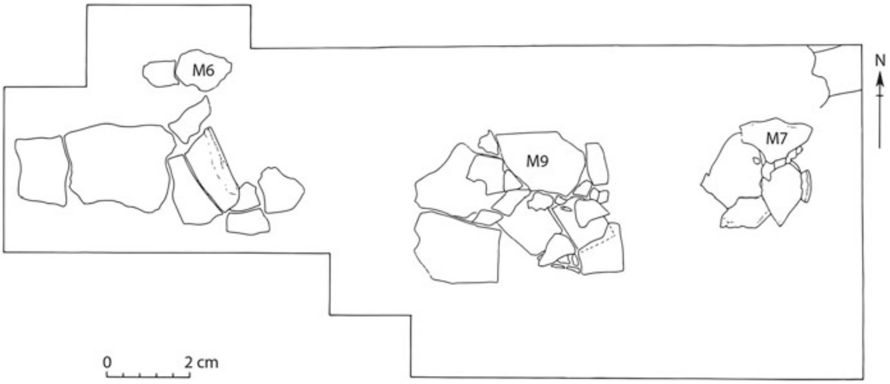

Fig. 7.11 Plan of Yanyuan Laolongtou (after Liangshan and Chengdu 2009: Fig. 2)

graves at Dayangdui (Figs. 7.12, 7.13, and 7.14). As explained in Chap. 4, these graves are all rather different in form and alignment between and within sites. As the excavation area in Qimugou is relatively small, it is unclear how large the cemetery originally was, but the three excavated graves, though similar in form, are oriented perpendicular to each other; they furthermore disturb earlier cultural layers, either not being aware of them or choosing to ignore their presence.

The site of Lizhou is not completely clear in its organization. All graves are similar in form (long narrow with rounded corners) but they differ considerably in size. One of the earliest graves, M4, is particularly long and cut by two shorter, later graves (M3 and M5), one of which is again cut by another grave of unclear length (M2). While M2 is oriented along a NE–SW axis, the other graves just mentioned point toward the North, so do a number of other shorter or longer graves, but some are oriented toward the East, and later Han graves at the same site (all of them rectangular or nearly square) are arranged in regular North–South rows. Given the general similarity in orientation, form, and even content, the seeming lack of cemetery organization and the disturbance of earlier graves are puzzling, and might be deliberate acts rather than accidents.

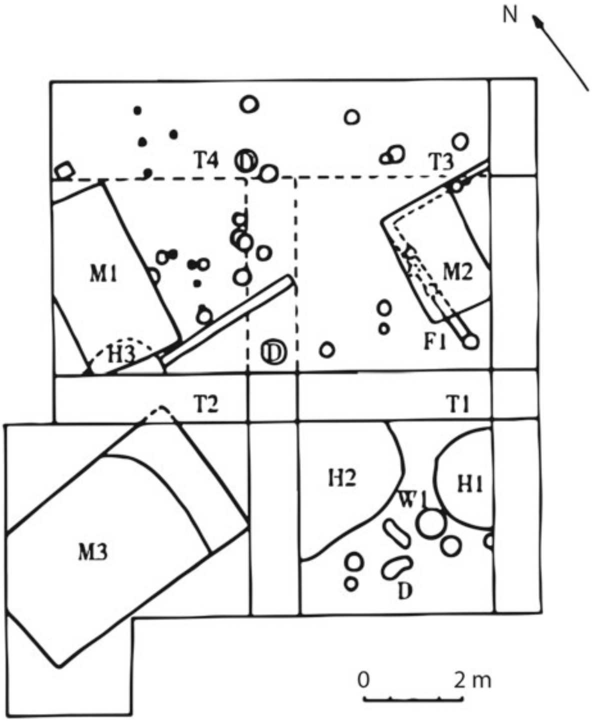

Fig. 7.12 Plan of excavation units T1-T4 at Xichang Qimugou (after Chengdu et al. 2009a: Fig. 2)

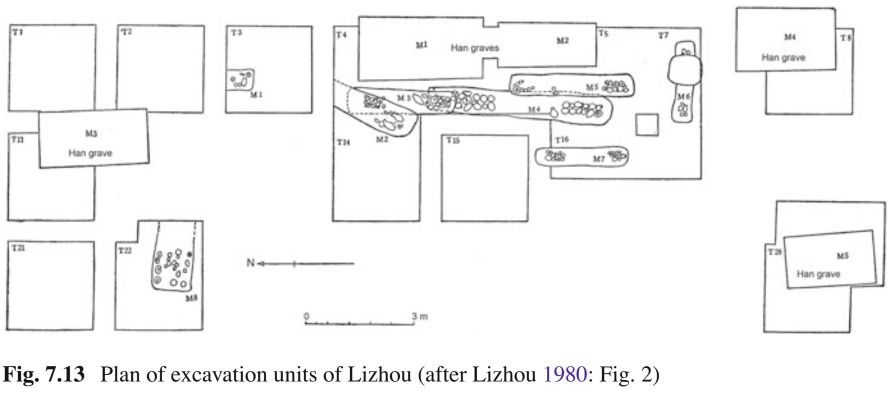

Fig. 7.13 Plan of excavation units of Lizhou (after Lizhou 1980: Fig. 2)

At Xichang Dayangdui, the earth-pit graves are in the earliest cultural layer, with object pits and megalithic graves in layers above that nevertheless do not disturb the earlier features. The graves are all oriented roughly in the same direction, but they do not form regular rows. M1 even cuts M4, destroying nearly half of the earlier grave, be it intentionally or unintentionally due to a lack of above-ground burial markers. All these graves are similar in form and size (rectangular with rounded

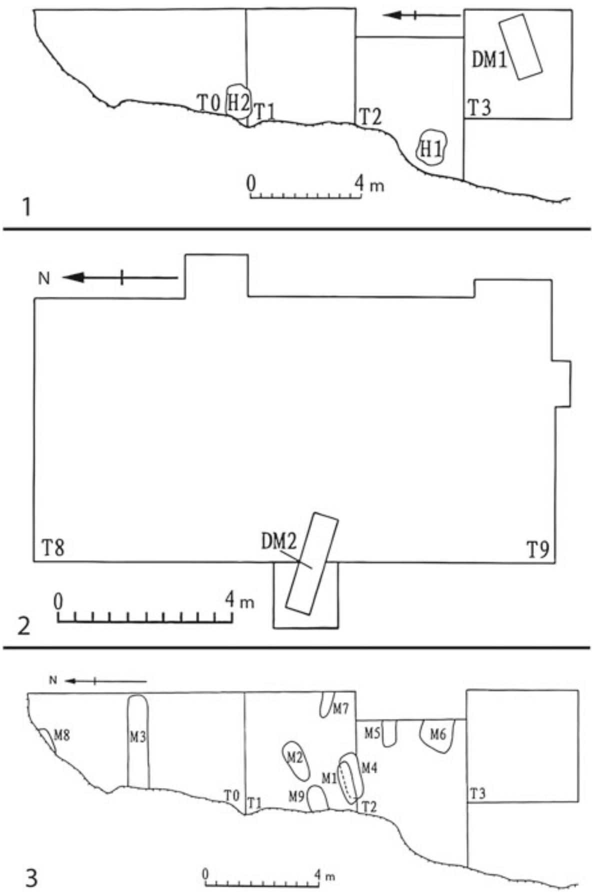

Fig. 7.14 Plans of excavation units T0–T9 at Xichang Dayangdui (after Xichangshi et al. 2004: Fig. 4 and 20)

corners, of 1.5–2 m length) except for M3, which is particularly long. Interestingly, the later object and soil pits at the same site are oriented either in the same direction as the graves or perpendicular to them, and even the later megalithic graves have the same orientation as the early graves, showing that there might be a common focus point. The site is located on a slope and the graves are described as facing east, which is the direction of the river. Given that the bones are missing, the graves might just as well have been facing west, i.e., the opposite direction, but it is likely that a geographic point of reference (either river or mountain) was the reason for their orientation.

Overall, we can thus see that grave orientation and placement were determined by various geographic and geomorphological factors but also by the location of other graves and ritual graves already present. It also has become clear that there are significant differences in grave types and grave placement between the five subregions of the research area, but sometimes also between different sites within the same subregion. Interment customs and other ritual acts as well as the spectrum of objects interred with the dead likewise vary over space and time, variations that will be explored in the next step.

7.3 Regional Differences: Grave Forms, Ritual Acts, and Object Types

7.3.1 Grave Forms, Ritual Acts, and Location Choice

The separate analysis of grave types, body treatment, and other rituals in Chaps. 4 and 5 has clearly shown that some grave types are connected with specific interment types and that regional differences play a role as well.

7.3.1.1 Interment Type

In terms of interment type, for all grave types and subregions primary extended-supine interment is most common, in the case of megalithic graves often followed by later re- or disarrangement, while secondary interments in the form of the reburial of selected bones are limited to stone-construction graves in the Northeast and very few small megalithic graves in the central Anning River Valley (i.e., Xichang Dayangdui DM1 and DM2).[4] Small megalithic graves similar in form to those at Dayangdui have also been observed at Xichang Tianwangshan, likewise in the central Anning River Valley, and in the neighboring mountains of Puge (Puge Xiaoxingchang). The megalithic graves in Puge generally tend to be small and very similar in construction to the small stone-construction graves in the Northeast, particularly the graves of Zhaojue Qianjinshe that I reclassified from megalithic to stone-construction graves (Sect. 7.2.3). The interment practice and number of skeletons at Zhaojue Qianjinshe is unclear, but the use of Han tiles indicates a relatively late date. The small megalithic graves in the Anning River Valley, on the other hand, are associated with early ceramic forms and had not been reopened, showing that an outward similarity in grave construction does not automatically show closeness in date or associated rituals.

In case of the Anning River Valley, the small graves of Tianwangshan and Dayangdui seem to represent either an early phase or a distinct tradition of megalithic

[4] The majority of earth-pit graves was devoid of bone remains due to unfavorable preservation conditions, making it impossible to pronounce on forms of body treatment. Of the few earth-pit and stone-construction graves that did contain human remains, the majority are single interments, many of them primary. Human remains were only found in the graves at Yongsheng Duizi, which remain unpublished, Mianning Xiaogoudi, Yanyuan Laolongtou, Huili Washitian, and very few graves at Huili Fenjiwan and Laolongtou, as well as stone-construction graves at Huili Xiaoyingpan, Luquan Yingpanbao, and a very few graves in Zhaojue and Mianning.

graves used for secondary burials without reaccessing of the tomb. The small graves in the northeastern mountains of Puge, on the other hand, likely mirror a different and possibly slightly later custom that involved reaccessing and continuous use of the same graves. Interestingly, Puge Xiaoxingchang AM1 and AM2 held only a small number of skeletons, while the other graves at the same site were the center of over 100, partially successive burials. Their small size suggests that these graves originally had not been meant to house such a large number of bodies but became the center of burial rites for several successive generations nevertheless. A similar development can be seen at Xichang Bahe Baozi in the central Anning River Valley, where all the graves are of small size, but some containing only a few skeletons and others housed 50–100 individuals, all of them primary interments.

Secondary interments are more commonly associated with stone-construction graves in the Northeast or in the North- and Southwest, usually as simultaneous multiple burials. There are differences in the details of burial ritual between these two areas, though. The graves in the Northeast are all characterized by secondary interments with a stacking of the bones in the rear part of the grave, in the case of Zhaojue Wazhaishan M4 even with a separation by bone type; they are thus secondary burials of bodies that before had been left to decompose elsewhere.

Secondary interments in the form of cremation are extremely rare but occur throughout various parts of the research area and associated with various grave forms.[5] Mianning Xiaogoudi in the northern part of the Anning River Valley is of particular interest as the site holds both earth-pit graves with single primary inhumations and urn burials, and megalithic graves can be found in the vicinity as well. It is therefore not unlikely that different parts of the same population were buried in different kinds of graves, e.g., children in cremation urns, and other subgroups in earth-pit or megalithic graves. Unfortunately, the conditions for bone preservation in Mianning were too poor to ascertain age or gender of the interred, and any hypothesis on burial differentiation has to remain untested.

7.3.1.2 Special Body Treatment

Special body treatment in the form of burning (other than cremation outside the grave), application of cinnabar, and special types of body positioning or rearrangement occurs at single sites throughout the research area and in combination with various types of graves. Special body treatment in the case of primary interments has so far only been observed in earth-pit graves at Huili Xiaoyingpan and Luquan Yingpanbao, which are located fairly close to each other in the Southeast of the research area. In all cases, the skull was detached and placed either in the stomach area of primary extended-supine interments, completely removed from the grave, or buried separately in graves made of thin stone slates that were oriented toward the

[5] Yongsheng Duizi and Mianning Xiaogoudi (urn-burials in earth pits); Puge Xiaoxingchang AM1 and Xichang Xijiao Gongshe M1 (in megalithic graves together with inhumations), Yanyuan Laolongtou M9 (with three primary inhumations).

North or Northeast on steep slopes of southern orientation, i.e., not any different from the other graves at the same cemeteries. It therefore seems likely that this form of special burial was a local custom reserved for a certain number of people.

Evidence for calcinated human bones other than urn burials occurs so rarely and so seemingly randomly distributed throughout the research area that no clear distribution pattern or deeper meaning can be discerned. In two cases, there is evidence of fire usage on bones in megalithic graves, potentially inflicted during a later reentering of the grave for a new interment or postburial rituals[6]; in one case, fire marks on bones are the outcome of a complex ritual in connection with an earth-pit grave in the Northwest holding at least four individuals (Yanyuan Laolongtou M9). Here, each set of bones is accompanied by its own set of burial goods, so the grave might have been the reunification of a family or other kind of small social group after the death of its last member, or the burial of one main person who was accompanied by relatives or dependents who had to follow him or her. A similar arrangement of one main but secondary interment (in this case represented by a human mandible covered in cinnabar and placed in the main chamber with a large number of burial object) and one primary extended-supine burial on the second-level ledge was observed in another grave at the same site (Laolongtou M4). Such a combination of primary and secondary interments associated with a number of other forms of body treatment and special deposition practices seems to be unique to the Yanyuan Basin or even the site of Yanyuan Laolongtou.

The rearrangement of bones in connection with a reopening of the grave, on the other hand, occurs at a larger number of sites in the central Anning River Valley and the mountains just to the east and always in megalithic graves. Most of the time, the bones of previous interments accumulated in the back in an unorderly fashion or simply were pushed to the side to make room for further interments. Actual piling of bones only took place in graves of a considerable size with large numbers of interments that show also other signs of reentering such as scorch marks on the stones, suggesting complex rituals that required some time spent inside the grave as opposed to only depositing a new body and then sealing the grave again relatively quickly.[7]

7.3.1.3 Evidence of Other Ritual Acts

Besides various types of special treatment of human bones, there is evidence for burning of animal bones or unknown substances inside a few graves, but rituals involving fire do not seem to be restricted to any specific grave or interment type or subregion.[8] Only fire treatment of animal bones—or indeed the interment of any type

[6] The only known cases are Xichang Xiaoxingchang M1 and Puge Xiaoxingchang M1.

[7] Such clear signs of an actual reentering and not just reopening have only been observed with large megalithic graves in the Xichang area as well as Puge and Xide.

[8] Evidence for burning of unknown substances is known from a very few graves of all types in the Anning River Valley (Xichang, Dechang, and Miyi) and in Luquan in the Southeast. Ash piles that might be the outcome of fire (be it inside the grave or elsewhere) are known from earth-pit graves

of animal bones—largely is restricted to the Northeast. Fire treatment of sheep shoulder blades (though without evidence for prognostication techniques as they are known from the Central Plains of China) so far only have been seen at Yanyuan Laolongtou, as have most other cases of sheep and horse bone interment. Especially horses seem to have had a special meaning and function in the Northwest, as the combination of horse heads, bones, and horse gear and ornaments in the richest graves indicates (Hein 2014b). The sheep bones, on the other hand, are more likely to have entered the graves as a meat offering, which is not unlikely given the strong prevalence of sheep and goat in the mountains around Yanyuan until the present day.

The only known occurrence of animal bones inside a grave outside of Yanyuan are the teeth interred in the stone-construction grave M3 at Zhaojue Fuchengqu in the Northeast. They are likely pig teeth, showing the greater importance of this kind of domestic animals, while graves in other areas are devoid of animal bones, even those where human bones have been preserved, showing that animals did not play a large part in burial rituals as reflected in the grave. Instead of animal bones, the megalithic grave Xichang Bahe Baozi M1 in the central Anning River Valley contained a pile of calcinated rice husks, showing the importance of this staple, be it for ritual reasons, be it as a food provision for the afterlife. This regional difference in food and animal offerings may not only reflect differences in rituals but also in the economic basis of the people conducting the burials.[9]

The lack of evidence for special rituals in most earth-pit graves and many stone-construction graves does not mean that the burial process was less complex, but only that it did not affect the grave itself. Nevertheless, even in earth-pit graves there is a certain amount of differentiation reflected in burial construction, with head- or foot compartments in a very few graves at in the Southeast and the West,[10] or a second-level ledge at single graves in three out of five subregions of the research area.[11] In the case of the Northwest, second-level ledges appear only in large graves with other special features and evidence of complex rituals such as treatment of human bones, animal offerings, evidence of fire, special stone installations, and a considerable number of metal weapons and ornaments of special local types; in contrast, graves with second-level ledges in the central Anning River Valley are rather small and contain only a limited number of Han style ceramics that clearly belong to a very different tradition. The second-level ledge is therefore another case in point that the similar-looking phenomena can have different origins. In such cases, especially associated objects can furnish important clue as to the origin and date of the archaeological features in question.

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in the central Anning River Valley and stone-construction graves in the Northeast; charcoal remains have been found in the Northwest (Yanyuan Laolongtou M4 and M7) and in various megalithic graves in the Anning River Valley.

[9] For further discussions of subsistence practices in Southwest Sichuan consult Hein (forthcoming).

[10] Such graves were found at Huili Washitian and Xiaoyingpan; Ninglang Daxingzhen, Yanyuan Laolongtou, and Yongsheng Duizi.

[11] These are graves at Huili Xiaoyingpan, Xichang Qimugou and Ma'anshan, Yanyuan Laolongtou, and Yongsheng Duizi.

7.3.2 Object Forms, Grave Types, and Their Geographic Distribution

As has become clear in Chap. 6, object assemblages vary significantly between subregions, but sometimes also between sites in the same subregion or even between different graves at the same site. Some of these variations thus seem to reflect regional differences while others may have a temporal component or be caused by intrasocietal differentiation. To ascertain which of these explanations is likely correct, in the following I consider variation in object types throughout all kinds of archaeological sites. With this aim in mind, I developed the object typologies introduced in Chap. 6 and depicted in the Plates based on all known material from all types of sites, including not only graves but also settlements, object pits, and single fins; I also evaluated the differences in raw material choice and production details between objects from graves and settlement sites and between different subregions (Sect. 6.2.1). In the present chapter, I consider the overall geographic distribution of the various subtypes of each object category—most importantly the ubiquitous ceramic vessels—and their connection with specific grave forms and interment types. The results of these analyses then serve as a basis for pronouncements on questions of chronology (Sect. 7.4) and local cultural developments (Chap. 8).

7.3.2.1 The Anning River Valley and the Adjacent Mountains

In the Center, megalithic graves prevail but a small number of earth-pit graves can be found as well, both appearing in similar locations and often not far from settlement sites (Fig. 7.15). The object material from the Anning River Valley is abundant and relatively well researched; nevertheless, objects found in megalithic graves are not easily connected with finds from other types of sites in the same subregions, simply because object forms and technological details differ. Nevertheless, there are some general trends observable throughout all sites in the Anning River Valley, most notably the dominance of low-fired reddish sand-tempered ceramics accompanied by only a small number of fine-ware vessels (with a higher proportion of fine ware in the graves than in settlements), the minimal line decoration especially in early periods, and the preponderance of handled vessels throughout most sites, especially since the emergence of the megalithic-grave custom (Fig. 7.16). Conversely, the neighboring mountains of Puge and Xide—albeit integrated into the megalithic-grave tradition as well—show largely undecorated fine ware without any handles and a tool assemblage dominated by arrowheads while in the Anning River Valley agricultural tools prevail (Fig. 7.17); at the same time, there are also notable differences in grave forms and usage, pointing to differences in subsistence patterns, ceramic tradition, and likely also beliefs and cultural identity.

Within this general layout of central valley vs neighboring mountains, we can also see internal differentiation between different parts of the Anning River Valley and even between individual sites, some of them caused by changes through time,

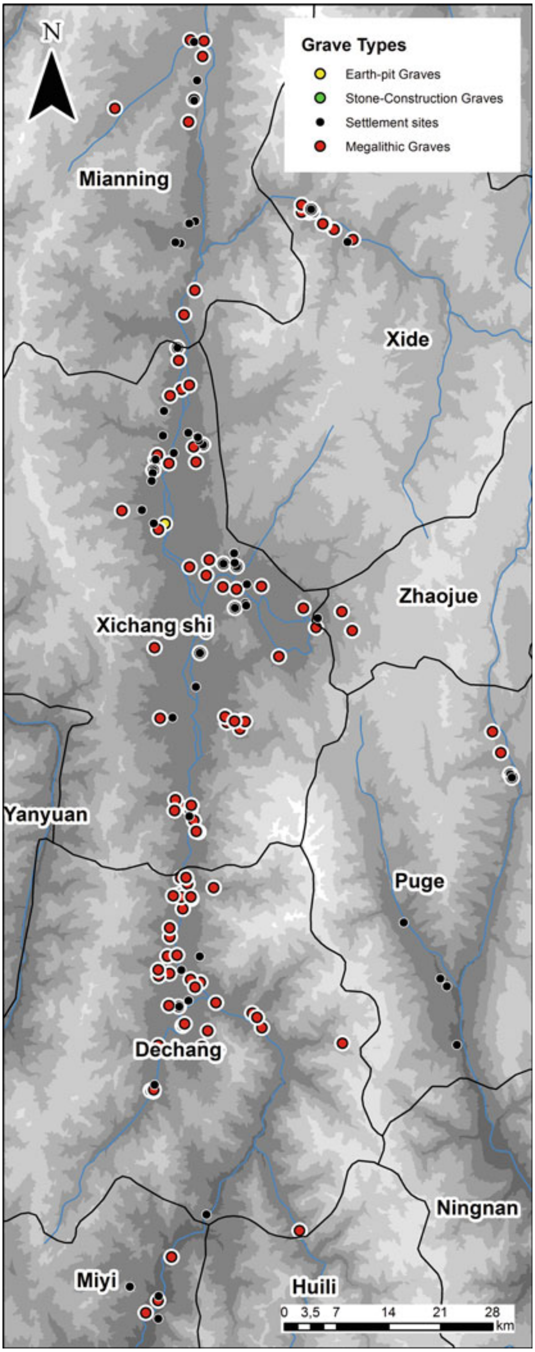

Fig. 7.15 Distribution of settlement sites and various types of graves in the *center*

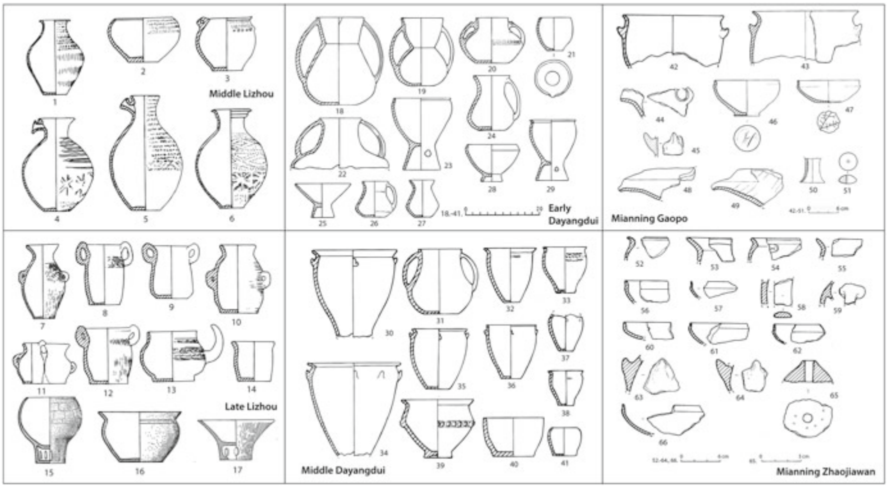

Fig. 7.16 Ceramic assemblage from earth-pit graves and ceramic deposits in the *Center*: (*1–6*) Xichang Lizhou earth-pit graves, middle phase (after Jiang 2007: Fig. 2); (*7–17*) late phase (*top two rows*: after Jiang 2007: Fig. 3, *bottom row*: after Lizhou Yizhi 1980: Fig. 9.9, 9.7, 9.4); (*18–28*) early Xichang Dayangdui early earth-pit graves (after Xichangshi et al. 2004: Fig. 7); (*29–41*) middle-phase ceramic deposits (after Xichangshi et al. 2004: Fig. 18); (*42–51*) Mianning Gaopo; (*52–66*) Mianning Zhaojiawan

others by idiosyncrasies of specific settlement and burying groups. Some of these, I am trying to trace in detail later. Most importantly, the megalithic graves themselves are fairly diverse not only in form but also in the kinds of objects they contain, some holding ceramics (sometimes in large quantities) of various types, others weapons, tools, and ornaments, a few graves have both, and some hardly any objects at all. Furthermore, the ceramic forms differ markedly between graves, both in regards to functional types and individual execution. The ceramics from megalithic graves fall into two main categories: assemblages consisting of sand-tempered ceramics and those characterized by fine ware. The sand-tempered ware is mostly low fired, of red-brown color, and decorated with water-ripple pattern on the belly or leaf-vein impressions on the bottom.[12]

In spite of the geographical dichotomy between megalithic graves dominated by sand-tempered ceramics in the Anning River Valley and the fine-ware assemblages in the eastern mountains of Puge and Xide, fine ware occurs in megalithic graves in Xichang as well, albeit rarely.[13] Xichang Wanao (a prominent representative of graves with sand-tempered ceramics) is less than 2 km away from Huangshuitang,

[12] These are the graves at Dechang Arong, Mianning Wanqiu, Xichang Dayangdui, Hexi Gongshe, Huangshuitang, Wanao, and Xiaohuashan.

[13] The fine ware from megalithic graves is either red or black-brown in color and only sparingly decorated with bundles of lines or fish-bone pattern. Graves with this kind of assemblages were found at Puge Xiaoxingchang, Xichang Bahe Baozi, Guanshan, Tianwangshan, Xijiao Gongshe, Yanjiashan, Yuanjiashan, Xide Guluqiao, and Lake Sihe.

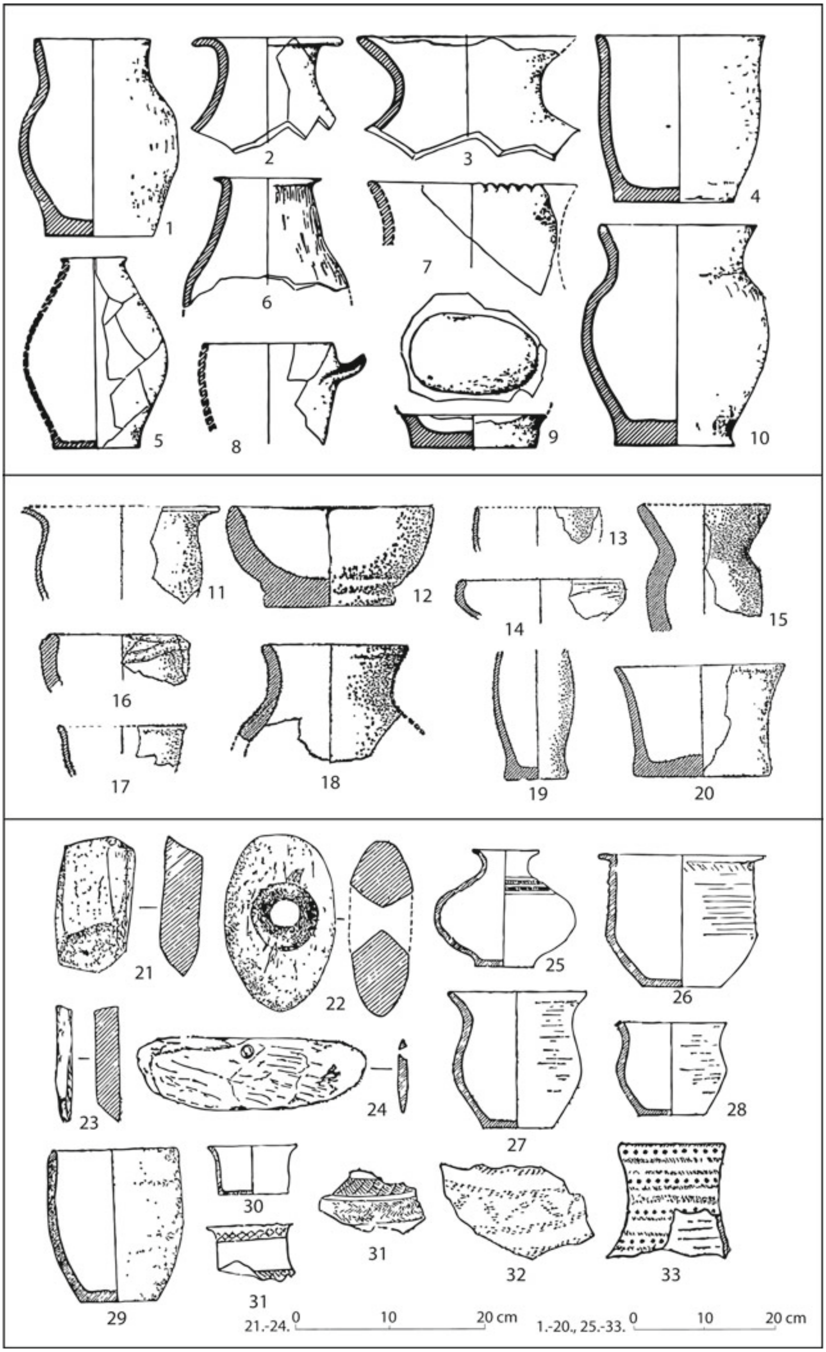

Fig. 7.17 Ceramics from the Northeast: (*1–10*) Puge Wadaluo (after Liangshan and Pugexian 1983: Fig. 3); (*11–13*, *16*, *17*, *19*, and *20*) Puge Xiaoxingchang; (*14* and *18*) Puge Zhongcun; (*15*) Puge Tianba (after Liangshan and Pugexian 1982: Fig. 4); (*21–33*) ceramics and stone tools from Xichang Yangjiashan (after Liu Shixu 1981: Fig. 1)

whose graves contain fine-ware vessels; it is therefore likely that the difference between coarse and fine ware has an additional chronological component.

Among these two main types of assemblages further subtypes are discernible. Among the megalithic graves with sand-tempered ceramics only Xichang Dayangdui DM2 yielded large urns with fingertip-impressed appliqué bands below the rim as they are so common in settlement sites. Most megalithic grave assemblages are instead characterized by jars with or without handles (the latter often carrying a bundle of water-ripple pattern around the belly) as well as cups and more rarely bowls, vases, or jars. Fine ware occurs mainly in the form of goblets, ewers, and vases, while jars and cups are rare.

Additionally, there are significant differences in form and execution between the ceramics from different sites. The ceramics from Xichang Tianwangshan M10, for example, are of red low-fired fine ware formed into squat closed vessels with high outward-flaring collars, similar to ceramics known from the object pits at Xichang Dayangdui (jars of Type Ba). The ceramics from Xide Guluqiao and some objects from Xichang Xijiao Gongshe and Xide Lake Sihe are of red fine ware as well, but they are high fired and mostly take the form of undecorated single-handled jars (Types CaI and K) different from the vessels at Tianwangshan. As the local stratigraphy indicates that the finds from Dayangdui are relatively early, while several of the other graves just mentioned contained Han coins, a difference in date is the most logical explanation for the difference between the ceramics. The graves at Xichang Xijiao Gongshe and Xide Lake Sihe additionally contain goblets of black/gray fine ware strongly resembling ceramics from the megalithic graves of Xichang Bahe Baozi and from the ceramic pit at Xichang Maliucun, reaffirming their identification as ceramic deposits connected to ritual activities in and around megalithic graves.

The objects from the ceramic pit at Puge Wadaluo are less easy to place. Judging by form alone, the vases and bowls found there resemble objects from the local settlement sites; however, the settlement ceramics are mostly made of sand-tempered pottery, and the ceramics at Wadaluo are of high-fired gray-brown fine ware, similar to those retrieved from the megalithic graves of Puge Xiaoxingchang. This indicates that in Puge fine ware might have been preferably used in a ritual context, and Puge Wadaluo might have been a ritual site as well.

Considering ceramic form types in relation to different kinds of sites, it is remarkable that large jars with fingertip-impressed appliqué bands occur in a large number of settlement sites as well as in some object pits but only in a very small number of small-sized megalithic graves. Based on their size and form, it is reasonable to suggest that these objects served as storage vessels, explaining their common occurrence at settlement sites. Their function in a ritual context, be it grave of object deposit, is less easy to explain. It is noteworthy, however, that this kind of jar is associated only with a specific type of megalithic graves, indicating that there might be a difference in date between graves holding these jars and those holding the typical handled vessels, especially as both vessel types never occur together in the same megalithic grave.

Handled vessels are present not only in megalithic graves but also in the earth-pit graves at Xichang Dayangdui, but they are different in form and execution. The specimens at Dayangdui are high-fired black-brown fine ware, have a black slip without further decoration, and thin long handles reaching from the high collar to the low belly of the round-bottom ovoid vessels; in contrast, the objects from megalithic graves have short band handles confined to the upper part of largely globular body, and they are made of coarse sand-tempered red low-fired ceramic material mostly decorated with water-ripple pattern. The presence of handles is thus by far not enough to draw a direct connection between different kinds of sites even within the confines of the Anning River Valley. The handles we see at Xichang Lizhou are thick ring handles attached to the upper part of jars made of coarse sand-tempered material sometimes decorated with net pattern, making them different from both the finds at Dayangdui and those from megalithic graves.

Furthermore, the vases and jars found at Lizhou are mostly completely covered in decoration, something never seen elsewhere in the Anning River Valley. Surface-covering decoration is otherwise only known from Huili Leijiashan M1 in the Southeast, but ceramic forms, decoration motives, and ceramic quality differ substantially from what we see at Lizhou. It is therefore likely that the ceramics from Lizhou represent a local and possibly short-lived custom of lavishly decorating vessels used in burials. Short outward-flaring spouts such as those seen on ewers from the graves of Lizhou occur in settlement sites as well (i.e., Xichang Henglanshan, Lizhou itself, Ma'anshan, Mimilang), albeit rarely. Spouted vessels are common in megalithic graves as well, but they have long tubular spouts attached to the shoulder at a 45° angle instead of the short outward-flaring spouts seen at Lizhou. In a settlement context, long-tubular spouts have only been found in the late layers of Xichang Qimugou, whose handled vessels are similar in form to those usually associated with megalithic graves, although the decorations differ. Qimugou also yielded fragments of ring-footed beakers not common to other settlement sites, indicating a local particularity.

The megalithic graves observed close to Xichang Qimugou have not been excavated, but the similarity of the Qimugou assemblage with objects from the ceramic deposition of Xichang Maliucun and with ceramics from the megalithic graves at Bahe Baozi, both of them located at not too far a distance from Qimugou (9 and 15 km distance), is apparent. The inhabitants of the site of Qimugou thus shared at least parts of their material culture with the builders of the graves at Bahe Baozi and with the people who dug the pit at Maliucun. Given the relatively short distance between all of those sites, they might even have been used by the same local community who would have shared mode of subsistence and living as well as various customs and beliefs.

Similarly, the settlement site of Dechang Wangjiatian in the southern part of the Anning River Valley holds faux ring feet and double-handled jars which are largely identical with objects from the megalithic graves at Miyi Wanqiu, a site located only about 7 km further down the Anning River. The band handles made of several clay strips seen at the settlement site of Sanfentun are similar to material from megalithic graves as well; both vessel forms and decoration motives on objects from Sanfentun are similar to what we see at Xichang Xijiao Gongshe, the closest excavated megalithic grave site (~40 km distance), indicating a potential cultural connection.

A few of the ceramics found in the graves and surface finds of Xichang Yangjiashan bear resemblance to those from the graves of Xichang Lizhou, both in form and decoration (e.g., surface-covering decoration on some jars, large bowls with side handles), but the majority of forms and especially the ceramic quality of objects from Yangjiashan is much closer to finds from Puge than to the material culture at other sites in the central Anning River Valley. Yangjiashan lies halfway between Puge and Lizhou and is located close to Lake Qionghai, a location characterized by fertile red soil and located at an elevated spot overlooking the lake. The stone tool assemblage of Yangjiashan furthermore contains evidence both for agricultural activities and forest clearing. It is therefore not unlikely that people from the rugged mountains of Puge resettled at the Qionghai, bringing with them their ceramic technology and assemblage while at the same time adopting vessel forms common in the Anning River Valley.

A remarkable phenomenon prevalent throughout all kinds of sites in the Anning River Valley and adjacent subregions is leaf-vein impressed vessel bottoms. As discussed elsewhere, these impressions are probably the outcome of placing the vessels on a leaf for drying rather than actual decoration motives (Hein 2013: 153). Be it decoration or a technical detail, the wide distribution of leaf-vein impressions throughout the mountains of western Sichuan and northern Yunnan is remarkable as it shows commonalities in production practices, if not decoration patterns.[14] Within the research area, such impressions are commonly seen on bowls and small to medium-sized jars/beakers (most of them two handled), and more rarely vases, cups, or goblets. They do not occur on all sites, but it is difficult to discern a pattern, be it geographically, chronologically, or by site or grave type (Fig. 7.18). This seeming randomness currently eludes explanation.

Even clear decorations are rare but there seems to be a chronological component in their relative frequency: the earliest settlement sites show hardly any decorated ceramics, and later sites and layers hold up to 19 % decorated ceramics, a distribution pattern indicating a chronological development from less to more decoration (Hein 2015). Most decorations are rather generic; only the most prominent decoration motive, the finger-tip impressed appliqué band, is distinct. It is restricted in its distribution to the center and the southern part of the Anning River Valley and a few sites in the Northeast, in all cases mostly in early settlement layers and a small number of graves. This decoration motive is therefore a chronological marker and also a local particularity. Surface-covering decoration is very rare, appearing mainly in the graves of Xichang Lizhou and Huili Leijiashan. Nevertheless, the decoration motives at these two sites are very different and likely belong to two distinct local ceramic traditions.

Among nonvessel objects, spindle whorls appear throughout all kinds of graves throughout the Anning River Valley, but they are most common in Xichang and relatively rare in the eastern mountains of Puge. In Puge, instead arrowheads of

[14] Leaf-vein impressed vessels have been found throughout most of the research area as well as in Northwest Sichuan, e.g., in Sichuan Shimian (Sichuansheng Wenguanhui 1996; Sichuansheng et al. 2006), and Northern Yunnan, e.g., in Yunnan Midu (Yunnansheng Bowuguan 1986).

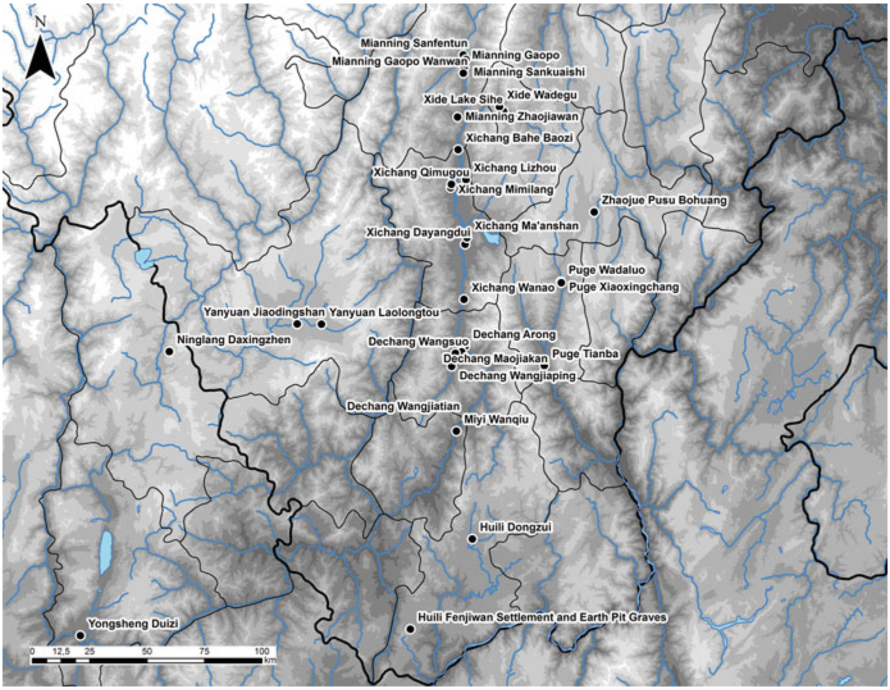

Fig. 7.18 Distribution of ceramics with leaf-vein impression throughout the research area

metal or stone occur particularly frequently both in graves and settlement sites. In the graves of Puge, they are often associated with perforated boar tusks, an object type that never occurs anywhere else in the research area but highlights the importance of hunting in this region—especially considering the large number of arrowheads and the lack of agricultural tools in both graves and settlement sites.

In the graves of the Anning River Valley, weapons and tools are rare and show no discernable regularity in distribution. Arrowheads sometime occur, as do knives, and various weapon types but in no sufficient frequency to evaluate their distribution in a meaningful way. It is remarkable, however, that the arrowheads found both in the Anning River Valley and the adjacent mountains do not differ in form or execution between grave and settlement finds. Interestingly, net weights, which have been reported from some settlement sites, have never been found in graves, showing that there was a considerable perceived difference between hunting and fishing. While arrowheads seem to have had a symbolic significance defining to a certain extent the identity of an individual and/or providing him/her with a means of subsistence (s)he could exploit on his own, net fishing might have been conducted in groups and/or not have any specific symbolic value attached to it that would connect it to an individual's identity.

Woodworking tools are sometimes found in graves as well, but they are usually much more finely polished and of more attractive materials (e.g., nephrite) than

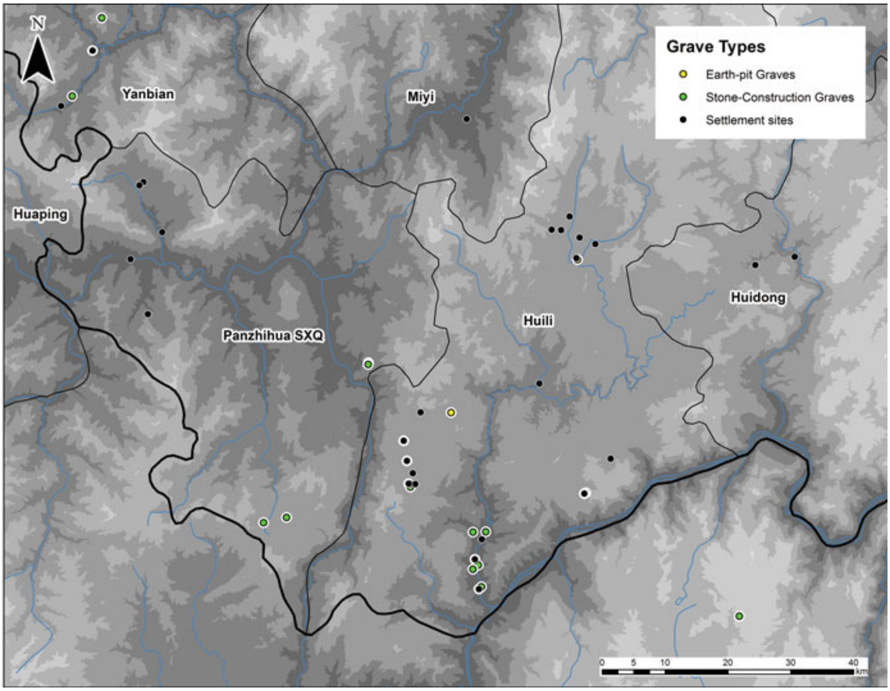

Fig. 7.19 Distribution of settlement sites and various types of graves in the Southeast

those found at settlement sites. Overall, stone tools occur too rarely to ascertain any regional differences in object preferences or forms. The only tool that occurs relatively frequently in the megalithic graves of the Anning River Valley are the grinding rods found in the pelvis area of the dead, likely accompanying them as a personal tool and part of their attire. Both grinding rods and the simple ornaments so common throughout the megalithic graves (but not the earth-pit graves) of the Anning River Valley thus likely served as *Mitgaben* and thus allow a fleeting glimpse at what may have been the common attire during life.

7.3.2.2 The Southeast: Huili, Luquan, and the Environs

In Contrast with the Center, the Southeast does not hold any megalithic graves but is characterized by earth-pit graves—some of them with stone installations—containing only a small number of ceramic objects very different in form and paste from those in the Anning River Valley (Figs. 7.19 and 7.20). The ceramic paste is yellowish in color, the vessels stout and decorated with bands of geometric patterns, and the graves contain hardly any weapons or tools. In contrast with sites in the Center, the graves of the Southeast are nearly devoid of personal ornaments, but spindle whorls occur even more frequently than in Xichang and grinding rods are known at least from Huili

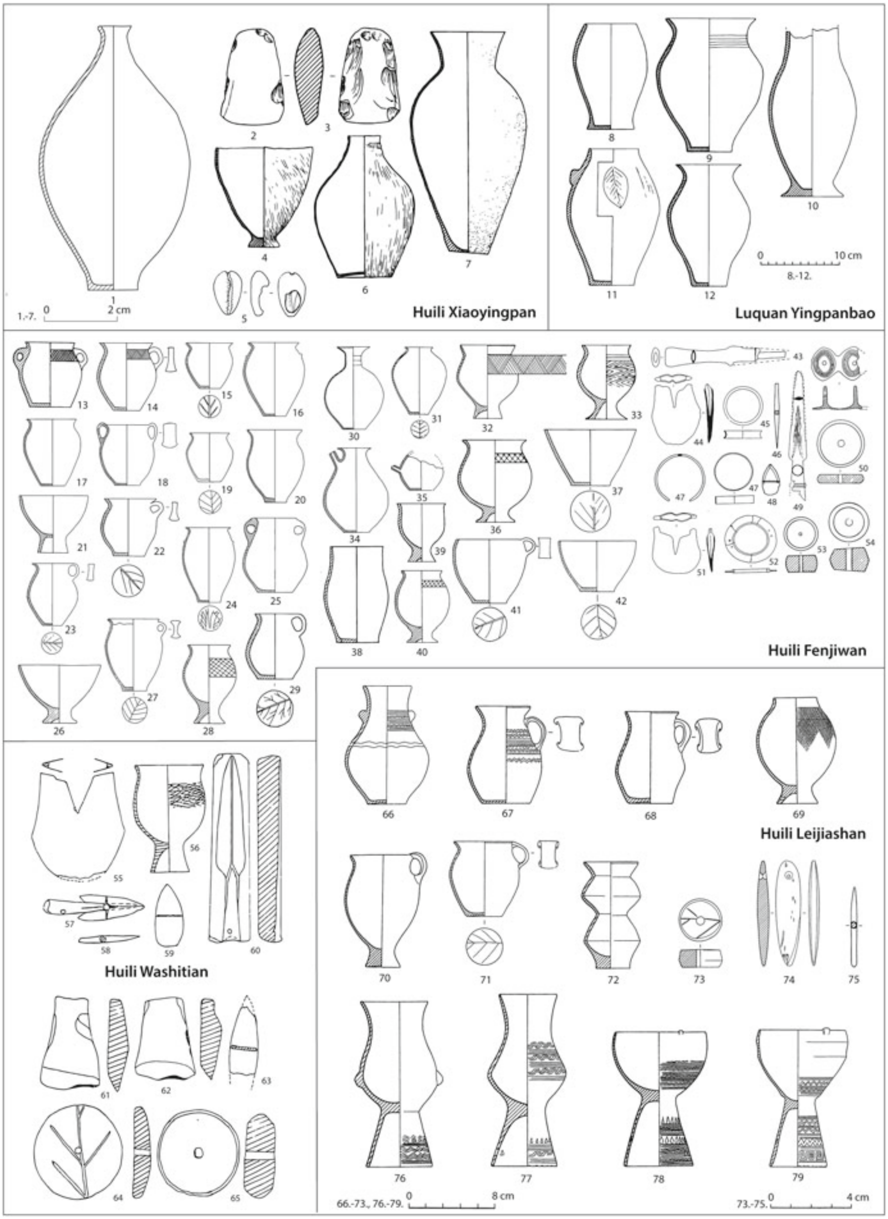

Fig. 7.20 Objects from graves in the Southeast: (*1–7*) Huili Xiaoyingpan (*left*; after Sichuansheng et al. 2009: Fig. 7–9); (*8–12*) Luquan Yingpanbao (*right*; after Kunmingshi Bowuguan et al. 2007: Fig. 8); (*13–54*) Huili Fenjiwan (after Huilixian et al. 2004: Fig. 11–13); (*55–65*) Huili Washitian (after Tang Xiang 1992: Fig. 5; Tao and Zhaodian 1981: Fig. 1 and 3); (*66–79*) Huili Leijiashan M1 (after Chengdu et al. 2009b: Fig. 6.1, 3.5, 3.3, 15.5, 19.1, 4.5, 7.2, 5.3, 8.2, 9.9, 10.4, 12.2, 13.10, and 19.3)

Leijiashan. Metal weapons hardly ever occur, but a considerable number of graves contain smooth river pebbles placed under the pelvis or head, clearly a local custom of deeper ritual/religious meaning.

Ceramics from graves and settlement sites in Huili and Luquan share a number of features with finds from the Anning River Valley, but overall the material from the Southeast is distinct. The yellowish ceramic color common to nearly all vessels from Huili is a clear local particularity and the forms are rather distinct as well. Nevertheless, there also is some differentiation between sites within this subregion: the ceramic material from both settlement layers and graves at Huili Fenjiwan, Houzidong, Washitian, and Xiaoyingpan (some of them grave sites, other settlement sites) mainly consists of low-fired, hand-thrown, yellow or yellow-brown undecorated vessels of sand-tempered ware, while the graves of Huili Guojiabao, Leijiashan, and Miaozi Laobao are characterized by lavishly decorated fine ware fired at high temperatures. The settlement site of Huili Dongzui, on the other hand, combines large amounts of often decorated sand-tempered ceramics with a small number of mostly undecorated fine-ware pieces of black or gray color. This site also holds ceramics with finger-tip impressed appliqué bands below the rim as seen at various settlement sites in the Anning River Valley, and small ring handles as they are occur at Huili Fenjiwan and Leijiashan as well as at various sites in northern Yunnan.[15]

The assemblage of Huili Dongzui furthermore shows that there is a chronological component to these differences: the earliest layers yield a large number of vessels with finger-tip impressed appliqué bands as they are common to early settlement sites in the central Anning River Valley around Xichang. By contrast, the incised decoration motives on neck and shoulders found in Layers 3 and 4 are particularly close to what we see at Dechang Wangjiaping in the southern Anning River Valley. This combination of objects related to places north and south is not surprising, considering the location of Dongzui half-way between Yunnan and Dechang next to a river system that provides pathways in both directions.

The ceramics from the settlement site of Huili Dongzui show clear similarities to those from the grave of Huili Leijiashan, mainly in the types of single-handled jars and some of the decoration motives. Nevertheless, there are considerable differences as well: the ceramics at Leijiashan are made of high-fired gray-brown fine ware with geometric decoration bands covering the whole vessel body of most objects; Dongzui, on the other hand, is characterized by sand-tempered, low-fired, moderately decorated ware. Furthermore, the vessel forms at Leijiashan are different from what is found at Dongzui (goblets and other drinking vessels instead of storage jars), but this may be due to functional differences between a grave and a settlement site. In vessel forms, the Leijiashan ceramics are similar to those from Fenjiwan, both of them settlement sites, but the decorative patterns differ. It is therefore likely that all three sites belong to the same ceramic tradition, with Dongzui

[15] These sites include, e.g., Yuanmou Dadunzi (Yunnansheng Bowuguan 1977), Yongren Caiyuanzi (Yunnansheng Bowuguan 1985) and Mopandi (Yunnansheng Wenwu et al. 2003), and Jianchuan Haimenkou (Yunnansheng et al. 2009a; 2009b).

spanning a relatively long period both pre- and postdating the other sites, and Fenjiwan dating earlier than Leijiashan.

Some of the goblet forms, single-handled jars, and spindle whorls at Leijiashan resemble material from Dechang Arong and Miyi Wanqiu, i.e., the megalithic graves located in the southernmost part of the Anning River Valley and therefore closest to Huili. The vases with flat middle-perforated knobs in Leijiashan (Types Ja and Jb), on the other hand, closely resemble objects from Yuanmou Dadunzi and other sites in northern Yunnan (Yunnansheng Bowuguan 1977). Seen from the ceramic material, Huili thus has a cultural tradition of its own that shows close connections with groups in Yunnan and less frequent and later contacts with the Anning River Valley, but local particularities prevail.

Besides general similarities with finds from other regions, there is considerable intraregional differentiation within the Southeast. The ceramic finds from the sites located at the lower reaches of the Cheng River and close to the Jinsha River (e.g., Fenjiwan, Tianbacun, and Washitian) are similar to each other but differ notably from the assemblages of Leijiashan or Dongzui. The settlement sites in Huili are mostly characterized by open bowls and plain flat-bottomed jars made of low-fired, hand-thrown, yellow or yellow-brown sand-tempered ware; they are thus similar to what we see in the graves at Fenjiwan, but usually without handles and little decoration.

The graves at Xiaoyingpan, on the other hand, although only 1 km south of Washitian and single interments in earth-pit graves with or without stone installations just like Fenjiwan, yield a different assemblage. The ceramics are all of coarse, undecorated, low-fired, sand-tempered ware, mostly in the form of small or medium-sized plain jars with wide openings, as well as vases with a particularly wide belly and narrow opening. These ceramics are sometimes accompanied by chains of cowrie shells, but other graves are completely empty. Graves and objects nearly identical to those at Fenjiwan were found at Huili Xiaotuanshan, which is located right next to Fenjiwan, and Luquan Yingpanbao on the other side of the Jinsha River in Yunnan.

Given the coarse material, it is likely that the graves of Xiaotuanshan, Xiaoyingpan, and Yingpanbao are of earlier date than those at Fenjiwan and might even belong to a different cultural tradition. The ceramics from Huili Guantianshan/Yingpanshan are of similarly coarse quality and the vessels are likewise mainly undecorated, flat-bottomed, and devoid of handles. These finds thus differ markedly from what is found at the neighboring site of Fenjiwan. Instead, the open, medium-sized jar forms of Guantianshan/Yingpanshan are similar to the ceramics found in the graves of Xiaoyingpan 20 km further south. These two sites might therefore be similar in date and probably belong to the same cultural tradition and Fenjiwan is likely later in date.

The material from another group of settlement sites in Huili (i.e., Hewanwan, Houzidong, Liantang, Tangjiaba, Tianbacun) is even more coarse than what we see at Guantianshan/Yingpanshan. The former assemblages furthermore contain coarse chipped stone tools instead of the polished stone tools seen at other sites in Huili. The ceramics collected at this group of sites are severely fragmented, but both quality (polished black-slipped gray sand-tempered pottery fired at low temperatures) and form (wide outward-flaring openings and folded rims) are different from those discussed before.[16] They therefore likely represent an early local group, which currently cannot be connected with any known graves.

At the other end of the chronological spectrum stands Huili Guojiabao, a cemetery composed of earth-pit and stone-construction graves built of thin slates just as Fenjiwan, but containing a rather different range of objects. The graves at Guojiabao are characterized by bronze weapons, ornaments, and horse gear as well as double-handled jars, all of them closely resembling objects from Yanyuan Laolongtou. Other ceramics, however, strongly resemble the moderately decorated jar types found at Huili Leijiashan M1. Miaozi Laobao, a site immediately adjacent to Guojiabao, furthermore revealed highly decorated goblet fragments and grinding rods virtually identical with objects from Leijiashan and also similar in vessel forms with some specimens from Guojiabao. The connection between these three sites is therefore close, but—considering the Yanyuan-style metal objects they contained—the graves at Guojiabao are probably of later date. The object assemblages of Huili are thus overall closely related to the regions adjacent in the South and West; the connections into the Anning River Valley are less pronounced and of later date, and the relationship with the Northeast at least one-sided, as none of the particular traits of the Zhaojue assemblages (calcinated ropes, wooden bracelets, Han bronze vessels) occur in Huili.

7.3.2.3 The Northeast: Zhaojue, Puge, and Yuexi

The Northeast is peculiar in many respects. It is very mountainous with narrow river valleys that do not provide much space for agricultural pursuits and a cold climate and not very fertile soil limiting the amount and type of crops that can be grown here (Fig. 7.21). This subregion is characterized by small stone-construction graves occurring in a wide variety of forms not found in any other part of Southwest China. Many of these graves are completely devoid of objects or contain so few and rather singular items that it is difficult to compare them to finds from other subregions. Where ceramics have been found, however, they mostly resemble objects from the Southeast (Fig. 4.24). The graves at Zhaojue Pusu Bohuang, for instance, yielded vases and jars closely resembling objects from the graves in Fenjiwan and Xiaoyingpan in the Southeast. The footed *dou* bowls from the graves of Zhaojue Erba Keku and Fuchengqu are similar to objects from Fenjiwan as well; the jars from the same sites in Zhaojue, however, closely resemble objects from settlements and earth-pit graves at Puge, both in form and ceramic quality. The ceramic vessels from Zhaojue Chike Boxixian M1 are again different from any other find discussed so far: Han-style wide-bottomed jars (Type Db) and *fu* vessels (Type A) of fine sand-tempered quality as they are otherwise known from Han graves throughout Southwest China (e.g., Xichang Lizhou, Lizhou Yizhi 1980).

[16] It has been suggested that the ceramic material might be connected to finds from Maoxian Baishuizhai in the Upper Min River Valley (Sichuansheng et al. 2009: 21; Chengdu et al. 2008), but the similarities are not very pronounced and the distance between the sites is considerable. At the current juncture, this hypothesis therefore seems unlikely.

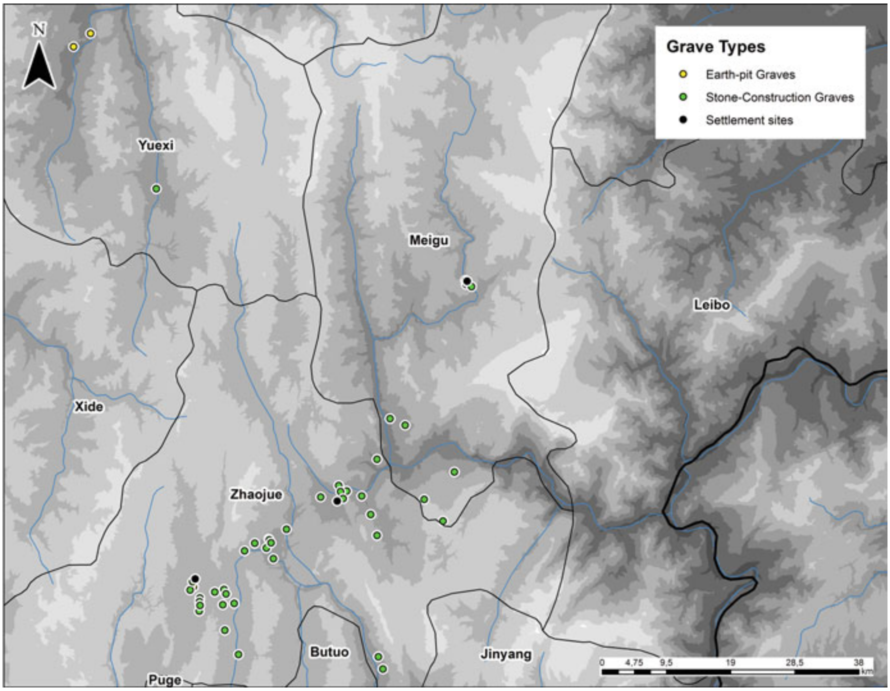

Fig. 7.21 Distribution of settlement sites and various types of graves in the Northeast

The exact relationship between the finds from Zhaojue, Puge, and Huili is thus not entirely clear. As Zhaojue and Puge are geographically close to each other and the river valleys allow for a relatively easy passage between the two subregions. Nevertheless, mode of burial (primary multiple vs. secondary single or group interment) and grave construction (megalithic above-ground construction vs. a variety of smaller stone-constructions below ground) differ substantially, reflecting different burial custom and thus very likely different beliefs. Only the three earth-pit graves of Puge Wadaluo deviate from what is otherwise common in Puge: they contained bone and shell ornaments largely identical with of objects known from Zhaojue and might thus have belonged to people who originally came from there. It is therefore not unlikely that marriage bonds existed between the groups in these two subregions; this would at least explain the similarities in ceramic assemblages combined with differences in burial tradition.

The situation in Yuexi is even less clear. Most sites in this area are characterized by stone-construction or small megalithic graves that all remain unexcavated; it is therefore not clear if they resemble graves from the surrounding regions. Settlement remains have not been reported. The only local archaeological remains excavated so far are the earth-pit graves of Yuexi Huayang and Liaojiashan, whose contents contrast strongly with what we see in the neighboring areas of Meigu and Zhaojue (i.e., places dominated by stone-construction graves with assemblages and burial rituals with a strong local flavor) or Mianning and Xide (i.e., mostly megalithic graves resembling finds from other parts of the Anning River Valley). Both Huayang and Liaojiashan are characterized by earth-pit graves containing mainly metal objects, i.e., bronze *mou* cauldrons, basins, beakers with and without handles, bronze and composite swords, daggers, knives, and bronze ornaments, as well as some double-handled ceramic vessels, assemblages virtually identical with what is commonly found in Han period stone-cist graves in the Upper Min River Valley (Sichuansheng and Maowenxian 1983). As the river system opens a direct connection between Yuexi and the Upper Min River, the meeting of different populations with different burial traditions in Yuexi seems natural; however, until further excavation work at stone-construction and megalithic graves in this area, such an interpretation of the material record must remain speculative.

7.3.2.4 The Northwest: Yanyuan and Ninglang

In spite of being not well explored, the Northwest—or more precisely Yanyuan—has already furnished a large number of bronze objects found in a small number of richly equipped graves clustered in a very few locations (Fig. 7.22). These bronzes combine signs of far-reaching contact including imports from surrounding parts of Southwest China and even the northern steppe with local idiosyncrasies in both object forms and burial customs (Fig. 7.23) (Hein 2014b). To establish

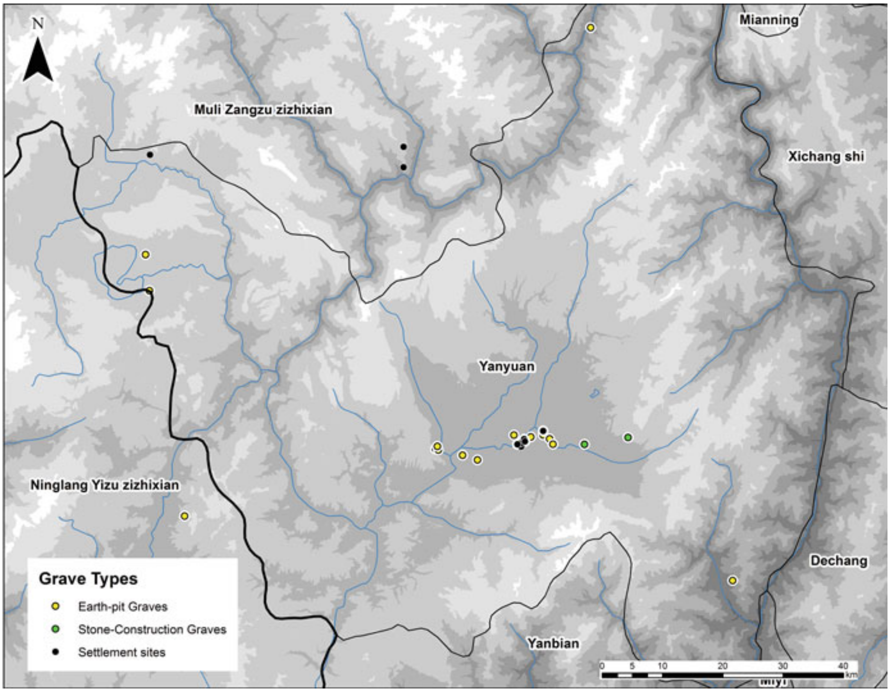

Fig. 7.22 Distribution of settlement sites and various types of graves in the Northeast

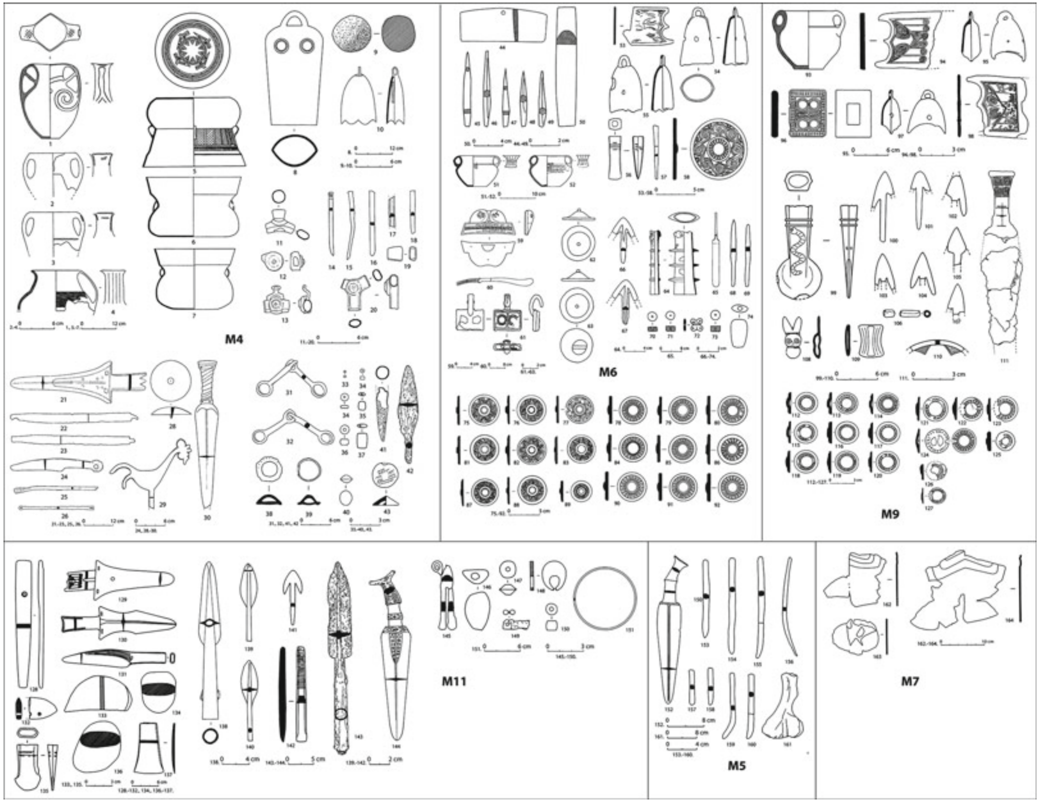

Fig. 7.23 Assemblage of Yanyuan Laolongtou: (*1–43*) M4 (after Liangshan et al. 2009: Fig. 4–8); (*44–92*) M6 (after Liangshan and Chengdu 2009: Fig. 10, 11, 13, 12, and 15); (*93–127*) M9 (after Liangshan and Chengdu 2009: Fig. 18, 19, and 21); (*128–151*) M11 (Liangshan and Chengdu 2009: Fig. 23–25); (*152–161*) M5 (after Liangshan and Chengdu 2009: Fig. 28); (*162–164*) M7 (after Liangshan and Chengdu 2009: Fig. 27)

the nature of the relationship between the Northwest and the surrounding areas, it is well worth considering both the main object types and more unique finds in a comparative way.

Various kinds of double-handled vessels as they occur in the Northwest have been found throughout all of western China in a wide range of varieties, but the stout versions most commonly seen in Yanyuan seem to be a particularity of stone graves in the Hengduan Mountain Range.[17] Stout double-handled vessels with double-spiral motives often referred to as ram's head decoration have so far only been reported from Northwest Sichuan, Yanyuan, and Deqin in northern Yunnan. Stout double-handled vessels with water-ripple pattern as they are most common to the megalithic graves of the Anning River Valley have been found in small numbers also in graves in Yanyuan and Ninglang but not in other parts of Southwest China. The double-handled vessels retrieved from the stone-construction and earth-pit graves of Yongsheng (e.g., Yongsheng Duizi Layer 2), on the other hand, are elongated and overall very different in form than those found in neighboring regions; especially the protruding feet that mark some of these vessels are rather unique.

The settlement material from the Southwest is likewise very different from what we see in the Northwest. In the Southwest, large and medium-sized storage vessel combined with clear agricultural tools and other indicators for a settled mode of living prevail. By contrast, the settlement assemblages observed in the mountainous parts of Ninglang and Yanyuan but also in the Yanyuan Basin are characterized by low-fired reddish flat-bottomed coarse ceramics largely devoid of handles or decoration combined with arrowheads, net weights, various tools made of deer antler, and a few woodworking tools, indicating a mixed economy.[18] The presence of large numbers of arrowheads, various types of weapons, horse bones and gear, capridae bones, but hardly any spindle whorls or other tools likewise reflect an emphasis on hunting and fighting rather than agriculture or domestic tasks.

Especially the assemblages of earth-pit and stone-construction graves in Yanyuan and to a lesser extent Ninglang contain considerable amounts of weapons, personal ornaments, clothing applications—most made of metal and/or precious stone—sometimes accompanied by horse gear, armor, or ritual items indicating a wide variety of far-reaching outside connections. Certain weapon types found in Yanyuan and Ninglang (especially swords with three-pronged hilts, daggers with spiral handles, daggers with double-circle pommels, daggers with fish-tail shaped handles) and also mirror-shaped objects are common in graves throughout the Hengduan Mountains from Northwest Sichuan all the way to northern Yunnan, mostly in association with so-called stone-cist graves (Aba and Chengdu 2009).

Similarities between Yanyuan/Ninglang and Northwest Sichuan are particularly close, especially in weapon types such as ring-pommel knives, scabbard types, and ornaments such as specific types of belt hooks not common in Yunnan. Some of the weapon forms (ring-pommel knives, arch-backed knives, double-circle headed dag-

[17] Examples can be found throughout the mountainous parts of northwest and southwest Sichuan and northern Yunnan (Aba and Chengdu 2009).

[18] For further discussions on the settlement material of the research area and its analysis and interpretation, consult Hein (forthcoming).

gers, and daggers with fish-tail shaped handles) even suggest a connection with the Northern Zone, especially in combination with the riding equipment and horse bones and heads found in Yanyuan that is otherwise uncommon in Southwest China but regularly found in the northern steppe, the Ordos region, and Central Asia.[19]

Some scholars have even tried to connect the bird-shaped ornaments, staff heads, staffs, and staff heads from Yanyuan to Central or even Western Asia, but strong differences in form and execution and wide gaps in time and space make these connections rather questionable (Hein 2014a). Within Southwest China at least, these bronze objects are unique and a local particularity of Yanyuan, especially in their combination with horse bones and gear, large amounts of weapons, personal ornament, and clothing decoration, and complex grave constructions and burial rituals. Only the graves of Huili Guojiabao in the Southeast hold assemblages nearly identical to those known from graves at Yanyuan Laolongtou, even though there are over 155 km distance and high mountains between them. Indeed, the graves of Huili Guojiabao and their content show no similarities to finds from other sites in the Southeast but they are closely connected with the object traditions of Yanyuan and Ninglang, even including the interment of horse gear.

The Anning River Valley, although much closer to either of these places, is characterized by rather different object types and burial traditions. The only object type connecting all three areas are the button-shaped bronze ornaments that have been found in great number in Yanyuan/Ninglang, at Huili Guojiabao, and in smaller number also in Northwest Sichuan and in the megalithic graves of the Anning River Valley. *Ling* bells likewise occur throughout Northwest Sichuan, Ninglang, Yanyuan, the mountains of northern Yunnan, at Huili Guojiabao, and in the Anning River Valley; they even appear in Yongsheng but only rarely. Otherwise, the assemblages of Yongsheng differ considerably from finds in other parts of the research area.

7.3.2.5 The Southwest: Yongsheng and Its Surroundings

The ceramics from earth-pit graves in Yongsheng are very different from finds in Yanyuan and Ninglang but resemble those from local settlement sites and earth-pit graves and settlement sites in middle and southern Yunnan (Fig. 7.24).[20] Ceramic vessels also are much more common in Yongsheng and occur in a much wider variety of forms than they do in Yanyuan or Ninglang. Interestingly, the assemblages from the settlement layers of Yongsheng Duizi (Layer 4 and Layer 3) closely resemble finds from settlement sites in other parts of Yunnan (especially Dali Prefecture). They comprise large and medium-sized storage jars accompanied by double-perforated half-moon or sickle-shaped stone knives, small stone adzes and axes, ceramic spindle whorls, and bone awls, reflecting a settled, agricultural mode of living, potentially supplemented by hunting, as the projectile points in some of

[19] For a detailed discussion of these connections consult Hein 2014a.

[20] The stemmed dou bowls appearing from Duizi Layer 3 onward both among settlement remains and in earth-pit graves, for instance, strongly resemble finds from Kunming Yangfutou (Yunnansheng et al. 2005) and other cemeteries around lake Dian.

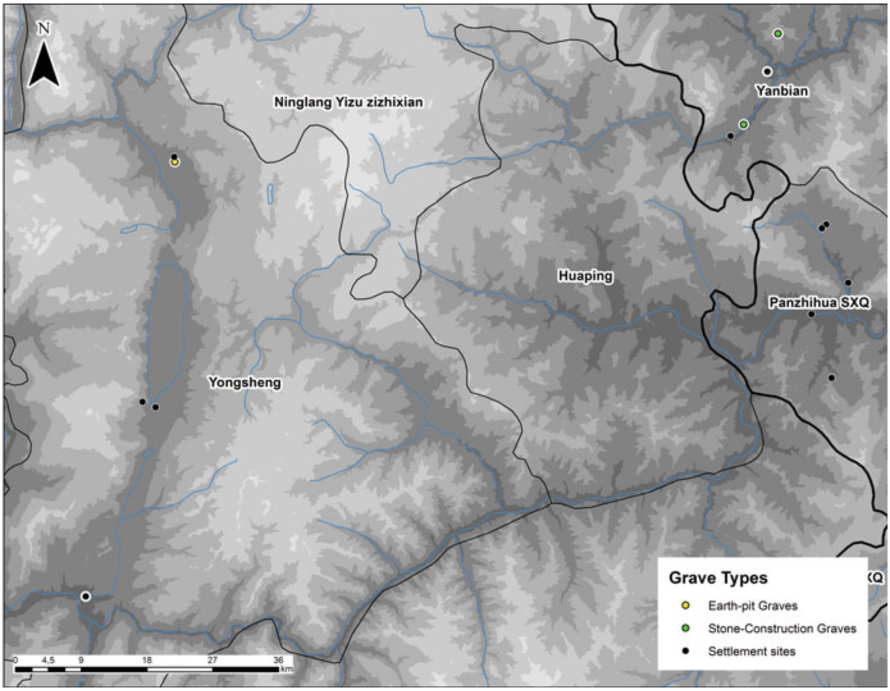

Fig. 7.24 Distribution of settlement sites and various types of graves in the Northeast

the graves indicate.[21] Similar assemblages were also observed in other settlement sites in the flatter parts of Yongsheng where fertile soil ideal for agriculture prevails.

Besides ceramics, the graves in the Southwest hold only a few simple personal ornaments (bracelets, rings, pendants), small tools (stone knives, chisels, needles, sometimes woodworking tools), in a few cases arrowheads, and a considerable number of cowrie shells. The later urn graves (Yongsheng Duizi Layer 2) contained only one singe urn each, sometimes accompanied by one or two small jars. In contrast, the stone-construction graves with multiple secondary interments from the same layer held a rather different assemblage, mostly double-handled jars rather different from earlier material at the same site, combined with bronze projectile points and/or a knives, as well as a range of different ornaments (metal bracelets, finger rings, turquoise or bone beads, perforated cowry and snail shells, bone hairpins, *ling* bells), and rarely spindle whorls, but usually only between one and ten items per graves. Similar assemblages are common in stone-construction graves throughout the southwestern part of the research area as well as adjacent parts of northern Yunnan; most of these graves, however, are primary single interments (as

[21] For comparanda from other parts of Yunnan consult the finds from Yongping Xinguang (Yunnansheng et al. 2002) or Yuanmou Dadunzi (Yunnansheng Bowuguan 1977).

opposed to the multiple secondary burials of Duizi) and generally yield metal swords and daggers as they are largely missing from the graves in the valleys of Yongsheng.

The numerous perforated cowrie shells found in the graves at Yongsheng Duizi (most of them likely originally combined into chains or bracelets) are otherwise not common in the research area, but they occur in the multiple secondary burials in the stone graves of Zhaojue, i.e., in the far Northeast. Considering the overall small number of specimens, the mere presence of cowries is not a clear proof of direct contact let alone a common identity between groups living so far away. It is more likely that cowries reached either of these places independently, passing through many hands along a series of exchange networks that must have linked up to the Indian Ocean.

Overall, in spite of their geographic closeness, the differences between the Northwest and the Southwest are striking. In the Southwest, there are the fertile valleys of Yongsheng whose ceramic forms, simple ornaments, and domestic tools are most closely connected to neighboring parts of Yunnan, especially Dali and to a lesser extent the Dian region; in the Northwest, there are the mountains of Yanyuan and Ninglang with their rich metal assemblages (especially weapons and personal ornaments/clothing applications) showing strong local particularities as well as connections with other parts of the Hengduan Mountain Range, especially places further north.

The overall picture that emerges from the comparison between different kinds of sites and assemblages thus shows regional particularities and chronological developments as well as signs of inter- and intraregional interaction. To fully understand the relationship between these different trends, in the next step I turn to evidence that throws light on the relative as well as absolute chronological position of the assemblages described earlier.

7.4 Relative and Absolute Dates: The Problem of Chronology

The prehistoric chronology and cultural sequence for the mountains of Southwest China are still far from clear, but the intensification of field work during the last decade has provided much new data that help solve this problem. The most important pieces of evidence are multiphase sites with thick cultural deposits, augmented by local radiocarbon dates, and typological comparison with well-dated sites in other places. At present, radiocarbon dates are available only for a limited number of sites,[22] and even these few dates are problematic as they mostly are based on a single sample per site or layer which is questionable from the statistical and methodological point of view. Furthermore, object comparisons between different

[22] These sites are Dechang Wangjipaing, Mianning Gaopo and Zhaojiawan, Puge Xiaoxingchang, and Xichang Henglanshan.

regions do not necessarily provide reliable dates either as the span of usage of specific types might differ significantly between locations. At the current state of research, the absolute dates for the various archaeological phenomena known from Southwest China therefore remain uncertain, but relative chronological assessments are possible based on stratigraphic evidence and typological comparisons, albeit in need of constant amendments and corrections as new finds come to light.

Within the research area, nearly all known stratified sites are located around Xichang[23]; they are crucial for establishing a basic chronological sequence, primarily for the Anning River Valley but also for neighboring regions. The further away any given site is located from Xichang, the more difficult it becomes to estimate its relative or absolute date. The only deeply stratified site outside the Anning River Valley is Yongsheng Duizi whose thick layers contained settlement remains as well as earth-pit and stone-construction graves and even cremation burials; however, as this site is unpublished, at the current juncture the material from Duizi can only serve as supporting evidence but not as main basis for chronological claims.

A more reliable point of reference is finds from other parts of northern Yunnan with thick cultural deposits that have served as the basis for recent studies on the relative and absolute chronology of Southwest China.[24] Excavations at multiphased sites with particularly thick deposits and rich assemblages at Jianchuan Haimenkou (Yunnansheng Bowuguan 1958; Yunnansheng et al. 2009a, b) and Dali Haidong Yinsuodao (Yunnansheng Wenwu et al. 2009) provide important stratigraphic observations that help in developing a chronological framework for the research area. One major drawback of such a comparative approach is potential differences in span of usage. Object types originating with groups in Yunnan but adopted by people in Sichuan may have been continued to be used long after they fell out of fashion at their place of origin; similarly, import objects may have been deposited in graves long after their production. The same of course applies to locally produced objects as well. Absolute dates inferred in this fashion are therefore only tentative and will have to be tested in future research.

The most important pieces of evidence for establishing the relative chronological sequence are stratigraphic evidence and the object typologies developed in Chap. 6 and displayed in Plates 1–21. As ceramics tend to break often and be discarded and replaced without much deliberation, they are chronologically highly sensitive, reflecting changes in taste and production techniques fairly reliably. Changes in ceramic form, decoration, and/or raw material and details of production are therefore particularly important in establishing chronological sequences as well as differences between contemporaneous sites occupied by people with separate ceramic

[23] The most important sites with thick cultural deposits consisting of several layers are Xichang Dayangdui, Yingpanshan, Ma'anshan, and Mianning Sanfentun. Several cultural phases have also been observed at Xichang Henglanshan, Lizhou, Mimilang, Qimugou, and Yongsheng Duizi.

[24] See, for example, Xu Xueshu (1999), Yang Fan (2002), Fan Yong (2007), and Zhou Zhiqing (2009). In her article on "Recent Developments in the Archaeology of Southwestern China," Alice Yao (2010) provides a very useful overview on the state of research for Yunnan, but Sichuan does hardly feature and the Liangshan region is not mentioned at all.

traditions. At the same locale, we may expect gradual changes over time within the same cultural tradition; sudden changes and replacement of one ceramic tradition by another, however, suggest a major cultural shift, possibly even the arrival of outside influences or foreign groups. Tools made of stone, bone, or metal reflect subsistence practices and may be less chronological sensitive. Especially in a grave context, the presence and form of ornaments and weapons may also reflect changes over time both in burial customs and fashion of dress or status symbols. Also in this case, intergroup influence may lead to changes that can be subtle or more substantial depending on the nature of the interaction. The same applies to changes in grave form or mortuary customs.

Based on a combination of stratigraphic evidence and object typologies, the settlement remains of the Liangshan Region can be placed relatively securely into a relative chronological sequence. The graves that are the focus of this study are more difficult to fit into this framework. As has become clear in Chap. 6, the object assemblages from graves and settlement sites differ markedly, and most cemeteries do not provide any stratigraphic evidence that could help in establishing a relative sequence of grave assemblage types. Major exceptions are the sites of Xichang Lizhou and Xichang Dayangdui which held both graves and settlement remains and are thus crucial for establishing the relationship between graves and settlement sites in the Anning River Valley.

Following, I am thus starting from the most securely dated sites in the Anning River Valley, before widening the view and including the material from other subregions into my comparative analysis of object types and burial customs to infer their relative chronological positions and suggest absolute dates where possible.

7.4.1 The Anning River Valley and the Adjacent Mountains

7.4.1.1 Early Earth-Pit Graves and Settlement Sites

The most striking archaeological feature of the Anning River Valley and the adjacent mountains of Puge and Xide are the megalithic graves. Previous to their emergence during the second half of the first millennium BC, the subregion is characterized by settlement sites and earth-pit graves whose assemblages differ somewhat between Center (Xichang), South (Dechang and Miyi), and North (Mianning) but become increasingly similar over time. The groups inhabiting the mountains of Puge and Xide seem to have kept largely separated in terms of object production, subsistence patterns, and burial customs at least until the emergence of the megalithic grave tradition when they adopted this burial practice from the Anning River Valley. Given the lack of radiocarbon dates or multilayered sites in Puge and Xide, the premegalithic sites in this area are thus difficult to relate to finds in the Anning River Valley whose early developmental sequence is relatively well understood. The chronological sequence of the early settlement sites in the Anning River Valley runs as follows[25]:

1. Dechang Maojiakan with its microlithic assemblage combined with coarse ceramics;
2. Early Henglanshan: Xichang Henglanshan Layer 4 (2545 ± 47 cal. BC)[26] and Dechang Wangjiaping;
3. Middle Henglanshan: Xichang Henglanshan Layer 3, 2112 ± 62 cal. BC;
4. Xichang Ma'anshan, lower Qimugou, and Lower Yingpanshan;
5. Late Henglanshan: Early Xichang Lizhou.[27]

The later settlement sites and earth-pit graves both in the mountains and in the river valley are more difficult to date as they differ markedly in assemblages both from each other and from grave finds. The most important evidence again comes from stratified sites, most importantly Xichang Lizhou, Dayangdui, and Yingpanshan. The late Henglanshan-style material in the early settlement layers of Xichang Lizhou is superimposed by earth-pit graves with rich ceramic assemblages that are similar in ceramic quality to earlier settlement remains (low-fired red-brown coarse ware) but differs significantly in form and decoration. Instead of large jars with outward flaring rims and appliqué bands and/or limited amounts of incised decoration, at Lizhou the assemblages consist of vases, ewers, double-handled jars, and bowls, some of them with surface-covering decoration. The earth-pit grave assemblages fall into two groups, once consisting of vases and ewers with surface-covering decoration (graves AM2, AM6, AM10, BM4; Fig. 7.16—1–6), the other comprising double-handled jars and bowls with limited amount of line decoration and net pattern (graves AM6, BM3, BM8; Fig. 7.16—7–17). Stratigraphic evidence—BM3 cutting BM4—suggests that the second type of ceramics predates the first. The second type of assemblages also encompasses a stout jar with horn-shaped handle nearly identical with a vessel from a Han grave at the same site, thus confirming the later date of the second assemblage type (Lizhou Yizhi 1980: Fig. 6.5).

The low-fired red-brown coarse ware that characterizes the early settlement sites and the graves at Lizhou contrasts strongly with the ceramics found in the earth-pit graves found in the early layers of Xichang Dayangdui; they are made of high-fired black-brown fine ware and are undecorated apart from a dark slip. The vessel forms likewise differ markedly (Fig. 7.16—18–29). Although both sites furnish handled vessels, those at Lizhou are thick ring-handles attached to the short neck of coarsely made squat straight-sided jars with net pattern while the vessels from Dayangdui are characterized by thin, long handles reaching from the high color to the low body of finely made round-bottom ovoid vessels. Instead of showing local characteristics, the Dayangdui ceramics strongly resemble finds from sites in Gansu and Qinghai attributed to the late phase of the Qijia Culture which is conventionally dated to

[25] Consult Hein 2015 for a detailed description of the settlement sites and their material.

[26] Here and in the following, the dates were calibrated using OxCal online radiocarbon calibration using IntCal13 with an error range of 2σ (https://c14.arch.ox.ac.uk/oxcalhelp/hlp_curves.html).

[27] Consult Chap. 1 in the present volume for an explanation of Henglanshan as a phase and culture.

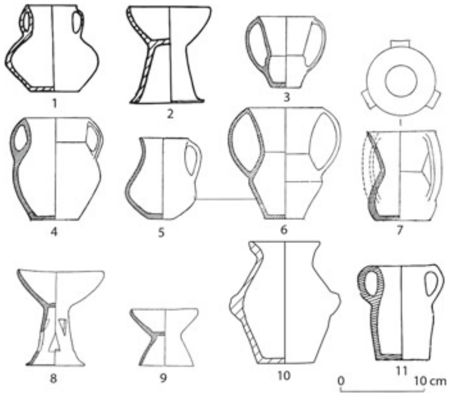

Fig. 7.25 Qijia ceramics from Gansu Yongjing Qinweijia (after Zhongguo Kexueyuan 1975: Fig. 16.5, 16.7, 18.5, 18.7), Yongjing Dahezhuang (after Debaine-Francfort 1995: Fig. 28.2), Minxian Xinlin (after Debaine-Francfort 1995: Fig. 19.5, 19.13), Qinghai Ledu Liuwan (after Debaine-Francfort 1995: Fig. 98.5 and 98.9), Ningxia Caiyuan (after Debaine-Francfort 1995: Fig. 116.7–8)

2200–1750 BC (Fig. 7.25). This similarity suggests that these earth-pit graves were built by a group that was either of foreign origin or had adopted the Qijia ceramic tradition; in either case, Dayangdui likely dates to the eighteenth or seventeenth century BC, postdating Early Lizhou but potentially contemporaneous with Middle Lizhou but predating Xichang Mimilang.

Xichang Mimilang is a settlement site characterized by a combination of large jars with outward-flaring rims, bowls, and straight-necked wide-bodied vessels with small ring-shaped handles somewhat reminiscent of the late Lizhou vessels but even more closely resembling finds from megalithic graves (Liangshan et al. 2005). A date slightly later than Lizhou but predating the megalithic graves is therefore likely.[28] In spite of the difference in assemblages, Mimilang thus is probably contemporaneous with the middle phase of Dayangdui.

The earth-pit graves of Early Dayangdui described earlier are superimposed by a layer of ceramic pits superimposed in turn by megalithic graves. The Middle Dayangdui pits hold double-handled jars that resemble the Early Dayangdui ceramics in form, but they are made of red-brown coarse ware instead of high-fired fine ware (Fig. 7.16—30–41). Furthermore, the overall form and handle style of the double-handled vessels at Middle Dayangdui is more similar to ceramics from stone-cist graves at Wenchuan Zhaodiancun in northwest Sichuan rather than objects from early Dayangdui or Gansu, as is the ceramic quality (Fig. 7.26). Based on comparisons with other finds from the Upper Min River, Zhaodiancun has been

[28] Two radiocarbon dates were taken from Mimilang, one from layer 5 (50–140 AD) and one from layer 4 (1050–920 BC), but as the date from layer 4 is earlier than the one from layer 5 instead of the other way around, and the dates rely on only one charcoal sample each (Jiang 2007: 10), this late date is likely faulty.

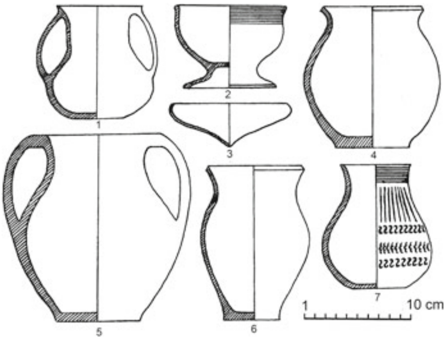

Fig. 7.26 Ceramics from Wenchuan Zhaodiancun (after Wenchuanxian and Shi 1999: Fig. 3)

dated to the seventh or eighth century BC, a date that might apply to middle Dayangdui as well.

Another element new to Middle Dayangdui are lug handles attached to large jars (Fig. 7.16—34–36). Lug handles are not common in the central Anning River Valley but they occur in large numbers at settlement sites in its northern part at Mianning Gaopo and Zhaojiawan. The ceramics from these two settlement sites are largely identical to each other but differ markedly from the assemblages at other site in the research area (Fig. 7.16—42–66). Instead, the ceramics from Gaopo and Zhaojiawan closely resemble finds from Ludian Yeshishan in northeast Yunnan which in turn shares many of its ceramic forms with Weining Jigongshan in neighboring western Guizhou. Based on five radiocarbon dates, Jigongshan is fairly securely dated to 1400–1100 cal. BC (Guizhousheng et al. 2006; Liu and Sun 2009), and the Yeshishan dates range around 1300–900 cal. BC (Yunnansheng et al. 2009).[29] The radiocarbon dates for Gaopo and Zhaojiawan fit well with this assessment, suggesting a date of around 1410–1050 cal. BC for Gaopo and 1360–920 cal. BC for Zhaojiawan.[30] It is thus likely that the ceramic tradition reflected in these two sites has close connections with northeast Yunnan; the relationship with other sites in the Anning River Valley is less clear. The lug handles appearing in small numbers at Middle Dayangdui in the central Anning River Valley and in the late phase of Dechang Dongjiapo in the south suggest that these sites are close in date to Mianning Gaopo and Zhaojiawan. The few band handles in Zhaojiawan Layer 3 furthermore indicate that this site might be connected with and close in date to Late Lizhou and Mimilang.

[29] These dates are based on two dates with wide error ranges, 1217 ± 121 cal. BC and 1347 ± 130 cal. BC, but as they fit very well with the dates suggested by the considerably more reliable dates from Jigongshan, a date around 1300–900 cal. BC is highly likely.

[30] The radiocarbon dates for Gaopo are 1379 ± 39 cal. BC for Layer 1, 1316 ± 47 cal. BC for Layer 2, and 1179 ± 47 cal. BC for Layer 3. The dates for Zhaojiawan are 1316 ± 47 cal. BC for Layer 2 and 972 ± 53 cal. BC for Layer 3 (Chengdushi et al. 2012).

Overall, lug handles seem to have been a short-lived trend largely confined to the northern part of the Anning River Valley, as was the whole ceramic tradition of Gaopo and Zhaojiawan. The ceramic assemblages of later sites in Mianning show no connection to these earlier sites, and the megalithic graves of Late Dayangdui do not contain any lug handles, neither do later sites in Dechang. Instead, the ceramic assemblages in megalithic graves and associated sites become increasingly similar throughout the Anning River Valley, and the tradition of erecting megalithic graves comes to be adopted even in the near-by mountains of Puge and Xide whose earlier archaeological material shows very different characteristics.

The early ceramics from the Anning River Valley are all low-fired red-brown coarse ware, mostly in the form of large urns with finger-tip impressed appliqué strip below the rim, jars, vases, and bowls, accompanied by polished stone woodworking tools, perforated stone knives, grinding equipment, and a small number of arrowheads (Hein 2014a: Fig. 5; Hein 2015; Hein forthcoming: Fig. 3). In contrast, the settlements of Puge Tianba, Zhongcun, and the early layers of Xiaoxingchang hold a very different assemblage consisting of high-fired brown fine ware in the form of crudely formed small stout jars, cups, vases, and bowls, all of them with very thick walls and devoid of decoration (Fig. 7.17). These ceramics are regularly associated with a considerable number of projectile points, as well as some woodworking tools and nonperforated knives, but no grinding equipment or agricultural tools, indicating a subsistence more heavily reliant on hunting than agriculture (Hein 2015). The assemblages of Tianba and Zhongcun are nearly identical but the ceramics seen at Early Xiaoxingchang differ slightly in form. Early Xiaoxingchang is overlain by megalithic graves showing that it dates to the premegalithic phase. The early layers furthermore hold vessels with a single lug-like handle as reported from Early Lizhou suggesting a closeness in date; Tianba and Zhongcun may date slightly earlier. The ceramic assemblage of the earth-pit graves and settlement layers of Puge Wadaluo resemble the Early Xiaoxingchang finds, too, most notably in ceramic quality and many of the jar and vase forms, but the cups and stout jars find their closest parallel at the megalithic graves of Miyi Wanqiu in the southern part of the Anning River Valley where they are executed in coarse instead of fine ware (Fig. 7.17—1–10 and Fig. 7.27—57–63). Spouted vessels and handled jars as they are typical for the Wanqiu, however, do not appear at Wadaluo and the tool assemblage is virtually identical with finds from other sites in Puge. The date of this site and its relationship with Wanqiu remain somewhat obscure.

Another site that shows some similarity to finds from the settlement sites and earth-pit graves from Puge is Xichang Yangjiashan in the central Anning River Valley, mostly in the form of stout jars and cups executed in the brown fine ware typical for Puge (Fig. 7.17—21–33). The decorated vases and the single stout vessel with side handle found at Yangjiashan, on the other hand, resemble ceramics from the earth-pit graves at Lizhou, but are executed in high-fired fine ware as common in Puge instead of coarse sand-tempered material known from Lizhou. Yangjiashan thus seems to be a combination of the two independent ceramic traditions of the Anning River Valley and the mountains of Puge but its date is not entirely clear.

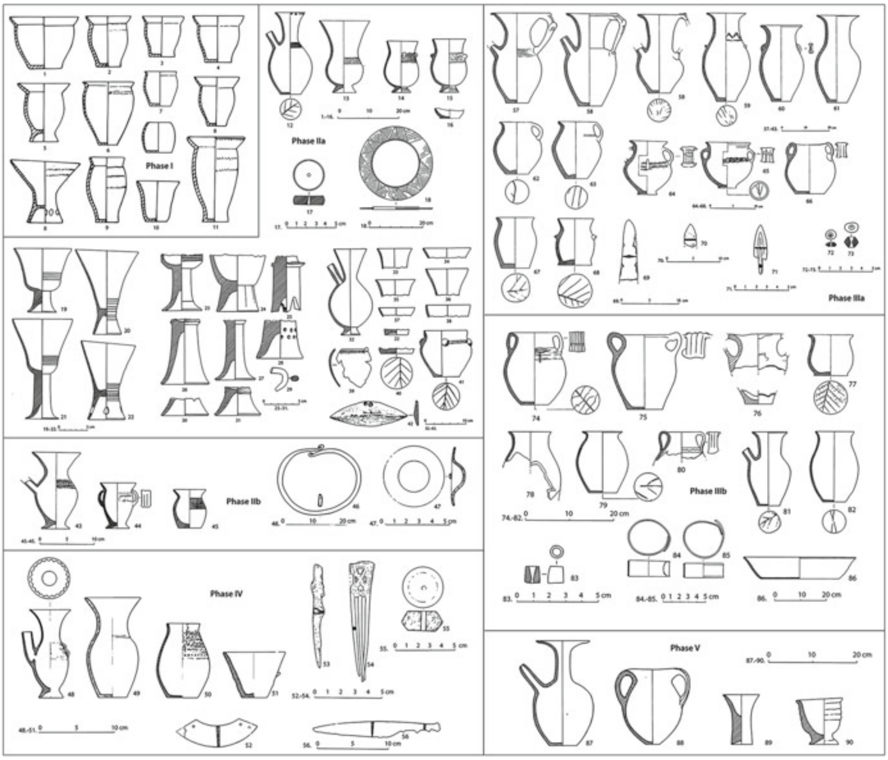

Fig. 7.27 Megalithic grave assemblages from the Anning River Valley by period: **Phase I**: (*1–11*) late phase ceramics from Xichang Dayangdui (after Xichangshi et al. 2004: Fig. 25); **Phase IIa**: (*12–18*) assemblage of Xichang Bahe Baozi M4 (Sichuansheng et al. 2006: Fig. 67.5, 66.3, 66.5, 66.1, 65.8, 71.13, and 78.4); (*19–42*) assemblage of Xichang Qimugou M2 (after Chengdu et al. 2009a: Fig. 9, 19, 14); **Phase IIb**: (*43–47*) assemblage of Xichang Lianghuan (after Sichuansheng et al. 2006: Fig. 63.7, 66.4, 68.2, 70.8, and 89.10); **Phase IIIa**: (*57–73*) objects from Miyi Wanqiu M1 (after Liangshan Yizu 1981: Fig. 6–7); **Phase IIIb**: (*74–85*) assemblage of Dechang Arong M4 (after Sichuansheng et al. 2006: Fig. 15); **Phase IV**: (*48–56*) Xide Lake Sihe M6 (after Sichuansheng et al. 2006: Fig. 69.3, 68.4, 59.4, 5.4, 91.22, 91.29, 90.10, 88.14, 85.4, 83.6, after 71.6); **Phase V**: ceramics from (*87–88*). Xichang Xijiao M1; (*89*) Xichang Hexi M3; (*90*) Xichang Bahe Baozi M3 (after Sichuansheng et al. 2006: Fig. 67.4, 57.4, 66.7–8)

7.4.1.2 The Megalithic Graves: Striving Toward a Chronological Framework

As discussed earlier in this chapter, megalithic graves occur throughout the whole Anning River Valley and the adjacent eastern mountains of Puge and Xide. For a variety of reasons, this type of graves is notoriously difficult to date; these reasons include:

1. Paucity of assemblages in most graves;
2. Large variability in grave goods between graves and sites making comparison difficult (i.e., some graves contain only ceramics while in others personal ornaments and weapons/tools prevail);

3. Long use-life and multiple instances of reopening in the case of some graves;
4. Located above ground ⇒ limited stratigraphic evidence.

To address these problems, in a first step I focus on graves used for a single instance of interment. To assign relative as well as absolute dates, I rely on stratified sites containing megalithic graves (Puge Xiaoxingchang, Xichang Dayangdui, Lizhou, Maliucun, Mimilang, and Qimugou), graves with published radiocarbon dates (Puge Xiaoxingchang AM1 and BM2), and comparison with material from well-dated sites. In a second step, I integrate sites with a known longer use-life and several instances of reopening as well as graves that have very limited assemblages. For typological comparisons between grave assemblages, especially the variation in form and decoration of spouted jars, goblets and cups, and double-handled vessels are useful indicators for developments over time (Appendix Figs. B.13–B.15). In the cases of graves devoid of ceramics, parallel finds from other regions and a comparison with graves containing both ceramics and metal objects provide valuable indicators. In all cases, material quality and production techniques are just as important to consider as variation in form and decoration.

Based on such comparisons of ceramic forms and quality, presence/absence and types of other burial goods, grave form and size, interment type and associated rituals, I suggest distinguishing between four main phases and four subphases (Table 7.12). As to absolute dates, stratigraphic evidence from Xichang Dayangdui and Yingpanshan suggests that the earliest megalithic graves date to the eighth century BC at the earliest.[31] The latest graves and their date are much easier to ascertain, as some of them contained Han-style ring-pommel iron knives and iron swords[32] and others coins with the characters *daquan wushi* (~AD 9–14) (e.g., Xide Guluqiao) or *wuzhu* (~AD25) inscribed on them, suggesting of AD first or second c. at least as *terminus post quem*.[33] The only radiocarbon dates from megalithic graves were taken from Puge Xiaoxingchang AM1 and BM2, both dating to 601 ± 127 cal. BC. Considering the wide error margin, the difference in burial custom between these two graves, and the fact that both were used for many successive instances of interment over a longer period of time, these dates can reflect but one point in time within a longer history of use and have to be treated with some caution. Based on grave form and type of burial goods, the Xiaoxingchang graves were used from the beginning of the second phase onward which fits well with the radiocarbon dates.

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[31] Based on the lack of metal objects in the early graves and comparison with ceramics from Chengdu Shi'erqiao, Luo Kaiyu (1989) suggests a Shang date (c. 1600–1046 BC), but as the resemblances are vague and early Dayangdui, which predates the megalithic graves, contains a bronze sword/knife, this date is probably too early. Based on the radiocarbon dates of Puge Xiaoxingchang, Liu Hong (2009) has suggested a late Spring and Autumn date (fifth c. BC) which considering the stratigraphic and typological evidence from Dayangdui seems a little late.

[32] Iron knives were found at Dechang Arong M3; Xichang Guoyuancun M1; Xichang Hexi Gongshe M2, M4, and M5; Huangshuitang M1; Wanao M1; and Xiaohuashan M1, and an iron sword was found at Xijiao Gongshe M1. Dechang Arong M4 furthermore contained a few iron nails.

[33] These graves are Xide Guluqiao M1, Lake Sihe M1, and Xichang Hexi Gongshe M3.

Table 7.12 Characteristics of main phases and subphases of megalithic graves containing ceramics and other objects

Phase	Ceramics	Other objects	Graves	Examples
I	*Forms*: few ceramics, urns, jars, goblets, cups	No other objects	Small graves, single instance of interment	Xichang Dayangdui DM1 and DM2, Xichang Tianwangshan M10
	Quality: high-fired, slipped, fine ware			
IIa	*Forms*: spouted jars, high-stemmed goblets, round-bodied goblets	Perforated knives, spindle whorls, stone arrowheads, metal bracelets, grinding tools	Small and medium-sized graves, group interments, reopening	Xichang Qimugou M1 and M2, Maliucun H1, Bahe Baozi M4 and M6, Yanjiashan M3
	Quality: high-fired, slipped, fine ware			Puge Xiaoxingchang AM2, and AM1 and BM1-2 (early interments)
IIb	*Forms*: spouted jars with foot and knob-handles, round-bodied goblets, small vessels with thin double-handles	Spindle whirls, arrowheads, bronze knives, bracelets, bone rings	Medium-sized graves, group interments, reopening	Dechang Guoyuan M2
				Xichang Bahe Baozi M1, Lianghuan
	Quality: high-fired, fine and sand-tempered ware			Xide Lake Sihe M6
				Puge Xiaoxingchang AM1 and BM1-2 (further interments)
IIIa	*Forms*: single- and double-handled round-bodied vessels, often with water-ripple application, spouted vessels with high trumpet-shaped neck and handle	Stone and metal arrowheads, grinding rods, adzes, chisels, spindle whorls, metal bracelets, beads, earrings, hair combs	Medium-sized or large graves (only Puge grave small), group interments, reopening, entering	Mianning Sanfentun
	Quality: coarse sand-tempered, low-fired, red-brown ceramics			Miyi Wanqiu M1-2, Puge Xiaoxingchang BM1-3 (last interments)
IIIb	*Forms*: single- and double-handled vessels with elongated body, often elaborate handle decoration, spouted vessels with high straight neck	Beads, metal knives, arrowheads, metal bracelets, perforated animal teeth (Puge only)	Medium-sized or large graves (only Puge grave small), group interments, reopening, entering	Dechang Arong M1, M3, and M4
	Quality: coarse sand-tempered, low-fired, red-brown ceramics			
IV	*Forms*: single and double-handled undecorated small vessels with long-narrow handles, spouted jars with high neck, small footed beakers	Bronze knives, iron swords, large metal hair combs, clothing applications, *ling* bells, metal bracelets, rings, earrings, beads, grinding rods	Large or very large, multiple interments, reentering of grave	Xichang Hexi M3, Huangshuitang M1, Wanao M1, Xijiao M1
	Quality: high-polished, high-fired, red fine ware			Xide Guluqiao M1, Xide Lake Sihe M1 and M8

The earliest megalithic graves, Xichang Dayangdui DM1 and DM2 and Tianwangshan M10, are small structures used for single instances of interment containing a small number of ceramic vessels but no other kinds of objects. The ceramics from the two sites are largely identical in form and quality. They are made of high-fired fine ware very similar to the Middle Dayangdui ceramics, but they come in the form of plain jars with high outward-flaring collars and footed beakers instead of large urns and double-handled jars (Fig. 7.27—1–11 vs. Fig. 7.16—30–41). Based on the comparanda and absolute dates just discussed, Phase I of the megalithic graves may be dated between the late eighth and the sixth century BC and seems to be confined to the central Anning River Valley. Phase II, dating commencing around the late seventh BC at the earliest, then sees an expansion of the megalithic grave custom into the northern and southern reaches of the Anning River Valley as well as into the eastern mountains.

The Phase II graves are larger and mostly used for multiple instances or primary inhumations. The ceramic assemblages of this phase still consist mainly of high-fired fine ware but footed beakers become increasingly more prominent and new forms such as vases and spouted ewers appear, many of them with simple decoration bands, and large undecorated jars and urns cease to be used in graves (Fig. 7.27—12–18). Examples include Xichang Bahe Baozi M4, M6, and Xichang Lianghuan (Fig. 7.27—43–47). In all of these graves, a few tools such as knives, spindle whorls, and grinding implements, as well as personal ornaments such as bracelets and other decorative rings appear on and in between the bones, albeit in small number. In contrast, the earliest megalithic graves in the nearby western mountains—most prominently Puge Xiaoxingchang AM1-2 and BM1-3 and Xide Lake Sihe M6—are characterized by a large number of bronze knives, bracelets, arrowheads, and also perforated animal teeth similar to the assemblages in earlier Puge earth-pit graves reflecting the local focus on hunting seen in settlement sites (Fig. 7.28). A few ceramics in the form of spouted vessels and spindle whorls do appear as well but they are rare. Ceramic pits holding large numbers of cups, beakers, and ewers pointing to drinking rituals as they have been observed close to a number of graves in Xichang are missing from the eastern mountains. In spite of the similarity in grave form, the range of burial goods and associated ritual acts thus followed a different set of rules than what was common in the Anning River Valley.

In the latter part of Phase II, the custom of interring people with their personal ornaments and tools seems to have been adopted in the Anning River Valley, too, as most prominently exemplified by Xichang Bahe Baozi M1. At the same time, we see the appearance of ceramic pits in the vicinity of megalithic graves, similar to the small pits inside and outside the burial mount of Tianwangshan M10. Xichang Maliucun H1 and Upper Yingpanshan, for instance, furnished a large number of high-fired fine ware cups, goblets, and ewers very similar in form and decoration to objects from the megalithic graves of Xichang Bahe Baozi (Fig. 7.29—1–17). Nearly identical ceramics also appear in the earth-pit graves in the middle layers of Xichang Qimugou, M1 and M2 (Fig. 7.27—19–42). Lower Yingpanshan and the early settlement layers of Qimugou are about contemporaneous and provide a *terminus post quem* for Upper Yingpanshan and Qimugou M1 and M2, respectively. Qimugou M1 and M2 are in turn superimposed by the Qimugou Layer 3 settlement

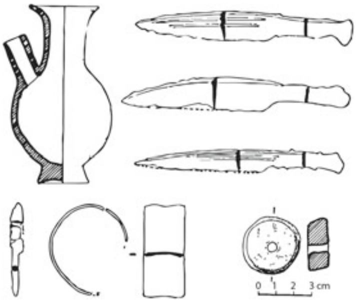


Fig. 7.28 Assemblage from Puge Xiaoxingchang AM1 (after Liangshan and Pugexian 1987: Fig. 8–9)

finds (Fig. 7.29—18–36) which are characterized by coarse sand-tempered handled vessels strongly resembling objects from the megalithic graves of Miyi Wanqiu and Dechang Arong (Fig. 7.27—57–85). Qimugou Layer 3 was superimposed by one earth-pit grave (M3) containing three coarse choppers and one round pit (W1) holding one large urn with a smaller jar inside, both of them strongly reminiscent of Han ceramics both in form and in their high-fired gray ceramic material (Chengdu et al. 2009a: Fig. 17–19). The grave form of Qimugou M3—a nearly square earth-pit grave with second-level ledge—is largely identical to Xichang Ma'anshan M1 whose ceramics show clear Han influence as well (Fig. 7.30). The chronological sequence therefore runs as follows: Upper Yingpanshan (early Phase IIa) → Qimugou M1 and M2 (late Phase IIa) → Xichang Lianghuan (IIb) → Qimugou Layer 3, Miyi Wanqiu, and Dechang Arong (Phase III) → Qimugou W1 and M3 (Phase IV), the last phase dating to the Western Han (206 BC–9 AD) or later.

During the latter part of Phase II, we see a transition from high-fired dark fine ware of Phase I to the red coarse ware that comes to characterize Phase III and IV. In a few megalithic graves (Dechang Guoyuan M2, Xichang Bahe Baozi M1, Xide Lake Sihe M6), both kinds of ceramic quality appear next to each other suggesting a transitional phase. In the megalithic graves of Phase III (Miyi Wanqiu, Dechang Arong) and associated settlement sites (Xichang Wangjiatian, Mianning Sanfentun), globular double-handled jars with water-ripple pattern made of low-fired coarse ware appear for the first time and become increasingly more numerous throughout the whole Anning River Valley and in limited numbers even in the eastern mountains (Fig. 7.27—57–85). Similar stout jars with short band handles are common to stone-cist graves from the Upper Min River Valley, which are conventionally dated to the third century BC (He 2009). Iron objects have been reported from megalithic graves holding similar ceramics (Miyi Wanqiu), but they never occur in megalithic graves with ceramics resembling those from Qimugou M1 and M2. Phase III may thus be dated between the fourth and third century BC and Phase IIb likely falls into the fifth century BC.

Interring the deceased with personal ornaments and a few tools/weapons on their body is a custom that commences already in Phase IIa with the graves in Puge but is adopted in the Anning River Valley soon after. Throughout Phase III, the number and variety of personal objects found in graves increases, coming to include bronze hair combs, small *ling* bells, earrings, and during Phase IV finally also iron swords

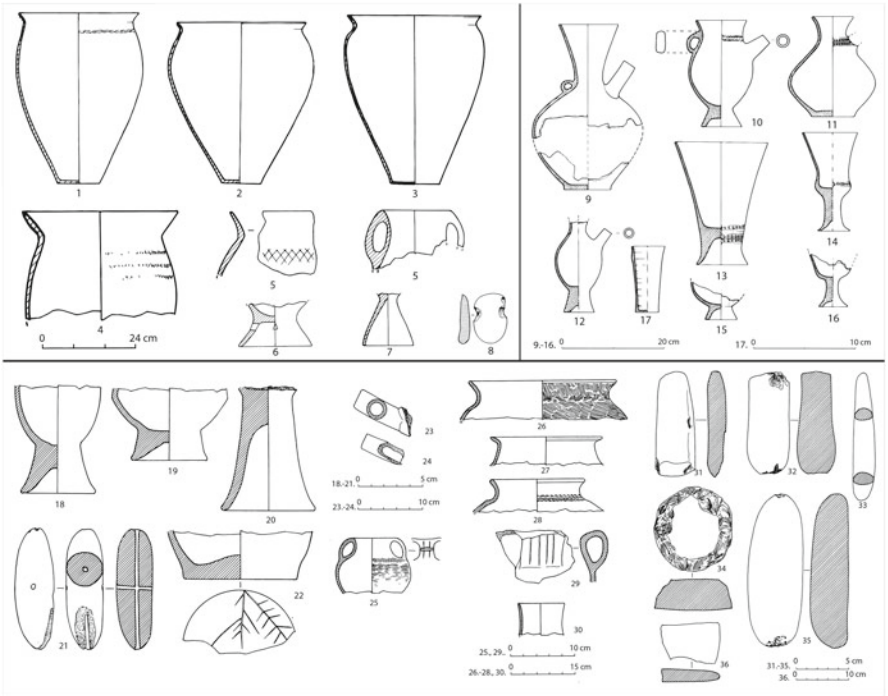
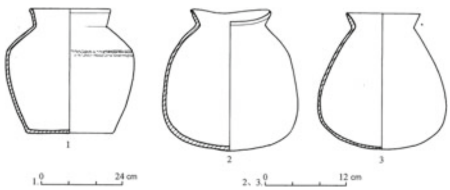


Fig. 7.29 Objects from megalithic-grave period ceramic deposits in the Anning River Valley: (*1–8*) Upper Yingpanshan (after Chengdu et al. 2005: Fig. 11.2, 8.2, 7.2, 18.2, 12.3, 16.2, 11.3, 10.3, 16.3, 18.3, 18.4, and 17.3); (*9–17*) Xichang Maliucun H1 (after Sichuansheng et al. 2006: Fig. 2); (*18–36*) Xichang Qimugou Layer 3 (Upper Qimugou) (after Chengdu et al. 2009a: Fig. 13–15 and Sichuansheng et al. 2006: Fig. 6–7)

Fig. 7.30 Assemblage of Xichang Ma'anshan M1 (Chengdu et al. 2007: Fig. 6)



and knives (Fig. 7.31). The increase in number of personal items is connected with the increasingly large number of people interred within the same grave culminating in the very large graves of Xichang Wanao M1 and Xijiao Gongshe M1 containing over a hundred individuals. The long use-life of most of the graves containing only or predominantly personal ornaments and weapons/tools makes typological comparison for dating purposes difficult.

Xide Lake Sihe M1, for example, contains both a goblet similar to objects from phase IIb graves and Han objects (coins and a Han-style *fu* vessel), showing that the grave may have been used from the fourth to the third or second century if not longer

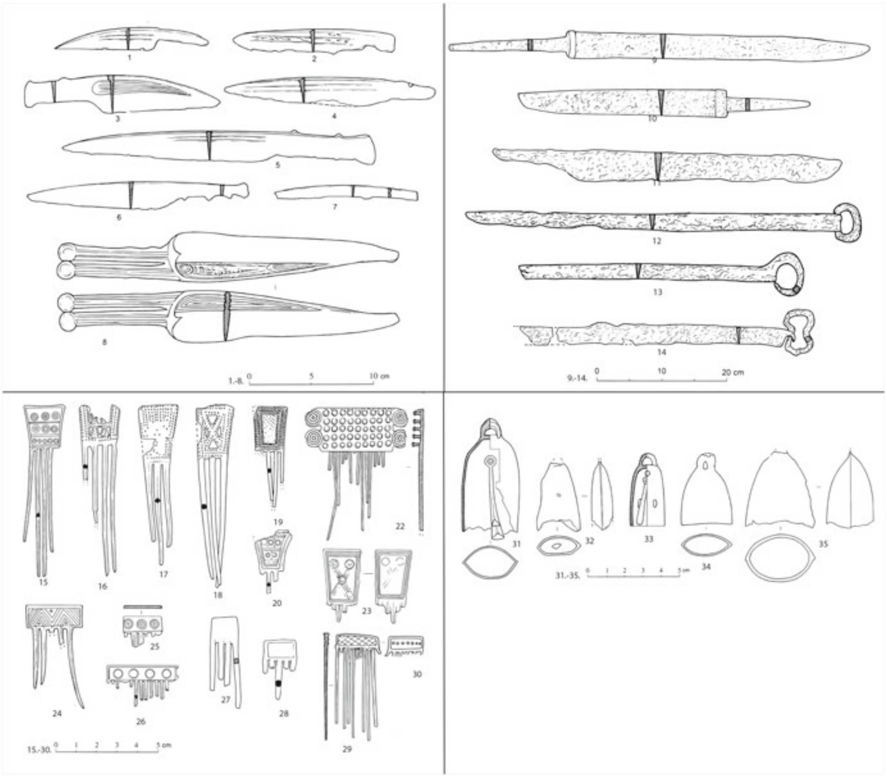


Fig. 7.31 Metal objects from megalithic graves: (*1–8*) bronze knives from Xide Lake Sihe M8, Xichang Bahe Baozi M1, Guoyuan M2, Lake Sihe M7, Xiaoxingchang AM2, AM1, Lake Sihe M6, M8, Hexi M2 (after Sichuansheng et al. 2006: Fig. 88.8–16); (*9–14*) iron weapons from Xichang Wanao M1, Guluqiao M1, Huangshuitang M1, Xiaohuashan M1, Dechang Arong M3 (after Sichuansheng et al. 2006: Fig. 90.1–6 and 8); (*15–30*) hair combs from Puge Xiaoxingchang BM4, Xichang Xiaohuashan M1, Bahe Baozi M1, Xijiao M1, Xide Guluqiao M1, Puge Xiaoxingchang BM4, BM2, BM4, Xijiao M1, Beishan M1, Xiaoxingchang BM2, Xichang Xijiao M1, Beishan M1 (after Sichuansheng et al. 2006: Fig. 84.5); *ling* bells from Xichang Hexi M2, Xide Lake Sihe M8, Xichang Bahe Baozi M1, Xide Guluqiao M1, Xichang Beishan M1, Xijiao M1 (after Sichuansheng et al. 2006: Fig. 82.1, 5, 7–10)

(Fig. 7.31). Another indicator for a long use-life is the number of skeletons interred in a single grave such as Puge Xiaoxingchang BM1 and BM4 or Xide Guluqiao M1 as well as other signs for reopening discussed in Chap. 5 such as doors, scorch marks inside the grave, or a disposal pattern reflecting rearrangement of bones or disturbance of previous interments. In contrast, the presence of a large number of ceramic vessels is not necessarily an absolute proof of a long use-life of the grave unless paired with a large number of skeletons and/or personal ornaments. A particularly spacious construction containing large number of vessels, especially if heavily fragmented as in Dechang Arong M1, M3, and M4, primarily reflects intensive use of the grave, but possibly within a relatively short time frame. In the graves of Miyi Wanqiu M1 and M2, however, the same basic vessel forms occur in a variety of different types and subtypes, indicating a somewhat longer period of usage.

With the help of the analyses and comparisons conducted earlier, it is possible to assign all but four of the excavated graves to a specific phase (Appendix Tables B.21–B.24). All graves that were likely used over an extended period are marked as such (Appendix Table B.24), and they are listed at the beginning of their period of use. Based on the current state of research, the chronological development of the megalithic graves runs as follows:

Phase I is characterized by small graves used for one single instance of interment; it likely postdates Middle Dayangdui and Puge Wadaluo. The main objects placed in these graves are large jars and urns, probably containing food provisions for the dead, while other kinds of objects are rare.

The graves of Phase II are of a very different character: they are of medium size and used for multiple instances of primary inhumations. The deceased were sometimes adorned with ornaments and/or carried personal tools or weapons showing a significant change in burial customs. Now, the dead were attired in what might have been a daily or special dress including personal belongings that reached the grave as *Mitgaben*. Ceramics in the form of fine, high-fired goblets, vases, and ewers, are common *Nachgaben* during this phase, items used in drinking rituals connected with the burial. During the second part of this phase, metal knives start to occur, as do bronze hair decorations, and personal ornaments become more common. Considering the increasing number of interments appearing in each grave, the occurrence of a larger number of personal items is only to be expected and does not mean that people wore more ornaments in real life; the sudden emergence of bronze hair decoration, *ling* bells, and other small objects not previously observed, however, suggests changes in personal attire. In spite of the increasing number of people interred in each grave during this phase, the grave size remains remarkably moderate. This changes only during the later period.

The graves of Phase III are characterized by jars with one or two short band handles made of several clay strips, while drinking vessels are relatively rare. Interestingly, the ceramic material becomes coarser, reminding of the early settlement and grave finds at Lizhou instead of the high-fired fine ware of objects at Dayangdui or Qimugou. As Dayangdui may have been occupied by a foreign population and Qimugou shows outside influence as well, the megalithic graves of Phase III may reflect a return to local traditions. During Phase III, grinding rods become common, increasing in number especially during the second part of this phase. Additionally, personal ornaments both of metal and stone become more frequent, especially in the second part of Phase III. This is furthermore the first time that iron knives and bronze swords/daggers occur in megalithic graves.

In Phase IV, considerable changes occur both in grave form and in ceramic assemblage. All very large graves date to this phase, and some of them contain considerable amounts of ceramic sherds indicating extensive rituals inside the graves. The assemblages now mainly consist of single-handled and mostly undecorated vessels of high-fired red fine ware, frequently accompanied by iron or bronze knives, grinding rods, elaborate hair combs, and many other ornaments, as well as clothing applications and various objects of clear Han origin.

The late phase therefore probably dates between the second century BC and the early first century AD, whereas Phase III dates to the fourth to third century BC, Phase II to the early fifth century, and Phase I to the seventh or sixth century. Given the many problems in the assignation of absolute dates discussed earlier, it also is perceivable that Phase II and III are nearly contemporaneous, and there might be some overlap between Phase III and IV as well, mainly because of the relatively long use-life of many late graves. What is certain, however, is the general development: at first, the graves were small and used for single interments with a small number of objects, and in the final phase they had developed into large constructions used in elaborate rituals. The intermediate period sees medium-sized graves containing increasingly larger numbers of people interred successively with their personal ornaments and tools under ceremonies involving communal drinking and possibly offerings for the dead.

The ceramic pits of upper Yingpanshan and Qimugou likely fall into the same time period as the megalithic graves (Phases IIa and IV, respectively); they might be connected to the burial of children or other members of the population not interred in the megalithic graves. The earth-pit graves at Qimugou, which are contemporary with the megalithic graves of Phase IIb, may have served a similar purpose, and Maliucun yielded ceramic remains connected with ritual acts centering around megalithic graves from Phase IIb as well.

Overall, it is remarkable to note that developments in Xichang and neighboring subregions before the advent of the megalithic graves were far from unified. The megalithic graves and their assemblages, on the other hand, are similar throughout the Anning River Valley and even in remote mountain areas such as Puge and Xide. The megalithic graves of Puge differ somewhat in form and associated rituals, but during later rituals the associated object forms are largely identical with those found in megalithic graves throughout the Anning River Valley. Other parts of the research area, such as Huili, Zhaojue, or Yanyuan, however, were not touched by this trend but underwent separate developments.

7.4.2 *The Southeast: Panzhihua, Huili, and the Environs*

The Southeast went through a development of its own that in large parts is quite independent from what occurred in the Center, and there are also locational differences between north and south and a few singular sites showing strong external connections (Huili Guojiabao, Guoyuan, Luoluochong, Zhuanchangba). Overall, we can see a development from likely early hunter-gatherer cave sites in the south followed by the emergence of more permanent settlement sites throughout the whole subregion, the earliest ones reflecting a mixed economy, the latter ones showing signs of an increasing reliance on agriculture (Hein 2015). The standard mode of burial throughout all periods at least from the mid-third millennium BC onward are single interments in earth-pit graves with or without stone-construction parts accompanied by a small number of ceramic vessels and only rarely personal ornaments or weapons/tools. During the late first millennium BC, there is evidence for the emergence of a new custom of metal deposits containing drums or bells, a custom that is either short-lived or poorly documented and involves foreign object forms and imports. Throughout this whole developmental sequence, the Southeast combines local idiosyncrasies—most importantly its yellow-paste ceramics and large cemeteries with simple earth-pit graves lacking strong differentiation in burial assemblages or significant numbers of metal objects—with single features and even whole sites pointing to outside contact, at first mainly to northern Yunnan, then also to the southern Anning River Valley, and finally even to the Northwest (Hein 2014a). These connections provide important evidence to establish the local chronology, as do changes in ceramic form, especially within the single large and nearly completely excavated cemetery of Huili Fenjiwan, and changes in tool assemblages and ceramic form for early settlement sites.

Based on their assemblages, the early local settlement sites can be classified as follows[34]:

1. Cave sites and open-air sites serving as hunting stations
   (a) Microlithic assemblages (Renhe Huilongwa and Xicaoping, Huili Yangjia Wuji);
   (b) Microliths, a few coarse ceramics (Xiqu Yanwan, Renhe Gongshe);
2. Small open-air sites with coarse stone tools and undecorated, black-slipped, low-fired, coarse ware jars reminding of Dechang Maojiakan (Huili Houzidong, Renhe Gongshe, Xiqu Yanwan);
3. Larger settlement sites with a coarse tool assemblage and plain coarse-ware ceramics:
   (a) Resembling finds from Dechang Maojiakan (Huili Hewanwan, Liantang, Tangjiaba, Tianbacun, Renhe Yangjiashan);
   (b) Yellow-paste coarse ware with outward-flaring rims and net pattern resembling finds from Dechang Wangjiaping (Huili Guantianshan/Yingpanshan).

In reference to their microlithic assemblage and the lack of ceramics, the Type 1.1 sites are generally labeled as Paleolithic, but this is only an assessment of mode of subsistence, rather than an actual date. The sites containing ceramic assemblages are more easily comparable to finds from Yunnan and the Anning River Valley; based on these similarities, Type 2 sites likely predate the earliest sites known from the Anning River Valley or any other part of the research area; Type 3.1 sites are probably roughly contemporaneous with Dechang Maojiakan, dating to the mid-third millennium BC, with Type 3.2 sites dating slightly later.

Later-period settlement sites are largely similar in tool assemblages suggesting a mode of subsistence mostly reliant on agriculture supplemented by some hunting. These sites mainly differ in ceramic forms and decoration; based on ceramic typology and comparisons with sites from other region (mostly Yunnan and the Anning River Valley), these sites can be grouped into the following phases:

4. Early Huili Dongzui: coarse-ware ceramics with appliqué bands similar to Henglanshan-type material (early second millennium BC);
5. Late Huili Dongzui: coarse-ware ceramics with corded-ware design similar to finds from Yongren Caiyuanzi and Mopandi in Yunnan (Yunnansheng Wenwu et al. 2003; Yunnansheng Bowuguan 1985), and handles with a middle ridge

[34] For a detailed analysis of the settlement material from the Liangshan Region consult Hein 2015.

reminding of objects from Jianchuan Haimenkou (Yunnansheng Bowuguan 1995, Yunnansheng et al. 2009a, b) but yellowish in paste color (1500–1000 BC);

6. Huili Washitian: yellowish coarse ware in the form of open bowls, plain flat-bottomed jars, and stemmed goblets with net pattern; metal spearhead mold resembling finds from Yongsheng Longze (Yang et al. 2009: 208–211); Shu-style *ge* dagger-axe mold (Tao and Zhaodian 1981) (ca. early mid fourth century BC).

The ceramics from Washitian have no clear outside connections but show close similarities with finds from the earth-pit graves at Huili Fenjiwan (Fig. 7.20—13–54). In turn, certain elements of the Fenjiwan ceramics resemble objects from various sites in the Anning River Valley. The large urn and jar forms are very similar to finds from Xichang Qimugou and Yingpanshan, the goblets remind of Dechang Dayangdui and Xichang Tianwangshan, and there are a number of parallels with the assemblages from earth-pit graves of Xichang Lizhou, including double-handled vessels, spouted ewers, and single bands of net pattern. In spite of all these comparanda, the parallels lie only in single elements but their combination is unique to the Southeast, as is the peculiar yellowish color of the clay reflecting local production throughout. The small number of bronze weapons from Fenjiwan (Fig. 7.20—43–51), on the other hand, is extremely close in shape and execution to objects from Yunnan, most notably the decorated spearhead found in Fenjiwan M3 (Yunnansheng 1983) and the *yue* axes with their comparanda at Washitian and in Yunnan (Xi 1991: Fig. 3 and 6; Li 1983: Fig. 5).

Taken together, these comparanda suggest a time span from the fifth to the fourth centuries BC, and the variation in ceramic forms and object assemblages throughout the site suggests chronological and/or social differences between graves. Based on these differences, I suggest distinguishing between three main groups and six subgroups (Table 7.13). Metal objects occur only in Group III assemblages and they are hardly ever associated with large urn forms. Such urns are mostly found with Group I and to a lesser extend with Group II; in the Anning River Valley, such vessels tend to be associated with early megalithic graves and settlement sites. Early settlement sites in both the Center and the Southeast are usually devoid of handled or spouted forms or stemmed *dou* bowls, while at Fenjiwan all three kinds of object often occur together in Group III assemblages. It is furthermore remarkable that metal weapons and ornaments never occur in graves containing a particularly large number of ceramic vessels. It is therefore reasonable to interpret the main three groups as chronological phases and the subgroups as socially defined. Judging from the comparison conducted earlier, Phases I and II (equaling Groups I and II) might partially overlap. Phase I probably dates to the fifth century BC, and Phase II and III can be assigned to the late fifth or early fourth century BC, and Phase III is contemporaneous with Huili Washitian, dating to the fourth century BC.

Large urns and jars resembling vessels from Fenjiwan Phase I also occur in some of the small stone-construction graves of Huili Xiaoyingpan, Xiaotuanshan, and Luquan Yingpanbao in the utmost Southeast of the research area (Fig. 7.20—1–12). The narrow-necked vases found at these three sites, however, are not common in other parts of the Southeast but closely resemble objects from stone-construction graves at Yongdingzehn in neighboring Chuxiong in Yunnan (Chuxiong and Yunnansheng 1986: Fig. 6). Considering the early date of the

Table 7.13 Assemblage types at Huili Fenjiwan

Group	Urn/jar	Other ceramics	Tools	Metal
Ia	1–3 urns and/or jars	No other ceramics	No tools	No metal
Ib	0–1 jar	No other ceramics	1 stone axe	No metal
Ic	1–2 jars	No other ceramics	1–2 spindle whorls	No metal
II	1–5 urns and/or jars	Bowls, goblets, ewers, vases, type C single- or type D or E double-handled jar, cups; up to 12 vessels	0–2 stone ornaments and/or spindle whorls	No metal
IIIa	0–1 jar	No other ceramics	No tools	1–2 bronze bracelets, finger rings, or other metal ornaments
IIIb	0–3 urns or jars	1–2 goblets, ewers, type I single-handled jars, *dou*, or bowls	0–1 stone arrows	1–5 bronze objects (bracelets, ornaments, swords, spears, *yue* axes)
IIIc	1–2 urns or jars	1 *dou* or single-handled jar of type I	0–1 spindle whorls	No metal

Chuxiong finds, the stone-construction graves in the utmost Southeast are probably a local phenomenon of relatively early date, possibly even predating Dongzui (mid second millennium BC).

The objects from Huili Leijiashan M1 and from the graves at Huili Guojiabao—all of them earth-pit graves—differ markedly from what was found either at Fenjiwan or in the stone-construction graves further south. The ceramics at the majority of sites in the Southeast are low-fired, hand-thrown, made of sand-tempered material, and only sparingly decorated; in contrast, nearly all vessels from Leijiashan and Guojiabao are decorated (in the case of Leijiashan mostly even surface covering) and of high-fired fine paste ware. The assemblage of Leijiashan shares a few forms with the graves at Fenjiwan, primarily moderately decorated single-handled jars with wide-bottomed bodies, and certain types of vases and goblets; another element shared by both sites is the custom of placing flat river cobbles into the grave. Some goblet forms seen at Leijiashan resemble finds from megalithic graves of Phase IIa, and the stout single-handled jars remind of finds from Phase IIb; the spindle whorl forms and grinding rods remind of objects from megalithic graves as well. The peculiar ear-shaped handles seen on some jars with wide bottoms at Leijiashan point in the opposite direction to Yunnan, resembling objects from Yuanmou Dadunzi and other late Neolithic to early Bronze Age sites in southern Yunnan (Yunnansheng Bowuguan 1977: Fig. 17.6), but similar objects have been reported from Fenjiwan as well (Fig. 7.20—66–79). Based on these comparisons, Leijiashan may be dated to the third century BC, as may the graves at Huili Miaozi Laobao whose ceramic objects are largely identical with the Leijiashan finds.

The bronze deposits of Huili Guoyuan, Luoluochong, and Zhuanchangba likewise show connections with Yunnan, but the deposition practice is unusual. The earthen pits of Guoyuan and Luoluochong furnished one Shizhaishan-type bronze drum each which can clearly be identified as imports dating between the third and second centuries BC (Zhongguo 1988: 34–47). The single *bianzhong* bell from Zhuanchangba combines a form very common throughout southern China and northern Vietnam (Falkenhausen 1988: 561–563) with a decoration and metal composition suggesting local production (Hein 2013: 497–500). Based on the southern comparanda, Zhuanchangba may be tentatively dated to the first c. AD.

The assemblage from Huili Guojiabao is again different from bronze deposits or graves in the Southeast but very similar to finds from Yanyuan; it consists consisting mainly of bronze weapons and ornaments nearly identical with objects known from graves in the Northwest, as well as turquoise beads, single- and double-handled vessels, and buttons similar to artifacts known from Dechang Arong (Fig. 7.32—1–43). The bronze bracelet types and scabbard tips seen at Guojiabao and Yanyuan are common in the so-called stone-cist graves of Northwest Sichuan such as Lixian Jiashan and Baoxing Hantanshan (Aba and Lixian 1987; Sichuansheng et al. 1999). Likewise, rabbit-head shaped objects of unclear function usually classified as ornaments have been reported from Guojiabao and Yanyuan as well as from earth-pit graves with or without stone installations in Yunnan such as Changning Fenlinggang (Yunnansheng 2005). All of these comparanda date between the fourth and the first centuries BC, suggesting a similar date range for both Guojiabao and the graves in Yanyuan.

Between Huili, Yanyuan, and the Anning River Valley lies Panzhihua, an area that is so poorly explored in archaeological terms that it is difficult to decide if it is more closely connected to the Southeast, to the West, or to the Center. All graves reported from the northeastern part of Panzhihua (i.e., Miyi at the southernmost end of the Anning River Valley) are megalithic graves. The areas further south and east (i.e., Renhe and Yanbian), on the other hand, are characterized by large cemeteries of single-interment stone-construction graves, most of them slightly trapezoidal cists aligned in neat rows, similar to the cemeteries along the Upper Min River. Of these cemeteries, only four graves at Yanbian Yumen Wanxiao have been excavated, and the corresponding report is lacking in detail; it contains only one imprecise drawing of a stout vase with a high-narrow neck, wide shoulders, and ring handles (Plate 7, bottom, Type Db) that strongly remind of objects from Xichang Mimilang (Jiang 2007: Fig. 4; Liangshan et al. 2005: Fig. 10–11). The graves at Yumen Wanxiao can therefore only tentatively be assigned to the wide span between the seventh and the third centuries BC.

7.4.3 The Northwest: Muli, Ninglang, and Yanyuan

The high-altitude mountains of Muli in the utmost Northwest are heavily underresearched and so far only a small number of settlement sites with stone buildings dating between the fourth and first centuries BC have been found (Hein forthcoming). The small number of settlement remains known from Yanyuan and Ninglang further south is only represented by a small number of ceramic sherds found during survey and too fragmented to conduct typological or comparative work. Instead, the majority of objects associated with the Northwest were retrieved from the art marked, but as I have shown elsewhere, most of them likely came from local graves dating between the third century BC and the first century AD (Hein 2014b).

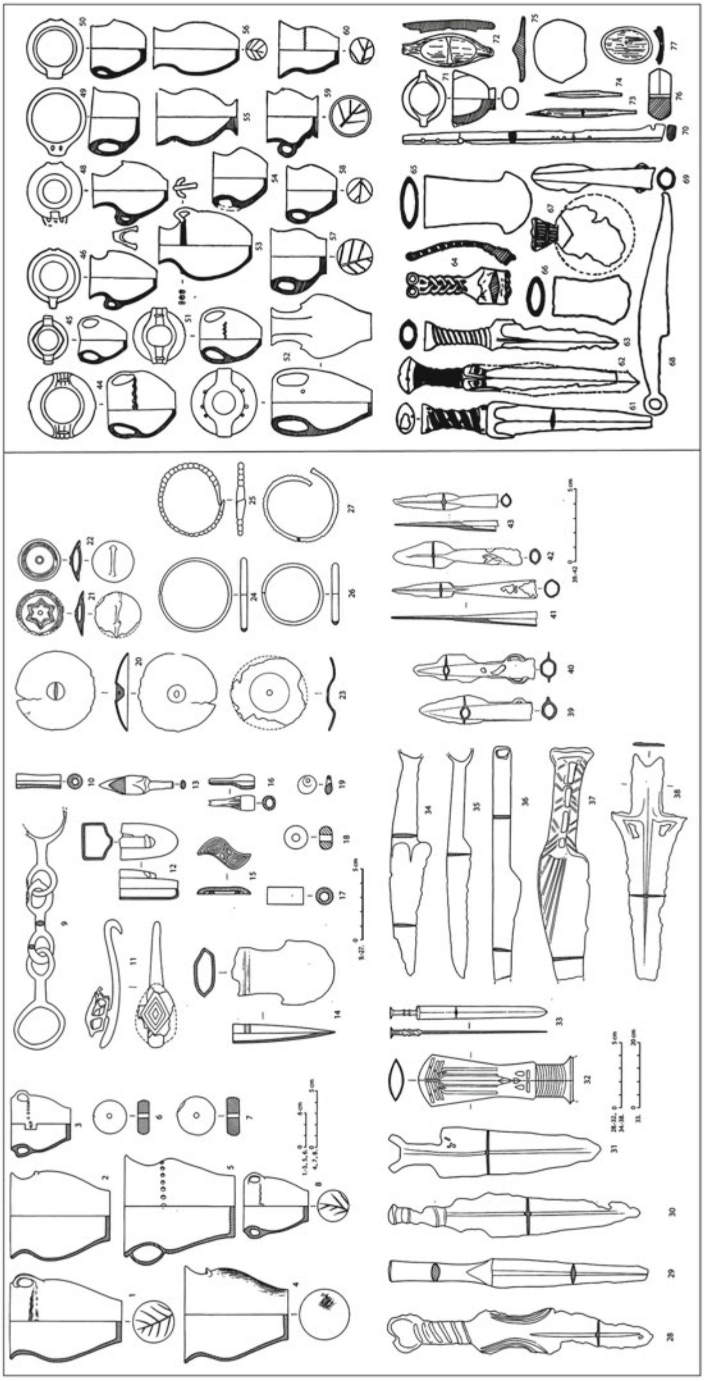


Fig. 7.32 Objects from: (*1–43*) Huili Guojiabao (after Chengdu Wenwu et al. 2008: Fig. 4–11); and (*44–77*) Ninglang Daxingzhen (after Yunnansheng Bowuguan 1983: Fig. 5–7)

The only scientifically excavated graves in Yanyuan and the adjacent county of Ninglang are those at Yanyuan Laolongtou M4-M11 and Maojiaba M1-M2, and Ninglang Daxingzhen M1-M11. Especially the Laolongtou graves show an astonishing number of outside connections that can be used for cross-dating. Dates assigned in this fashion can naturally only provide a *terminus post quem* as foreign objects and elements may have been in use much longer in their final place of deposit than they were in their place of origin. Nevertheless, such dates provide a useful reference point until more reliable evidence in the form of stratigraphy and/or radiocarbon dates become available.

The ceramics from Ninglang Daxingzhen, particularly the elongated double-handled jars and small single-handled cups, are similar to objects from Dechang Arong and other sites belonging to Phase IIIb of the megalithic graves (Fig. 7.25—44–77); the combinations of metal objects (swords/daggers with three-pronged and torqued hilt, *fu* axes, knives with ring-shaped pommel, spear heads with side loops, mirror-shaped decorative plaques), however, are virtually identical with what was found in stone-construction and earth-pit graves at Deqin Yongzhi in Yunnan (Yunnansheng Bowuguan Wenwu 1975). The kinds of swords/daggers seen at Daxingzhen are common in stone-cist graves on the Upper Min River, but occur even more often in graves with or without stone-installation parts in northern Yunnan, particularly Deqin and Chuxiong; mirror-shaped objects have been reported from both areas as well (Aba and Chengdu 2009). All these graves date between the fifth and the first centuries BC, but considering the similarities in ceramics between Daxingzhen and Dechang Arong and the lack of composite weapons or *fu* vessels commonly occurring in the late graves along the Upper Min River, a date around the late fourth or third century BC seems a tenable estimate for Daxingzhen.

The metal assemblage of Laolongtou M4 closely resembles finds form Daxingzhen, while the double-handled vessels strongly remind of ceramics from Deqin Yongzhi, both bearing a prominent double-spiral motive on the body (Fig. 7.23). Such vessels are common in stone-cist graves in the Upper Min River Valley; the types most similar to the vessels at Laolongtou M4 date to the second/first century BC. The middle support in the handles of some vessels from Laolongtou, on the other hand, seems to be a local trait. The drum and the bell in Laolongtou M4 are similar to objects from Shizhaishan dating to the third and second century BC, but the iron spearheads in Laolongtou M4 remind of objects from Phase IV of Kunming Yangfutou, suggesting a slightly later date (Yunnansheng et al. 2005).

The grave assemblages of Yanyuan Maojiaba M1 and M2 encompass Shizhaishan-style bronze drums; M1 held no iron objects but M2 contained several composite objects and an iron spear similar to the one at Laolongtou M4 (Liu Shixu 1981). It is therefore likely that Maojiaba M2 is contemporaneous with Laolongtou M4, while M1 dates earlier.

The surface finds from the grave site of Yanyuan Caojiawan comprise composite and iron spearheads, double-handled jars, swords with three-pronged guards, ring-pommeled knives, bronze ornaments, and horse gear similar to objects from Laolongtou M4, suggesting a similar date. Laolongtou M11 likewise contained an iron spearhead, but of a different type and accompanied by the dagger with fish-tail handle discussed in Chap. 6 as having parallels in Laolongtou M7 and Deqin Nagu on the one hand, and in various sites in Baoxing County on the other (Baoxingxian Wenhuaguan 1982; Yunnansheng 1983). Overall, the evidence thus suggests a date of the second or first centuries BC for Laolongtou M7 and M11, but the few bronze fragments in M5 do not provide enough evidence to suggest a date for this grave (Fig. 7.26).

The assemblages of Laolongtou M6 and M9, on the other hand, are rich, containing a number of ceramics, personal ornaments, clothing applications, and bronze and composite weapons but no pure iron objects (Fig. 7.26). The assemblages from these two graves are similar to each other, suggesting a closeness in date; the stout double-handled vessels that both contain are remarkably different from the vessels of M4; instead, they are similar to objects known from megalithic graves of Phase III, but a little stouter, indicating a slight later date. It is therefore likely that both M6 and M9 date a little earlier than the other graves at Laolongtou; being probably contemporaneous with Maojiaba M1 and the late megalithic graves.

Overall, the sequence of graves in the Northwest thus probably runs as follows: Yanyuan Laolongtou M6 and M9 &Yanyuan Maojiaba M1 (late third to early second centuries BC) → Laolongtou M4 & Maojiaba M2 (late second to first centuries BC) → Yanyuan Laolongtou M7 and M11 (late first century BC to early first century AD).

7.4.4 The Southwest: Yongsheng

The Southwest is mostly represented by the deeply layered but unfortunately unpublished site of Yongsheng Duizi. The excavators distinguish between four phases, Duizi I (Layer 4 settlement remains), Duizi II (early earth-pit graves and house remains), Duizi III (Layer 3 settlement remains), and Duizi IV (different kinds of stone-construction graves, cremation burials in urns, and late earth-pit graves) (Yunnansheng et al. 2010). The Phase I gray coarse vessels with wide opening and net patter, corded ware design, or appliqué bands accompanied by woodworking tools and bone needles resemble finds from northern Yunnan such as Xinguang (Yunnansheng et al. 2002) and Yuanmou Dadunzi (Yunnansheng 1977) dating to 2000–1700 BC. The ceramics from the earth-pit graves of Duizi Phase II—mostly small stout jars, wide-bellied vases, and carinated bowls made of highly polished ceramic material and decorated with fish-bone patterns and incised lines—differ markedly from finds in other parts of the research area but resemble finds from the Bronze Age (1200–900 BC) layers of Yinsuodao, Yunnan (Yunnansheng et al. 2009a). The carinated bowls, in particular, resemble finds from Dali Binchuan Baiyangcun usually accompanied by polished woodworking tools with crescent-shaped double-perforated knives as they are typical for Duizi Phase III (Wang Dadao 1998: 50–52) as well as for various other early Bronze Age sites in Yunnan such as Haimenkou (Yunnansheng 1958; Yunnansheng et al. 2009a, b; Yunnansheng Wenwu et al. 2009), suggesting a similar date. The Phase IV graves vary widely in form and assemblages. The earth-pit graves were equipped with stemmed bowls strongly resembling objects from Kunming Yangfutou (Yunnansheng et al. 2005) and other cemeteries around Lake Dian suggesting a date around the first century BC. The stone-construction grave assemblages combine double-handled vessels with middle support similar to objects from Yanyuan Laolongtou M4 with a large number of similarities with finds from stone-construction and earth-pit graves in neighboring parts of Yunnan (e.g., composite weapons, ring-pommel knives, mirror-shaped ornaments, *ling* bells, and cowrie shells, turquoise beads, and spear- and arrowheads), suggesting a date of late second or early first century BC. At the current stage of publication (or lack thereof), this internal chronology of Yongsheng Duizi is necessarily tentative, but it is clear that the site was occupied over a long period, spanning the time from the late second or early first millennium to at least the first century BC.

7.4.5 The Northeast: Zhaojue, Yuexi, and Their Environs

The least well-understood part of the prehistoric Liangshan Region besides the western mountains may be the Northeast. This is less for lack of fieldwork but rather caused by the nature of the material itself. As most graves in Zhaojue and Meigu are completely devoid of objects, and the others so far have yielded only a small number of often unique items, it is difficult to assess their date. The main clues are provided by Han imports in some graves and ceramic forms similar to objects from the Southeast in others.

The graves at Zhaojue Chike Boxixian, whose brick-wall-like construction clearly imitate Han graves, contained unique ornaments of semiprecious stone and metal as well as typical Han ceramics and Han coins; they can thus be dated to the first or second centuries AD at the earliest (Fig. 7.33—32–39). Eba Buji M1 furnished a bronze basin virtually identical to object from Han Graves in late Western to early Eastern Han graves at Guizhou Weining and Mancheng and (Fig. 7.33—1–8) (Guizhousheng and Weiningxian 1981: Fig. 11). Eba Buji M3 yielded a finely worked bronze axe of a form common in both Western and Eastern Han sites as well, indicating a similar date. The single nephrite pendant in M2 is not sufficient for assigning a date, but as the grave structure of all three graves is largely identical, it is likely that they are about contemporaneous, dating to the first century AD. M4 at the same site contained fragments of a metal basin as well, but the quality is low and the form does not resemble any known Han objects (Fig. 7.33—28–31). The basin was accompanied by finely polished arrowheads similar to those from grave M5 at the same site, and a large stone axe similar to the one from M9. These stone tools all closely resemble objects from the settlement layers of Puge Xiaoxingchang suggesting a considerable earlier date around the sixth or fifth century BC. If this estimate is correct, than Erba Keku must have been used as a burial ground for an extended period of time, potentially with phases of abandonment in between.

Zhaojue Fuchengqu—located very close to Erba Keku—likely dates even earlier than the earliest graves at the neighboring site. The stone-construction graves of Fuchengqu contain objects showing strong resemblance with finds from Puge as well: the flat-bottomed jars are nearly identical with objects from the settlement layers of Wadaluo and Xiaoxingchang, but the footed bowls are of the same form type as those in the early earth-pit graves at Xichang Dayangdui, suggesting a date around the eighth or seventh century BC.

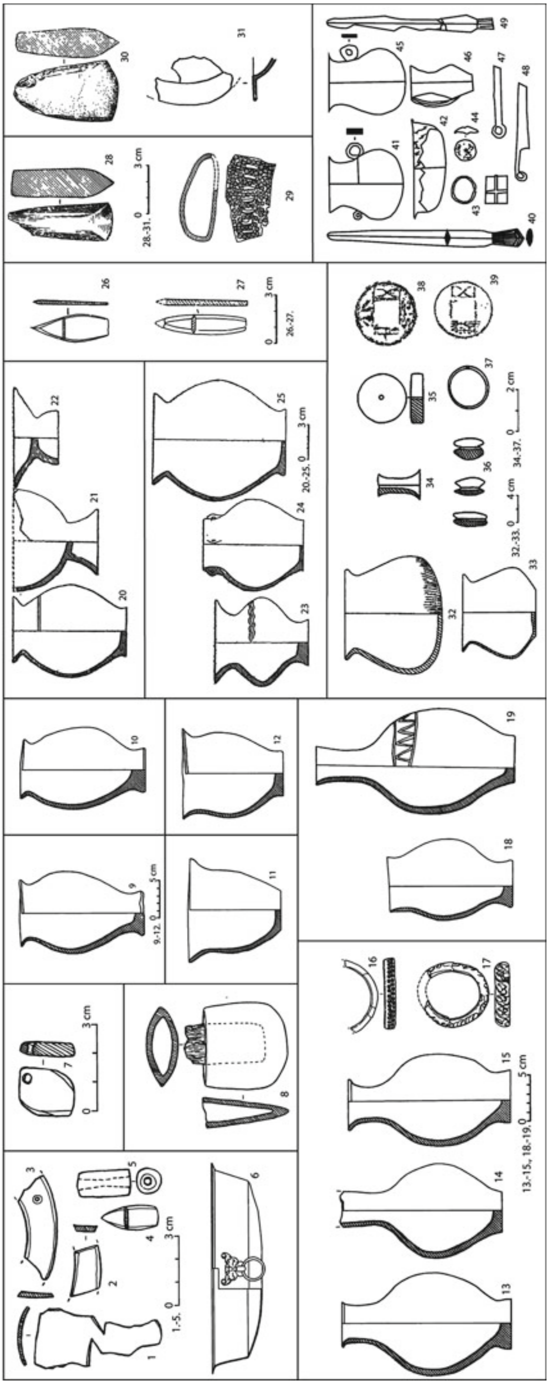


Fig. 7.33 Object assemblages from stone-construction graves in the Southeast: finds from Zhaojue Eba Buji M1 (*1–6*), M2 (*7*), and M3 (*8*); Pusu Bohuang M2 (*10*), M3 (*13–17*), M4 (*18–19*), M8 (*12*), M9 (*13–15*), M11 (*11*) (after Liangshan et al. 2009); Zhaojue Fuchengqu M1 (*20–22*), M2 (*27*), M3 (*23–25*), Erba Keku M4 (*30–31*), M5 (*26*), M9 (*28–29*) (after Liangshan Yizu 1981: Fig. 6–8); (*32–39*) Zhaojue Chike Boxian (after Liangshan et al. 2010: Fig. 8–9); (*40–49*) Yuexi Liaojiashan (after Mao and Zou 1991)

Fig. 7.34 Calcinated ropes from Zhaojue Wazhaishan (photograph curtesy of Zhao Deyun, Sichuan University)

Zhaojue Pusu Bohuang is located close-by as well, more precisely on the other side of the same hill as Eba Buji, but the assemblages differ markedly. The plain ceramic vessels resemble finds from the stone-construction graves at Huili Xiaotuanshan, Xiaoyingpan, and Luquan Yingpanbao, which date to the late third millennium BC (Fig. 7.20). Calcinated ropes occur at most sites in Zhaojue and in graves of many different shapes and sizes; it is therefore currently impossible to date the graves from Zhaojue Wazhaishan, which contained nothing but such ropes (Fig. 7.34), let alone stone-construction graves which were completely devoid of objects. Overall, the chronological sequence thus runs as follows: Zhaojue Pusu Bohuang M3-4, M8-9, M11 (late third mil. BC) → Zhaojue Fuchengqu M1-3 (eighth to seventh century BC) → Zhaojue Erba Keku M2, M4, M9 (sixth c. BC) → Zhaojue Eba Buji M1-2 (first c. AD) → Eba Buji M3 (first c. AD) → Pusu Bohuang M1, Chike Boxixian M1-6 (first to second c. BC).

Considering the geographic location of Zhaojue in the Northeast, close connections with Puge on the one hand and more distant relations with Huili on the other are not surprising, but one would expect even closer contacts with Xide and Yuexi, which are immediately adjacent to Zhaojue. Xide, however, is most closely linked with the Anning River Valley but not with the mountains further east or further north including Yuexi. The earth-pit graves from Yuexi Huayang and Liaojiashan are noteworthy for the large number of bronze vessels, bronze and composite swords, daggers, knives, double-handled ceramics, and bronze ornaments they contain (Fig. 7.33—40–49). Their assemblages are largely identical to those from late stone-cist graves at the Upper Min River, which yield Han style bronze vessels and are therefore usually seen as contemporaneous with the Western Han period (e.g., Sichuansheng and Maowenxian 1983: Fig. 12–13).

The main connecting factor between Yuexi and Zhaojue is thus the intense and relatively early contact with the Han that both places experienced due to their geographical closeness to the Sichuan Basin; by contrast, in other parts of the research area it is not until the middle to late Eastern Han that a strong Han presence is reflected in the material record. The considerable cultural and social change that the encroachment of the Han means is clearly visible in the archaeological record and thus sets a fitting endpoint for this study.

On the basis on the analyses and comparisons conducted earlier, it now becomes possible to compile for the first time a chronological table for the research area (Table 7.14). Given the unevenness of the material currently available, this table is

Table 7.14 Chronological table

Date	Anning River Valley	Northeast	South and Southeast	West
pre 2500 BC (*Paleolithic to early Neolithic*)			Renhe Huilongwa, Xicaoping	
			Huili Yangjia Wuji	
2500–1600 BC (*Neolithic to early Bronze Age*)			Huili Houzidong	
			Xiqu Yanwan, Renhe Gongshe	
	Dechang Maojiakan		Huili Hewanwan, Liantang, Tangjiaba, Tianbacun	
			Renhe Yangjiashan	
	Dechang Wangjiaping (2360 ± 69 cal. BC)		Huili Guantianshan/Yingpanshan	
	Xichang Henglanshan 4 (2545 ± 47 cal. BC)			
	Xichang Henglanshan 3 (2112 ± 62 cal. BC)			
	Xichang Ma'anshan	Zhaojue Pusu Bohuang	Huili Xiaoyingpan	Yongsheng Duizi I
	Xichang Qimugou settlement remains	M3-4, M8-9, M11	Huili Xiaotuanshan	
	Lower Yingpanshan (Xichang)		Luquan Yingpanbao	
	Early Dongjiapo (Dechang)		Early Huili Dongzui	
	Early Lizhou (Xichang)	Puge Tianba		Yanyuan Jiaodingshan
		Puge Zhongcun		
1600–1046 BC (*Shang*)	Early Dayangdui (Xichang)	Early Xiaoxingchang (Puge)	Late Huili Dongzui	Yongsheng Duizi II
	Middle Lizhou graves (Xichang)			
	Xichang Yangjiashan			
	Mianning Gaopo Layer 1 (1379 ± 39 cal. BC)			
	Mianning Zhaojiawan Layer 2 (1316 ± 47 cal. BC)			
	Mianning Gaopo Layer 3 (1179 ± 47 cal. BC)			
1046–771 BC (*Western Zhou*)	Late Lizhou (Xichang)			Yongsheng Duizi III
	Mianning Zhaojiawan Layer 3 (972 ± 53 cal. BC)			
	Middle Dayangdui (Xichang)	Puge Wadaluo	Yanbian Yumen Wanxiao?	
	Xichang Mimilang	Zhaojue Fuchengqu M1-3		
	Late Dongjiapo (Dechang)			

(continued)

Table 7.14 (continued)

Date	Anning River Valley	Northeast	South and Southeast	West
771–476 BC (*Spring and Autumn*)	**Megalithic Graves I**			
	Late Dayangdui (Xichang)			
	Tianwangshan M10			
	Megalithic Graves IIa	Zhaojue Erba Keku M2, M4, M9	Huili Fenjiwan I	
	Upper Yingpanshan (Xichang)	Puge Xiaoxingchang AM1 (early)		
	Xichang Qimugou M1 and M2	Puge Xiaoxingchang AM2		
	Xichang Maliucun H1	Puge Xiaoxingchang BM1-3 (601 ± 127 cal. BC) (early)		
		Xide Lake Sihe (early)		
475–222 BC (*Warring States*)	**Megalithic Graves IIb**	Xide Lake Sihe (middle)	Huili Fenjiwan II	
	Dechang Guoyuan M2	Puge Xiaoxingchang AM2 and BM1-2 (middle)		
	Megalithic Graves IIIa	Puge Xiaoxingchang BM1-3 (late)	Huili Washitian	Muli Qingrenbao
	Xichang Qimugou Layer 3		Huili Fenjiwan III	Muli Shaoxiang Liangzi
	Dechang Wangjiatian			
	Mianning Sanfentun		Huili Leijiashan M1	Ninglang Daxingzhen
	Miyi Wanqi M1-M2		Huili Miaozi Laobao	Muli Qingrenbao
				Muli Shaoxiang Liangzi

Date	Anning River Valley	Northeast	South and Southeast	West
221–206 BC (*Qin*)	**Megalithic Graves IIIb**		Huili Guojiabao	Muli Qingrenbao
	Dechang Arong M1, M3, M4			Muli Shaoxiang Liangzi
206 BC–AD 9 (*Western Han*)	**Megalithic Graves IV**		Huili Guoyuan and Luoluochong	Yanyuan Laolongtou M6, M9
	Xichang Qimugou M3 and W1			Yanyuan Maojiaba M1
				Muli Qingrenbao
				Muli Shaoxiang Liangzi
	Xichang Huangshuitang M1, Wanao M1 (early), Xijiao M1		Huili Zhuanchangba	Yongsheng Duizi IV
				Yanyuan Caojiawan
				Yanyuan Laolongtou M4
				Maojiaba M2
		Yuexi Liaojiashan		Yanyuan Laolongtou M7 and M11
		Yuexi Huayang		
AD 9–23 (*Wang Mang*)	**Megalithic Graves IV**	Zhaojue Eba Buji M1-2		
		Eba Buji M3		
AD 24–220 (*Eastern Han*)	**Megalithic Graves IV**	Zhaojue Pusu Bohuang M1, Chike Boxixian M1-6		

Note: The terminology used in the Chinese literature on this topic is based on the chronology of the Central Plains, speaking of Late Spring and Autumn (771–476 BC) to Early Warring States (475–222 BC) as the earliest dates and early Eastern Han (AD 24–220) for the end point of this burial tradition (e.g., Sichuansheng et al. 2006; Jiang Zhanghua 2007). This table therefore lists both absolute and conventional historical dates for easy reference necessarily tentative but it can serve as a useful basis for discussions concerning cultural developments and contact networks not only in the research area itself but also throughout Southwest China as a whole.

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Part III
Evaluating the Model and the Data

Chapter 8
Connecting the Parts: Graves and Groups, Space and Time

From the earlier analyses of the grave material, several spheres of behavior have emerged, some of them overlapping, others intersecting or excluding each other in time and/or space. These spheres of behavior include:

1. The construction of various kinds of graves;
2. The interment of one or more bodies;
3. Various types of body treatment and other ritual acts; and
4. The deposition of objects in or around the grave

The graves were built in many different forms with varying amounts of stone installations. They contain the remains of primary or secondary burials deposited in one or several instances of interment. In and around the grave, the burying groups engaged in various types of rituals including communal drinking, offering, and burning of objects or even bodies. The correlation between these different actions varies greatly from region to region and between different chronological periods, but they are also greatly influenced by the natural environment. The present chapter connects the results of these separate analyses to paint the "big picture" of regional groups, geographic preconditions, and chronological developments.

8.1 The Different Burial Traditions Viewed in Context

It has become clear that geographic preconditions are an important factor in shaping the appearance of the graves and their content as well as their spatial distribution. Most importantly, the limited availability of level ground has resulted in a dense clustering of grave sites in specific areas. The high north–south running mountain ridges channeling both the rivers and the connections between the various subregions have furthermore led to a clear spatial separation between different burial customs with limited overlap only in the border regions. Additionally, the particular landscape clearly was a point of reference for grave placement and orientation,

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indicating the religious importance of the natural surroundings, especially mountains and/or water courses (Table 8.1).

The megalithic graves clustered in the Anning River Valley are mostly located on flat ground. Their alignment follows the direction of both river and mountain ridges, and a few of them slope up the hillside at an angle that is exactly perpendicular to the direction of these landmarks. By their sheer size, the megalithic graves themselves become landmarks, entering in a close relationship with their natural surroundings and with each other. Forming more or less widely spaced clusters, they constituted a ritual landscape. Each grave was used and reused many times for successive primary interments as well as, very rarely, for cremation burials. Moreover, the megalithic graves became the focus of complex rituals that may have served commemorative purposes or marked special occasions. Most importantly and most frequently, the inhabitants of the Anning River Valley and the mountains of Puge and Xide engaged in the communal consumption of liquids in or around these graves, and the vessels used at such occasions were later disposed of nearby, be it in the grave, in the tumulus, or in pits especially dug for the purpose. Less frequently, organic materials such as rice were burned inside or outside a grave, as attested by piles of ashes in some graves.

Human bones were only rarely burned, be it inside or outside the grave. The bodies of the deceased were usually interred as primary extended supine burials probably wearing what they had been wearing in life (or at least on special occasions), including a limited number of personal ornaments and tools probably kept in a small pouch or under the belt. During later instances of interment, the bones already present in the grave were either pushed aside or more rarely neatly stacked, activities that were probably likewise accompanied by specific rituals. The differences in object assemblages that are observable between different graves indicate that different social groups might have been buried separately in neighboring graves, or that neighboring graves contained the members of successive generations. The fact that these graves held only adult and senile men and women, combined with the presence of earth-pit graves in the vicinity of megalithic graves, furthermore suggests that part of the population might have been buried differently. Nevertheless, Xichang Qimugou is currently the only known earth-pit grave containing objects virtually identical with what is otherwise known from nearby megalithic graves. The other earth-pit graves in the area are very different in nature. While the location of the megalithic graves was mostly chosen to allow for high visibility or in relation to earlier megalithic graves and other landmarks, the earth-pit graves are located further away from river courses in areas less easily accessible. Furthermore, the earth-pit graves were often adjacent to settlement sites, while most megalithic graves were built at a greater distance from the places of the living.

There are only very few earth-pit graves in the Anning River Valley, and in spite of their similarity in form, they belong to three different traditions: one connected with the megalithic graves (e.g., Qimugou), one with coarse-ware ceramic assemblages with earlier form types (e.g., Lizhou), and one with high-fired fine ware and metal ornaments and weapons (Dayangdui). The majority follow burial customs that are very different from those observed in connection with the megalithic graves.

Table 8.1 Overview of grave types, location, associated burial customs, and object assemblages

Grave type	Sub-region	Natural environment	Grave placement	Burial customs	Object assemblages
Megalithic graves	Center (Anning River Valley) + westernmost part of eastern mountains (Puge and Xide)	**Anning River Valley**:	**Anning River Valley**:	– Successive primary interments	– Ceramics used in drinking rituals deposited in grave or pit (*Nachgaben*)
		– Wide river valley	– Clustered	– Rarely cremation	– Very few *Beigaben*
		– Much flat, fertile land	– Mostly on flat ground	– Many instances of reopening	– Set of ornaments and personal tools/weapons on person (*Mitgaben*)
		– Moderate mountain slopes	– Following direction of river/mountain	– Communal consumption of liquids at grave	– In Puge perforated animal teeth
		Puge/Xide:	– A few sloping up hillside	– Ritual landscape	– Double-handled jars
		– Steep mountain slopes	– Visibility important	– Burning in/around grave	
		– Few narrow river valleys		– Only for some adult and senile men and women	
		– Little flat ground			
Earth-pit graves	Center	– Wide river valley	– Away from rivers on mountain slopes	– Single primary interments	**Three traditions**:
		– Much flat, fertile land	– Often adjacent to settlement sites		1. Coarse-ware ceramic assemblages
		– Moderate mountain slopes			2. High-fired black fine ware + metal weapons and ornaments
					3. Ceramic types known from megalithic graves

(continued)

Table 8.1 (continued)

Grave type	Sub-region	Natural environment	Grave placement	Burial customs	Object assemblages
Earth-pit graves	Westernmost part of eastern mountains	– Steep mountain slopes	– Away from rivers on mountain slopes	– Single primary interments	– Undecorated high-fired yellowish fine ware
		– Few narrow river valleys	– Adjacent to settlements		– Perforated animal teeth
		– Little flat ground			
Stone-construction graves	Northeast	– Steep mountain slopes	– Away from rivers on mountain slopes	– Multiple secondary interments	– Limited number of grave goods, wide variety of forms
		– Few narrow river valleys	– Graves often facing river	– Few cases of special body treatment	– Calcinated ropes
		– Little flat ground	– Visibility insured by large cover stones	– Variety of grave forms	– Imported Han objects
		– Not very fertile soil		– Burning in graves	– Larger assemblages in Yuexi with many metal ornaments and weapons
		– Cold winters, mild summers		– Several burial traditions next to each other	
Earth-pit graves with or without stone-construction parts	Southeast	– Wide river valleys	– Away from rivers and fertile agricultural soil	– Single primary interments	– Similar assemblages throughout most graves
		– Very fertile ground and favorable climate	– On mountain slopes	– Flat river pebbles under pelvis/head of deceased	– Mainly ceramics
		– Mountain slopes	– Close to settlements	– Sometimes stone installations in graves	– Few ornaments or weapons/tools
			– Graves oriented facing the river/mountain		

Grave type	Sub-region	Natural environment	Grave placement	Burial customs	Object assemblages
Earth-pit graves with or without stone-construction parts	Northwest; one grave group in the Northeast belongs to same tradition (Huili Guojiabao)	**Northwest**:	– Richest graves in Yanyuan Basin on slightly elevated platforms in river valley	– **Yanyuan**: single or group interments, primary and secondary combined	– Standard set of weapon + a few ornaments
		– Very diverse	– In surrounding mountains graves on slopes high above river valleys	– **Mountains**: mostly single primary interments	– Few rich graves with hair ornaments, many weapons, horse skulls, riding equipment
		– High-altitude basin of Yanyuan with fertile soil and moderate temperatures		– **Yanyuan**: complex rituals including fire, body treatment, interment of animal bones	– few graves with large assemblages; majority with standard set
		– High mountains; narrow river valleys		– Wooden coffins	– Double-handled jars
		– Mountains further north very cold and forbidding			
Earth-pit graves	Southwest	– Wide and fertile river valleys amid steep mountains	– Mostly in river valleys or around Lake Chenghai	– Single primary interments	– Few ceramic vessels
		– Large lake (Lake Chenghai)	– Close to settlements		– Few ornaments
					– Few tools, hardly any weapons
Stone-construction graves	Southwest	– Wide and fertile river valleys amidst steep mountains	– Mostly in river valleys or around Lake Chenghai	– Multiple primary or secondary interments	– Few ceramic vessels
		– Large lake (Lake Chenghai)	– Close to settlements	– Some variety in burial rituals and body treatment	– Few personal ornaments
					– Few tools, hardly any weapons
Urn graves	Southwest	– Wide and fertile river valleys amidst steep mountains	– Mostly in river valleys or around Lake Chenghai	– Cremated remains of children in urns	– 1–4 ceramic vessels
		– Large lake (Lake Chenghai)	– Close to settlements		– Rarely ornaments or a small tools

In most graves, single interments are accompanied by jars and other vessels probably holding food provisions but no further artifacts, showing that the dead were not buried in their usual attire, but either in a plain garments or only wrapped in a piece of cloth. The only exception is Dayangdui whose graves not only contained sets of weapons and tools but also ceramics that were of very different form and quality from those found in the other graves in the Anning River Valley. While the majority of earth-pit graves in the region are dominated by coarse sand-tempered low-fired ceramic vessels without handles or spouts, Dayangdui yielded high-fired black double-handled vessels. The graves at Qimugou, on the other hand, are characterized by an assemblage consisting of goblets and ewers very different in overall from what can be seen at Dayangdui, but instead resembling assemblages known from megalithic graves.

The megalithic graves, as well, exhibit some differentiation, spatially as well as temporarily. Their chronological development seems to have undergone three stages: from relatively small graves only containing very few bodies that might even have been interred at the same time, to small- or medium-sized constructions containing an increasingly large number of interments, and finally to extremely large graves that were not always used for particularly large numbers of interments but for elaborate rituals requiring the entering of the grave. From the spatial point of view, the most common grave types, Types 1 and 2, appear without much variation throughout the Anning River Valley from Mianning in the far north to Miyi in the far south. By contrast, graves located on less easily accessible tributaries or along other river courses further east, such as those in the mountains of Xide and Puge, can differ considerably from the graves in the Anning River Valley, both in grave form and in the style of the objects they contain, even though the range of functional types is the same.

The rugged mountains east and west of the Anning River Valley lack flat open plains in which widely visible megalithic constructions could easily find space, and the area is furthermore not easily accessible from the Anning River Valley. Considering these geomorphological preconditions, it is not surprising that the main type of graves found in the eastern and western part of the research area are small earth-pit graves with varying amounts of stone construction that are located at high altitudes at some distance to the rivers and aligned with the slope of the mountain, with the dead facing the river as a point of reference and geographical feature of cultural importance. In the Southeast, it was even customary to place flat river pebbles under the pelvis or head of the deceased, reaffirming the ritual and thus religious importance of the river. While these graves in the Southeast were all located completely below ground, in the Northeast, stones slabs of sometimes considerable size were used as grave covers. Although they are much smaller than what was usually employed in the construction of megalithic graves, the large, above-ground structure indicates that the grave builders desired a certain degree of visibility. Indeed, the outward similarity with the smaller varieties of stone-construction graves in nearby Puge is remarkable, even though the burial mode and object assemblages are rather different.

Due to the fact that many of the graves in the Northeast occur next to Han brick graves, sometimes even imitating them and/or containing a few objects of Han origin, we may infer that the stone-construction graves in that part of the region are essentially distinct from and later in date than the megalithic graves of the Anning River Valley. Although a number of multiple interments and ash remains have been observed in the Northeast as well, the related behavioral patterns are very different. The graves with multiple interments in the Northeast were only used for one instance of secondary interment involving the careful arrangement of the bones, instead of pushing them to the side as seen in most megalithic graves. The ash remains were furthermore never connected with traces of red-burned soil, indicating that the fire had burned elsewhere and it was only the ash that entered the grave, while in megalithic graves both can occur. A particular local custom not observed anywhere else but in Zhaojue in the heartland of the Northeast is the interment of calcinated ropes occurring in all different kinds of stone constructions and artifacts without discernible regularity. The number of grave goods is very limited, but they are clearly all objects that either belonged to the attire of the dead or were meant for his/her use in the afterlife, such as a small storage vessels, tools, personal ornaments, and, rarely, weapons or special objects such as precious Han bronze vessels.

The funerary-good assemblages in all earth-pit and stone-construction graves in the research area are dominated by medium-sized ceramic vessels that likely contained food offerings and were placed in the head or foot area of the grave. These vessels could be combined with a few personal ornaments (most often bracelets or other rings or beads), weapons or tools worn on the body, sometimes clothing applications or hair decoration, and very rarely special objects, such as metal vessels or drums (Figs. 8.1 and 8.2). Nevertheless, the relative and absolute number of the different kinds of objects, as well as their execution and style, differ considerably from region to region, and sometimes even within the same region, as exemplified by the case of the earth-pit graves in the Anning River Valley. Interestingly, there is usually no apparent correlation between the amount of stone installations

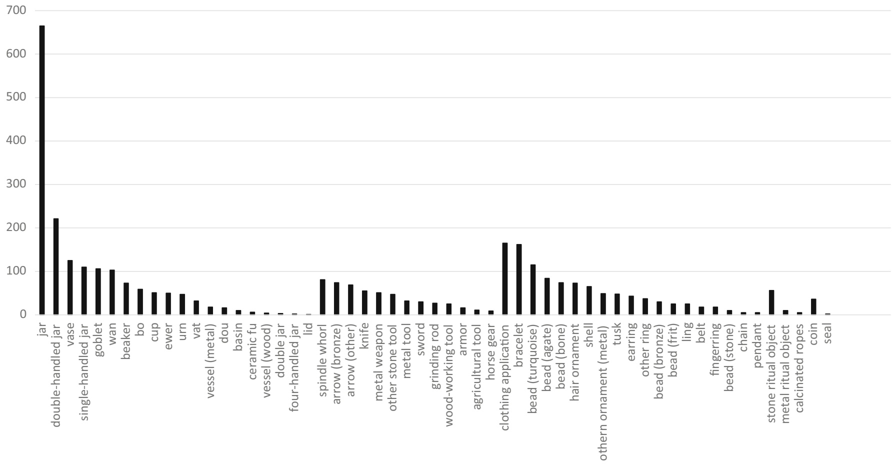

Fig. 8.1 Overall frequency of different object types at grave sites

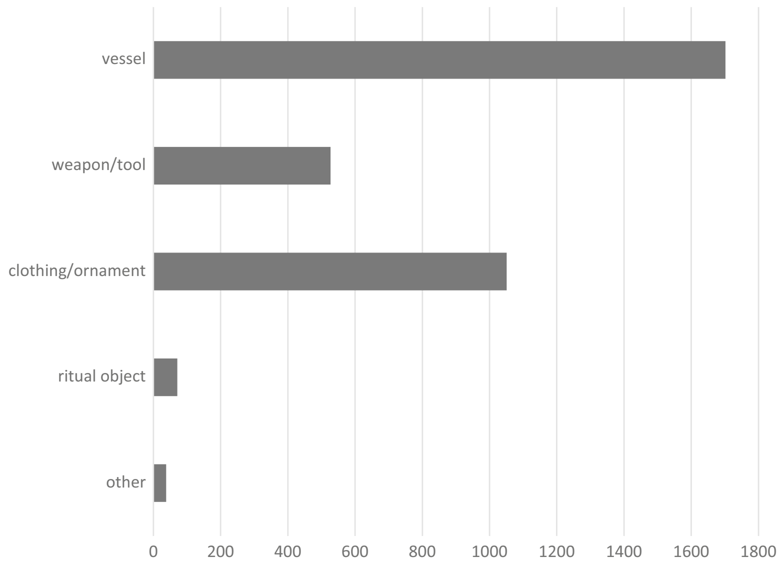

Fig. 8.2 Overall frequency of different object categories at grave sites

in a grave and the amount and kind of objects it contains, showing that the stone constructions had a considerably deeper meaning than just serving as a marker of high status for the deceased. Instead, the form and contents of these tombs are clearly differentiated regionally. While earth-pit graves with and without stone installations and stone-construction graves can appear side by side in the Southeast, Southwest, and even the Northwest, the Northeast is exclusively dominated by small- and medium-sized types of stone-construction graves made of particularly coarse stones rarely or never seen in other regions. Huili and Luquan in the Southeast, on the other hand, are dominated by cist-like constructions made of thin slates next to earth-pit graves, while Yanyuan in the Northwest and Yongsheng in the Southwest feature similar graves but with the addition of wooden coffins in many earth-pit graves and some large special grave constructions involving both wooden coffins and stone-construction parts.

Furthermore, there is some inner-regional diversification and diachronic change: the graves at Huili Fenjiwan in the Southeast, for example, all contain similar sets of plain small storage vessels and river pebbles only rarely accompanied by tools or ornaments. The grave of Huili Leijiashan M1, on the other hand, is dominated by drinking vessels combined with considerable numbers of stone weapons and tools; and the graves at Huili Guojiabao combine few double-handled vessels with a large number of metal weapons and ornaments, exhibiting a repertoire that is otherwise customary in the southern part of the Northwest as well as the Southwest and neighboring part of Yunnan but not in other parts of the research area. These differences between the graves at different sites in Huili reflect changes over time as well as regional developments versus outside influences. Within the Southeast, the relationship of Huili Fenjiwan, Leijiashan, and Guojiabao on the one hand with Huili Xiaoyingpan, Xiaotuanshan, and Luquan Yingpanbao on the other is less clear. The latter sites all hold stone-cist graves containing only very few objects including vases with a particularly wide belly and a narrow opening and chains of cowrie shells, that is, objects that are very similar to what is known from graves in the Northeast, which are otherwise very different in construction and interment practices.

The graves in the Northeast, on the other hand, additionally contain ceramics reminiscent of those from Huili Fenjiwan, as well as Han objects and the calcinated ropes not found anywhere else. If Fenjiwan is indeed of a relatively early date, then the assemblages in the Northeast show a conflation of objects from different traditions and places combined with local burial customs; for instance, Han brick graves and various types of stone-construction graves to occur side by side on the same mountain slopes, albeit in separate groups. This great diversity of grave forms shows the coexistence of different cultural traditions, with various groups conducting different kinds of burial rituals next to each other, while respecting the other's monuments and even adopting some of their customs and objects.

The few earth-pit graves in Puge, an area which is otherwise characterized by megalithic graves, contain assemblages very similar to those further northeast but lack stone-construction parts. These graves thus can be interpreted as the last resting place of people who had relocated from the Northeast to Puge, possibly through marriage or similar bonds, but were buried according to their own customs; nevertheless, these customs did not exert much influence on the local burial tradition as a whole. The same may have happened in Yuexi, likewise located in the Northeast, whose graves display very peculiar assemblages of metal weapons, vessels, and ornaments very different from the local traditions but more closely related to finds in Yanyuan and Yunnan over 150 km further southwest. The distance between Huili in the Southeast and Yanyuan and Ninglang in the Northwest is quite far apart as well but likewise exhibit signs of contact, likely through the valleys of the Jinsha River flowing through both subregions. These similarities, however, are restricted to a few sites and objects (e.g., the metal objects from Huili Guojiabao), while on the whole the burial customs and interment practices are very different both between these two regions and between them and the Anning River Valley. The Northeast, in spite of being particularly rich in metal resources, is characterized by graves with object assemblages that are dominated by ceramics and contain only very few metal ornaments, weapons, and tools.

The dead interred in the megalithic graves are equipped with similarly small sets of weapons and ornaments, mostly sets consisting of one or two bracelets or other rings and/or sometimes a chain of beads or other pendants, occasionally combined with a knife, grinding rod, or other personal tool, but swords or other weapons as well as hair ornaments and clothing application are rare. The assemblages in graves in Yanyuan and northwest Yunnan, on the other hand, are mostly dominated by considerable numbers of metal weapons. Clothing applications and hair decoration are very frequent as well and usually occur together with swords and other weapons, showing that people engaged in combat had elaborate hair-dos and other types of clothing decoration. This applies equally to the few occurrences of swords/daggers in megalithic graves, where they are commonly associated with a small number of clothing items and hair ornaments. The most common object sets in megalithic graves are bronze knives associated with a few rings and bracelets. These minimal sets were probably the standard attire of the majority of the population, but there likely were only very few sword-bearers. Nevertheless, weapons feature prominently in the Northwest, not only in the rich multiple burials of Yanyuan Laolongtou, which are clearly elite burials, but also in smaller graves with a more limited amount of burial goods. This prevalence of weapons shows very clearly that in these areas armed combat—which for a small number of people was combined with horse-riding—constituted a central part of life. Warfare was thus the basis for and expression of identity (likely related to a specific social group) that was translated into the graves. In the Southwest as well as in the Center and the whole eastern part of the research area, by contrast, weapons were apparently of lesser importance and reserved for a very few, possibly as a status symbol.

These differences in livelihood are reflected furthermore in the kind of food and animal offerings observed in the different subregions. While the Anning River Valley and the Southeast seem to have been dominated by nonmeat food items including rice, which could only have been grown by a settled community focusing on agriculture, the graves in Puge yielded large numbers of arrowheads and boar tusks that reflect the importance of hunting, while in Zhaojue, pig teeth in some graves indicate a mixed economy. The graves in Yanyuan, on the other hand, contained only very few ceramic vessels (the probable containers of grain and other staples), but featured instead sheep bones, which might have been the remains of meat offering. The interment, in these graves, of horse skulls together with horse gear shows the importance of these animals, which—one may surmise—were raised mainly as riding animals rather than as suppliers of meat. This fits exceedingly well with the geographic preconditions in the different areas, which would have required different modes of adaptation and additionally led to different social responses and cultural developments, as the difference in grave material clearly shows.

In spite of these differences in subsistence, ways of life, and object assemblages, there are nevertheless a few communalities in interment practices and related rituals between these different areas so far apart from each other. The multiple secondary interments in coarse stone-construction graves in the Northeast have striking parallels in Yongsheng Duizi in the utmost Southwest, both in grave construction and interment form, but at the current stage of publication it is impossible to suggest what these similarities signify. The symbolic interment of smooth stones with the dead was observed both in Huili in the Southeast and Yanyuan in the southern part of the Northwest, but different kinds of stones were used (smooth river pebbles in one case, round stone balls in the other). These seemingly similar customs might therefore have a different origin and meaning. Huili and Yanyuan are furthermore connected by the presence of Shizhaishan-type bronze drums and bells, but deposition practices differ between the two regions. In Yanyuan, drums and bells were found in graves, just as in Yunnan, were the Shizhaishan-type drums originate; in Huili they were deposited in pits.[1] The apparent sharing of object types is therefore

[1] For further details on this deposition practice consult Hein (2013: 492–525).

probably just the outcome of a shared connection with a third place, that is, Shizhaishan in Yunnan, rather than actual similarities in burial rituals or other religious practices.

8.2 The Big Picture: Regional Groups, Geographic Preconditions, and Chronological Developments

After sketching out the relationship between the different types of sites and assemblages and assessing their relative and absolute chronological position, the question arises as to how these developments are related to the actual people inhabiting the research area in the past. As has become clear through previous analyses of the settlement material (Hein 2015) and the present study of the burial material, the research area can be divided into several subregions. These areas exhibit fairly distinct archaeological assemblages, burial patterns, and subsistence systems, indicating that they were likely inhabited by different cultural groups. Thus, the subregions as defined by the archaeological material in part correspond with the five climato-geographic zones defined in Chap. 3 (Fig. 3.6), yet, they are not completely identical either (Table 8.2).

The Anning River Valley forms a culture-geographic unit already from the Neolithic onward, but during the time of the megalithic graves it comes to encompass parts of the westernmost parts of the geographic Northeast. The Center is thus a rather well-defined unit, but it expands over time and becomes overall more homogenous in terms of material culture. The Northeast shows some variety in grave forms and customs but is clearly distinct from the Center or the Southeast so that it stands as a well-defined culture-geographic unit, too, but its western fringes become integrated into the Center. The Southeast with its peculiar local ceramic tradition and limited outside contacts can also be seen as an independent unit defined by both geography and archaeologically.

The western part of the research area is more problematic to divide into discrete units, partially because geographical traits and archaeological remains do not coincide, partially because of a simple lack of field research. Yanyuan is a very special place defined by a few burials rich in weapons and characterized by complicated mortuary customs. The sites in the surrounding mountains of Ninglang show some similarity in grave and object forms but no elaborate burials have been found. Nevertheless, both areas seem to belong to the same culture-geographic unit but its borders are not entirely clear. The finds from Yongsheng are very different in overall assemblage yet show some similarities in certain object types and grave forms, so the divide between Northwest and Southwest is not as clear in archaeological terms as it is geographically. The western part of Panzhihua furthermore seems to be entirely separate from what we see in the neighboring mountains, and the geographic unit of the Southwest thus stands dissolved at least in archaeological terms (Figs. 8.3 and 8.4). Geographically, western Panzhihua could be separate or seen as an extension of the Anning River Valley (similar to Miyi) or of the western area or

Table 8.2 Cultural vs. geographic areas and general cultural developments

Cultural area	Natural environment	Grave types	Cultural particularities and developments
Center			
Anning River Valley (includes northeastern Panzhihua)	– Wide river valley	– Three separate traditions of earth-pit graves with single primary interments	– **Subsistence:** early reliance on agriculture; functional differentiation between sites and local differences in emphasis of domesticated vs wild food sources
	– Much flat, fertile land	– Megalithic graves with multiple primary interments holding only part of the population	– **Social differentiation:** no apparent differentiation between individuals in terms of richness of grave equipment but different grave forms and burial customs for subsets of population
	– Moderate mountain slopes		– **Ceramics:** shared ceramic tradition but different local varieties in north, south, and center; become increasingly similar over time
			– **Early earth-pit graves**, some with foreign ceramics; later earth-pit graves connected with megalithic-grave tradition
			– Spread of **megalithic-grave tradition** from the center from eighth c. BC onward => increasing integration and homogenization of material culture and burial customs throughout Anning River Valley
			– Integration of eastern mountains of Puge and Xide into megalithic sphere but no spread beyond => remains special subregional phenomenon creating a supra-local **identity**
			– **Connections** with northwest Sichuan, esp. during early phase, but limited
Northeast			
Eastern mountains of Puge and Xide	– Steep mountain slopes	– Earth-pit graves with single primary interments	– **Subsistence:** strong reliance on hunting throughout
	– Few narrow river valleys	– Megalithic graves with multiple primary interments	– **Ceramics:** independent ceramic tradition
	– Little flat ground		– Second mil. BC single-interment **earth-pit graves** with local particularities
			– From ca. eighth c. BC local adoption of **megalithic grave** tradition but some differences in form and associated rituals
			– Aspects of local **identity** remain separate from groups in Center: continued reliance on hunting; importance of wild game also in ritual/beliefs

Northeast (without Puge and Xide)	– Steep mountain slopes	– Wide variety of stone-construction grave forms	– **Subsistence**: mixed economy
	– Few narrow river valleys	– Mostly multiple secondary interments	– Early second mil. BC: **small graves** made of thin stone slabs with few ceramics
	– Little flat ground	– Local idiosyncrasies in burial ritual	– First mil. BC to first c. AD: **wide variety of grave forms** next to each other
	– Not very fertile soil		– **Thoroughfare** from Chengdu Plain toward south and west; many foreign groups
	– Cold winters, mild summers		– Several separate small **identity groups** with different burial customs living next to each other, respecting each other's monuments, adopting some elements from each other
Southeast			
Southeast (includes southern Panzhihua)	– Wide river valleys	– Earth-pit graves with or without stone-construction parts	– **Subsistence**: mixed economy throughout
	– Very fertile ground and favorable climate	– Mostly single primary interments	– **Connections**: largely independent local development; only from first mil. BC onward more outside connections but limited
	– Mountain slopes	– Not much differentiation in burials	– Late third mil. BC: hunter-gatherer groups connected with northern Yunnan
		– Large cemeteries	– Early second mil. first agriculturalists; **earth-pit graves** with ceramics
		– Mostly ceramics, little metal	– No apparent **social differentiation** in burials
			– Hardly any metal in graves but local **metal production** (for trade?)
			– Few graves with Yanyuan-equipment => traders?

(continued)

Table 8.2 (continued)

Cultural area	Natural environment	Grave types	Cultural particularities and developments
Northwest			
Yanyuan Basin	– High-altitude basin	– Earth-pit graves with or without stone-construction parts	– **Subsistence:** pastoral economy?
	– Ample flat ground, fertile soil, river system	– Complex burial rituals	– Strong **differentiation** in richness of burial goods and rituals
	– Moderate temperatures	– Single and multiple interments; primary and secondary	– Emphasis on combat and horse-riding
		– Wide variety of metal ornaments and weapons	– **Connections:** closely connected with Ninglang; wide variety of outside contacts; strong connection to northern steppe
			– Problem: known material mostly second half first mil. BC graves
Mountains of Ninglang and Yanyuan	– High, steep mountains	– Earth-pit graves with single primary interments and modest equipment	– **Subsistence:** pastoral economy?
	– Narrow river valleys		– Emphasis on combat and horse-riding
			– **Connections:** closely connected with Yanyuan Basin but poorly equipped graves on steep slopes instead of rich graves on flat ground => subgroup pushed to the margins?
Muli	– Very high, steep, and cold mountains	– Unclear	– 4th–1st c. BC: settlement sites with stone buildings
	– Narrow river valleys		– **Connection:** some connection with developments in Tibet, northwest Sichuan, northwest Yunnan
	– Hardly any place suitable for agriculture		

Southwest			
Yongsheng	– Wide and fertile river valleys amid steep mountains	– Earth-pit graves with single primary interments (throughout)	– **Subsistence:** emphasis on agriculture with some hunting/gathering throughout
	– Large lake (Lake Chenghai)	– Stone-construction graves with multiple primary or secondary interments and some variety in burial rituals and body treatment (throughout)	– **Ceramics:** similarities with both Yanyuan and middle/southern Yunnan but also local particularities
		– Cremated remains of children in urn burials (late first mil. BC)	– No apparent **social differentiation** in burials
			– Settlement material from second mil. BC onward
			– From mid second mil. BC: single-interment earth-pit graves
			– Late first mil. BC: wide variety in burial forms
			– **Connected** with developments in other parts of Yunnan
Western Panzhihua	– Mountainous with wide variety of elevations but favorable climate	– Stone-construction graves	– Very little material
		– Few double-handled vessels	– Resembles finds from Upper Min River (Northwest Sichuan)

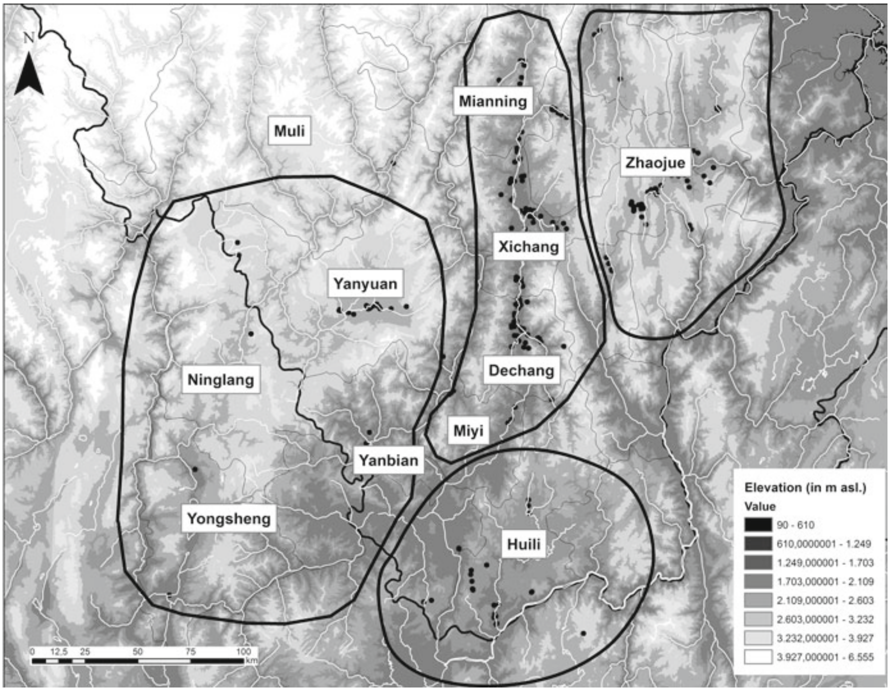

Fig. 8.3 Main subregions of the research area—reconsidered I

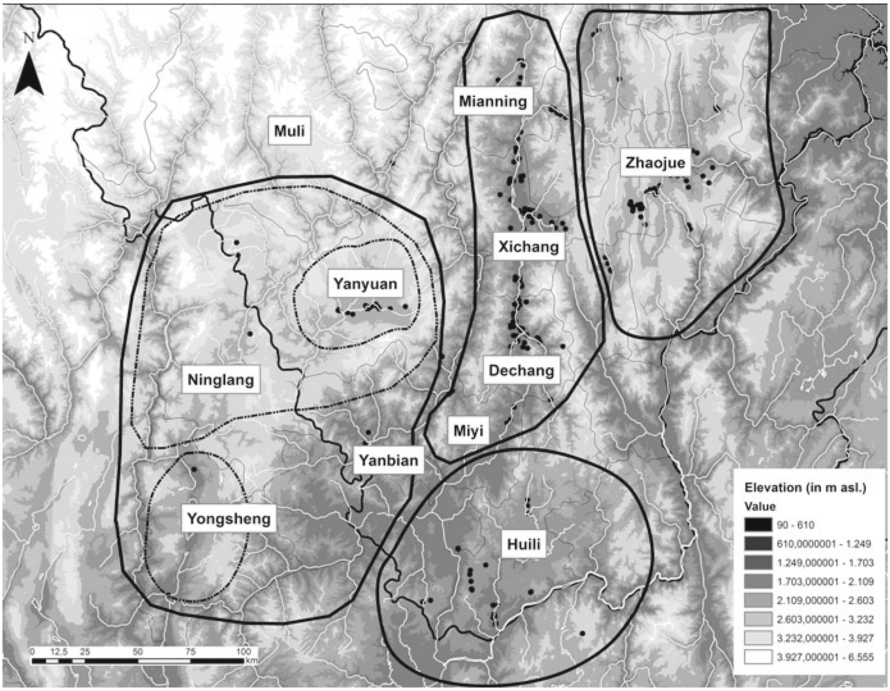

Fig. 8.4 Main subregions of the research area—reconsidered II

even the Southeast, but archaeologically the case remains unclear until further field research supplies new material evidence.

Overall, there is thus a close connection between cultural developments and natural surroundings, but geographic and cultural entities cannot overlap completely as they are very different in nature. While geographic entities naturally stay constant in their extent, culture regions are not static in their expansion and character, nor are they isolated from each other, but they are all part of various contact networks. These networks expand, contract, and change over time, so do the boundaries and particularities of the different culture regions and the groups that characterize them. Each of the culture-geographic subregions furthermore shows some internal variation, both spatial and chronological. Additionally, there is some overlap between some of them at certain times that will be discussed in greater detail later.

8.2.1 The Anning River Valley and Its Inhabitants

The major developments in the Anning River Valley seem to originate from its central area during the mid-third millennium BC. At that time, communities inhabiting settlements such as those of Xichang Henglanshan, Ma'anshan, Qimugou, Yingpanshan, and Lizhou shared the same ceramic forms, decoration, and production techniques, indicating that they shared similar cultural tradition and thus identified themselves as part of the same larger group (Fig. 8.5). The slight variation in ceramic style between Henglanshan, Early Lizhou, and the "triad" of Ma'anshan, Qimugou Phase I, and Lower Yingpanshan, is chronological in nature. The difference in stone tool assemblage, however, also shows differences in subsistence practices (mixed economy at Henglanshan, Ma'anshan, and Qimugou; extensive agriculture at Lizhou; fishing and gathering at Yingpanshan). As discussed extensively elsewhere (Hein 2014a, 2015), these sites may have been used subsequently by the same group or simultaneously by different communities exchanging food supplies won through different modes of economic practice.

The southern part of the Anning River Valley around Dechang was at first inhabited by a preagricultural local group that was culturally different from the people who lived in the Xichang area. During the following centuries, an increasingly close contact between the two areas ensued. The communities in Dechang came to adopt most of the ceramic assemblages that they knew from their neighbors, but they maintained the mixed form of economy most suitable to their natural surroundings. It is probable that people from Xichang even relocated to Dechang—be it through marriage arrangements or for other reasons—bringing with them a particular tradition of pottery making, and finally even a peculiar burial practice.

A similar development seems to have taken place in Mianning in the northern part of the Anning River Valley; however, the differences in ceramic assemblage between Xichang and Mianning are considerable, and the megalithic-grave tradition reaches Mianning only during Phase III accompanied by a drastic change in ceramic forms and decoration motifs. At this point, all local particularities seem to be lost.

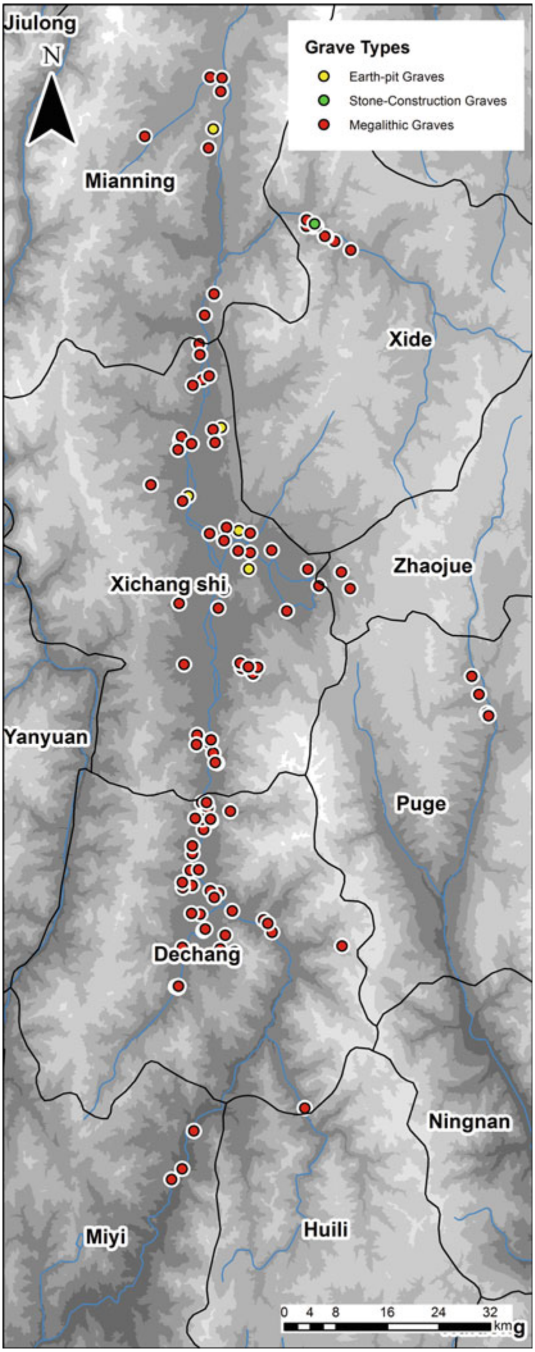

Fig. 8.5 Distribution of graves by grave types in the Anning River Valley

Mianning thus changed from a place inhabited by people identifying themselves with a local culture to a place belonging to the region occupied by megalithic-grave builders; this change took place in a process of complete replacement rather than slow acculturation as seen in Dechang.

For both the southern and the northern Anning River Valley, it remains unclear how the local communities disposed of their dead before megalithic graves became customary. In the central Anning River Valley around Xichang, single primary interments in earth-pit graves with food offerings in ceramic vessels seem to have been the norm. Of particular interest are the earth-pit graves from the early phase of Xichang Dayangdui. The ceramic quality (high-fired black brown fine ware with black slip and no further decoration) as well as the forms (vessels with high collars and long band handles, stemmed bowls) are strikingly different from the typical coarse low-fired sand-tempered reddish material and the flat-bottomed bowl, jar, vase, and ewer forms otherwise common in the early sites of the Anning River Valley. Instead, the assemblage of the early Dayangdui graves so strongly resembles objects known from Qijia culture context in Gansu that it seems highly probable that these graves were built by a foreign population that had immigrated from the North. The double-handled vessels at Lizhou and Mimilang show some resemblance to material from Gansu as well, but overall local particularities prevail, showing that these sites were inhabited by local groups that might have been in contact with areas in the North.

The lack of clarity on the exact number and form of objects found in the graves at Dayangdui and Lizhou makes it difficult to infer the social differences between the occupants of the different tombs. Some of the graves at Lizhou seem to have yielded significantly larger ceramic assemblages than others, indicating possible social differentiation, but grave form and size are similar throughout. The graves at Dayangdui all had a similar form and orientation and contained 1–6 ceramic vessels each as well as some stone tools and beads, giving the appearance of equality at least in death. Only two tombs were slightly different from the others, as they contained one bronze sword or dagger each, indicating a different and possibly higher status of the person interred therein. As there is no evidence for early metallurgy in the Anning River Valley before Dayangdui, and metal objects only become common in megalithic graves, it is likely that this new technology was introduced through contact with or relocation of Qijia-related groups from Gansu.

The middle and late Dayangdui assemblages do not contain any metal objects, however, and they show a mixture of both early Dayangdui and local Neolithic traits that indicate some form of acculturation of the group of immigrants observed in early Dayangdui. As no similar sites of clear foreign origin have been identified in the Anning River Valley, it is likely that migration of whole groups from the North occurred only rarely.

The early graves at Dayangdui are superimposed by ceramic deposits in the middle phase, which were in turn superimposed by early megalithic graves. Ritual deposits of ceramics are not known from Qijia culture context and they are rare in the Anning River Valley as well. The origin and meaning of this tradition are therefore unclear.[2] The ceramics of middle Dayangdui indicate a mixed population of acculturated foreign and local people to whom the place had a deep cultural or religious meaning.

Graves with stone-construction parts are common throughout Southwest China, but megalithic graves seem to be unique to the Anning River Valley. The ceramics associated with these graves indicate a local origin of this burial tradition in the Xichang area. This impression is supported by the fact that all early megalithic graves (Dayangdui DM1 and DM2, Tianwangshan M10, and Guanshan M1) are located in Xichang, while the megalithic graves in other regions such as Dechang, Mianning, Puge, and Xide all date to Phase IIa at the earliest. Why this kind of burial mode arose is uncertain, but its overall development and spread is relatively clear: it started with small constructions used for a single instance of interment of several people, possibly in a secondary mode of burial. During or after the burial, communal drinking rituals took place which seem to have become more extensive over time, as the large number of drinking vessels both in later graves and related ceramic pits shows.

The mode of interment changed over time as well, most substantially from Phase I to Phase II. At first the graves are still of medium size, but increasingly large numbers of people are interred in multiple instances of primary inhumations and under increasingly elaborate rituals involving fire, and especially in Phase III also the reentering of the grave and/or the rearrangement of the bones of previous interments. Some of the later graves of Phase III and IV are of considerable size and high enough to stand up in, but the number of skeletons in them is comparatively small. The reason for building increasingly large graves was therefore not to inter more people but to conduct increasingly extensive rituals inside the megalithic structures.

The considerable number of highly visible large stone constructions dotting the Anning River Valley and especially Xichang, combined with the fact that these graves usually occur in more or less widely spaced groups, show the emergence of a ritual landscape that was probably traversed in various kinds of processions involving more than one grave. The orientation of the graves parallel or at a right angle to geographic markers such as rivers and mountains furthermore indicates that nature was involved in these rituals as well. Such extensive and visually impressive rituals can be expected to have a strong binding power for the communities that conduct them; they thus also might have helped to incorporate groups that before stood in loose contact with those in the Xichang area. This applies not only to Dechang and Mianning, which are still located within the Anning River Valley, but also to the remote mountains of Xide and Puge, whose inhabitants belonged to clearly culturally distinct groups.

[2] The ceramic deposits of middle Dayangdui are different from those at upper Yingpanshan and Qimugou, both in nature and in date. The ceramic pits at Dayangdui did not contain any human bones or ash and were paired with silt pits, indicating a ritual nature different from actual burials. The pits at the other two sites, on the other hand, might have been cremation burials related to megalithic graves. Although somewhat similar in object assemblage and mode of deposit, the two kinds of pits therefore probably reflect two unrelated traditions. For further details consult Hein (2013: 492–525).

Not much is known about the archaeological material of Xide predating the megalithic graves, but the few known early settlement remains are different from assemblages in Xichang, showing some vague resemblance only to material from Mianning Gaopo (e.g., lug handles, small-footed open bowls). The early settlement material from Puge is more ample and shows distinct local particularities in ceramic quality and form, as well as in stone tool assemblages. The strong reliance on hunting and to a lesser extent fishing reflected in the local tool assemblages is natural for the forested mountains characterizing Puge to this day. The ceramics furthermore show that the difference between the people living in Puge and those inhabiting the Anning River Valley in prehistoric times was not only one of subsistence and environment but also of cultural identity.

The only early settlement site in Xichang whose ceramics show clear resemblance with material from Puge combined with a tool assemblage indicating an agricultural mode of living, is Yangjiashan. As argued in Chap. 7.3.2.1, Yangjiashan is therefore probably the settlement of a community from Puge that moved to the Qionghai, taking advantage of the fertile soil and the mild climate. The quality and execution of the ceramic assemblage at Yangjiashan indicates that the producers were from Puge, but adopted local forms as well. Even when the custom of erecting megalithic graves reached Puge, the mode of subsistence did not change, and the grave forms remained small and too low to be completely reentered to conduct complex rituals as seen in the Anning River Valley. The ceramics and personal ornaments retrieved from the megalithic graves at Puge Xiaoxingchang nevertheless do not differ much from what we see in the graves in Dechang, Miyi, or Xichang; only the ornaments made of perforated bovine teeth and the regular occurrence of arrowheads in all graves in Puge are a local idiosyncrasy.

This particular combination of similarities and differences indicates that both Xide and Puge were inhabited by local groups that were culturally different from and at first hardly in contact with people in the Anning River Valley. Only later did the groups inhabiting the mountains become part of the powerful tradition of megalithic grave burials, adopting even ceramics and personal ornaments from groups in Xichang but preserving particularities of their own. Perforated bovine teeth (probably talismans rather than ornaments) and arrowheads, for example, show not only the continued importance of hunting as a subsistence practice, but also its significance for the self-definition and possibly the spiritual beliefs of the people in Puge.

In spite of all similarities, the differences in burial ritual between Puge and Xichang are a rather clear sign that no change or mixing of populations took place. Instead, it is more likely that local people adopted some aspects of a foreign ritual practices and even foreign objects of daily use without necessarily abandoning their own beliefs, let alone their sense of a separate group identity. Nevertheless, sharing at least part of the burial customs and associated rituals—powerful rituals requiring much physical labor and organization (i.e., for building the graves) and thus doubly reaffirming social bonds—must have created a supra-local sense of community throughout the Anning River Valley and neighboring regions, leading to the emergence of a new kind of identity that transcended the previous cultural and local group boundaries without necessarily destroying them.

But what about social, gender, and personal identities in such communal graves? The earliest megalithic graves contain only a few ceramic vessels, but in all later phases the deceased seem to have been buried with a small number of personal ornaments, tools, and more rarely weapons on their body, some of them with signs of usage, indicating that the interred wore their usual attire that they had worn in life. They were thus equipped with *Mitgaben*, *Beigaben* meant to be used by the deceased in afterlife, on the other hand, seem to have been uncommon. Most ceramics had been employed in communal drinking, entering the grave as *Nachgaben*. It therefore seems that the burying community was the focus of the burial rituals more so than the deceased. Nevertheless, as no reoccurring ornament or tool sets could be identified, it seems that there was a certain freedom for expression of individuality in personal attire and spontaneous gifts.

It is furthermore noteworthy that men and women were buried together and that even individuals who possibly had a special function or special powers (e.g., people wearing typical "shaman" bells on their belt or people wearing swords) were buried with everybody else. Only a small number of individuals seem to have been cremated—be it because of their special status, be it a disease, or other special circumstance that required such treatment. It is possible that different social groups or clans/families might have been buried in separate graves, which would explain the divergence in assemblages between neighboring megalithic structures; however, the limited amount of objects in all graves speaks against a discrepancy in wealth between the different groups buried separately. These graves may thus differ somewhat in date or they may hold groups that were socially or culturally different without these subtle differences being reflected clearly in the archaeological record.

As far as can be judged from the few graves containing sufficiently preserved bone material, all people interred therein were of an advanced age. At least in the Anning River Valley, where these observations were made, it is therefore likely that only men and women who had reached a certain age and possibly a certain status were buried in megalithic graves. As ethnographic and archaeological examples worldwide show, cremation burials or other form of separate treatment for children is common, largely because infants below a certain age were not seen as full members of society, yet (e.g., Goody 1962). The urn pits at Yingpanshan and Qimugou might thus have been child burials conducted by the same people who built the megalithic graves. The assemblages of Xichang Qimugou M1 and M2, which are so exceedingly like those in megalithic graves of Phase IIa, and the ceramic pit of Maliucun, show that part of the population was apparently buried in earth-pit graves; however, who was buried in which fashion and for which reasons is currently unclear.

As far as daily life and mode of subsistence are concerned, the tool assemblages from megalithic graves and related settlement sites in the Anning River Valley show an agricultural and probably settled mode of living involving the planting of rice and other cereals, often supplemented by hunting, and in some places fishing (Hein forthcoming). Only the sites in Puge indicate a continued primary reliance on hunting. Metal seems to have mainly been used for personal ornaments and only secondarily weapons or tools. While personal knives (functioning as tools rather than weapons) and stone grinding rollers seem to have been of some importance, swords are rare and mostly made of iron, i.e., they are of late date. It therefore seems that swords and possibly daggers were signs of a special status of a few, but armed combat was not a central part of life, or at least in the expression of communal and individual identities as expressed in the grave.

So far, no traces of local metal working have been found, but the coarse quality and considerable number of metal ornaments indicate that these items were produced locally. Many people wore metal bracelets, rings, and stone beads. In later graves, metal hair ornaments and clothing applications seem to have become popular both in the Anning River Valley and even more so in the mountains of Puge and Xide. Some ornaments and tools show signs of wear, indicating that they were worn in life as well as in death. As all of these ornaments were spread throughout communal graves and could not be assigned to separate individuals, it is unclear if they were an expression of a specific form of personal identity or social status, or if they had some other function. It is noteworthy, however, that clothing ornaments such as the buttons and belt hooks are not unique to megalithic graves or the Anning River Valley, but commonly occur in many different kinds of graves throughout Southwest China, and in association with different kinds of ceramics.[3] At least within megalithic graves, these objects were therefore probably not an expression of cultural identity but either followed a supra-regional trend or were precious imported objects. The same applies to the inclusion of coins and other Han objects in megalithic graves of Phase IV.

Elaborate hair combs, on the other hand, seem to be a unique feature of megalithic graves of Phase III and IV and might therefore be a promising indicator of cultural and—given the considerable difference in execution of different types—even social identity. Hairdos can be important markers of identity as both ethnographic examples and historical texts and depictions show. The small bronze figurines on bronze cowrie containers from Dian sites in Yunnan all show different hairdos, which Feng Hanji (1961) has interpreted as expressions of different tribal identities. Hair ornaments thus deserve particular attention in future studies.

8.2.2 The Remote Mountains of the Northeast: A Place in Between

Although technically located in the northeastern mountains, the developments in Puge and Xide with their more moderate climate and less forbidding elevation have a stronger connection to the Anning River Valley than to the remote and cold mountains of Zhaojue, Meigu, or Yuexi (Fig. 8.6). Even today, the Daliangshan area, i.e., the "Great Cool Mountains" of the Northeast, remains hardly accessible and is characterized by infertile soil, cold winters, and not much natural resources. In the past,

[3] Apart from a number of examples in the research area (Huili Guojiabao M1 and various graves in Yanyuan), similar objects have been reported from stone-construction and earth-pit graves in northern Yunnan, in the Upper Min River Valley, and in Ya'an Shimian (Sichuansheng et al. 2006).

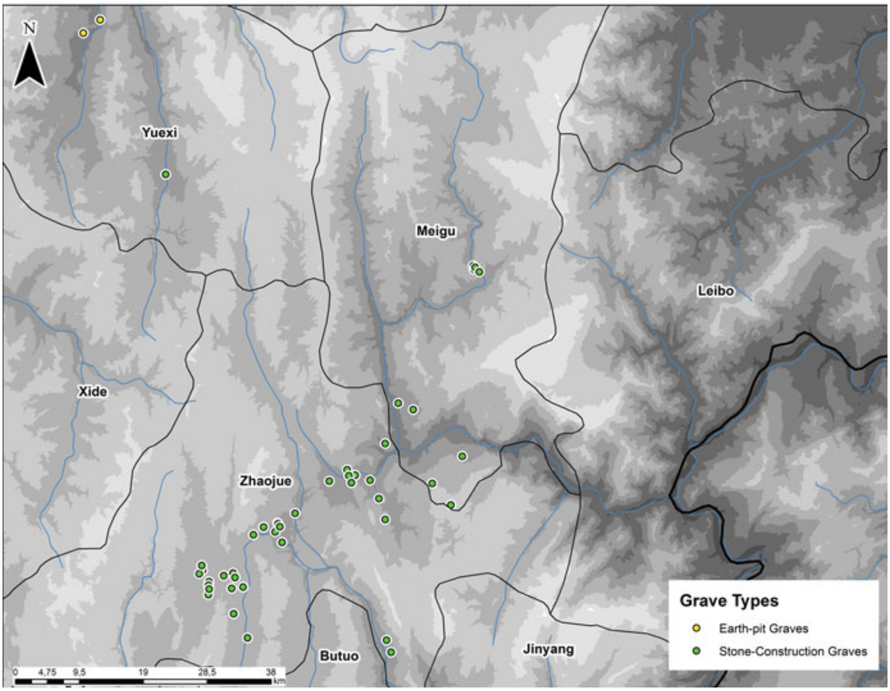

Fig. 8.6 Distribution of graves by grave type in the Northeast

the mountains were densely forested, making the Northeast a more agreeable but nevertheless harsh place to live. The few known settlement remains and the small number of tools found in graves show that hunting was an important subsistence practice, but woodworking tools and teeth of domesticated pigs found in graves show that mixed forms of economy were most common.

What is most striking about the graves in Zhaojue and Meigu is the great diversity of grave forms that occur in close vicinity to each other, with assemblages combining objects from different traditions. The small stone-construction graves of Pusu Bohuang contained only a few stout jars and narrow-necked vases strongly resembling objects from stone-construction graves at Huili Xiaotuanshan and Xiaoyingpan, and Luquan Yingpanbao. The graves of Eba Buji on the other side of the hill were irregular constructions of large stone slabs yielding imported Han bronze vessels and local personal ornaments, and both kinds of grave contain calcinated ropes, a particular local custom. Other unexcavated graves on the same hill comprise Han cliff tombs and various other kinds of small stone constructions.

A similar situation can be seen in Zhaojue Fuchengqu/Erba Keku: small stone-cists made of thin slates and containing ceramics and stone tools remarkably similar to finds from Puge Wadaluo were observed in the immediate vicinity of graves made of four thick slates containing similar ceramics and stone tools but combined with metal vessels. In close proximity to all of these graves, Han brick graves and other kinds of stone-construction graves have been observed that so far have not been excavated. Particularly remarkable is the site of Chike Boxixian, whose brick-wall-like construction clearly imitates Han graves, and which contain unique ornaments of semiprecious stone and metal as well as typical Han ceramics and Han coins.

The usual burial mode seems to have been secondary burial of one or several people during a single instance of interment; this mode of interment occurs through all types of grave construction except for the Han brick graves, just as the custom of interring calcinated ropes and beads and pendants made of nephrite, turquoise, bone, or shell. In spite of these noticeable continuities visible in some graves, the slight spatial separation between graves of different construction indicates that they were built for and by people belonging to different groups that were probably culturally defined.

It is interesting to note that these groups of different origins conducted different kinds of burial rituals next to each other, apparently respecting each other's monuments and even adopting part of each other's burial customs and objects. In this meeting place of different groups, cultural and other forms of identity (or at least their expression in the choice of grave from, burial mode, and object assemblage) thus seem to have been extremely fluid. At the current state of research it would be unwise to jump to any conclusions on the precise identity of the buried or the burying group for any of these graves, but the material from Zhaojue indicates that the idea of border regions as places of heightened differentiation between groups—as suggested by Frederik Barth (1969)—might require some rethinking if not revision.[4] Conversely, at least before the large-scale encroachment of the Han during late Eastern Han, the Northeast is not actually a border region, in the sense of a border area of a state, but simply a meeting place of different groups none of which was more powerful than the other.

The nature of the groups who may have lived in Zhaojue before the onset of considerable outside contact is unknown. Why people may have moved into or through Zhaojue is not entirely clear either. At least in the case of Puge, contact with Zhaojue was clearly not a one-way street: the assemblages of the three earth-pit graves at Puge Wadaluo consist of bone and shell ornaments largely identical with those known from Zhaojue. These objects were furthermore found in a grave that deviated from the interment practices otherwise common in Puge, indicating that the people buried there might have relocated from Zhaojue. Considering how close Puge and Zhaojue are to each other, marriage or other kinds of social bonds between the people inhabiting these two areas would not be surprising.

The multiple secondary interments in coarse stone-construction graves in Zhaojue have striking parallels in Yongsheng Duizi, both in grave construction and interment form, but considering the equally strong differences in object assemblages and the considerable distance between these two places, it is likely that what we see are structural similarities rather than actual connections. The relationship

[4] Geoff Emberling (1997) has made some remarks to that extent as well, but studies on concrete archaeological examples are still missing.

between Zhaojue and Huili is much closer, as shown by the strong resemblance between the ceramics from some graves in Zhaojue with objects from Huili Fenjiwan and Xiaoyingpan. The associated burial modes, however, differ greatly between the two regions, as do most of the associated objects. If Zhaojue did indeed act mainly as a thoroughfare, the inclusion of objects from Huili in graves in Zhaojue is not necessarily a sign that these graves were built to bury foreigners, but may just show contact with foreign groups. The reasons for and circumstances of this contact, however, are as of yet unclear.

The sizable number of Han objects in later graves in Zhaojue and the appearance of Han brick graves and stone-construction graves imitating them are considerably easier to explain. The Han were trying to find a way into and through the Liangshan region toward Yunnan, and they seem to have settled the area in increasingly large groups. Considering the function of Han bronze vessels as precious prestige goods within local non-Han graves (the wrapping of such vessels in fine cloth says as much) and the imitation of brick constructions in some graves that otherwise follow local interment practices, indicate that the Han enjoyed a relatively high status, making their customs and objects worthy of imitation and special treatment. The assessment of the exact relations between the Han and other groups living in the Northeast during the Western and Eastern Han, however, would require a separate study considering later Han material not included in this study.

At the current state of research it is only clear that Zhaojue served as a gateway into the Liangshan area and as a transit region for people moving from the Liangshan to the North and East. Some people in transit may have stayed, leading to a highly diverse population that seems to have been comfortable mixing different burial practices and object forms or at least letting them exist side by side. Nevertheless, certain idiosyncrasies of burial ritual are likely of local origin, such as the interment of calcinated ropes, multiple secondary interments, and the placement of graves on steep slopes, orienting them toward the river as a point of reference and cultural/ritual importance. These customs may be holdovers from an older local cultural group that absorbed both foreign people and customs, but preserved certain beliefs and traditions that were essential to their identity as a group and their relationship with the environment.

The situation in Yuexi is less clear, as hardly any archaeological work has been conducted there so far. Surveys have shown that different kinds of stone-construction graves, megalithic graves, and earth-pit graves with assemblages nearly identical to those in stone-cist graves on the Upper Min River and objects showing Han connections occur next to each other. Similar to Zhaojue, Yuexi thus seems to have been an intermediate area where people, objects, and traditions from different places met in not yet well-understood ways. Being located in between the Anning River Valley, the Sichuan Plain, and Huili, the Northeast is a natural transit region. At the same time, the marginal environment may have led to particular local developments different from what is seen in neighboring areas. To understand this network of different connections and local particularities, extensive fieldwork is needed.

8.2.3 The Fertile Valleys on the Other Side of the Mountains: The Southeast

Being separated from the Anning River Valley by high mountains, the Southeast underwent a developmental sequence of its own that is different from what we see either of the two subregions discussed so far (Fig. 8.7). The assemblages of the cave and open-air sites found in the mountains of Huili and Panzhihua reflect a hunter-gatherer lifestyle in seasonal or hunting camps. Hunting sites may have existed alongside more permanent settlements producing ceramics and practicing a certain amount of agriculture (Hein forthcoming). None of these sites has been sufficiently excavated or published to make any cultural assignations. Only the site of Huili Houzidong is relatively well known. Both ceramics and most of the stone tools from Houzidong resemble material from other early settlement sites in Huili but differs markedly from other settlement sites throughout the research area. It is therefore likely that these sites were inhabited by communities that identified themselves with the same cultural group of local origin.

The ceramic material and stone tools from the settlement and stone-construction grave site of Huili Guantianshan/Yingpanshan probably belong to the same local tradition but dates somewhat later. In construction, the graves furthermore resemble

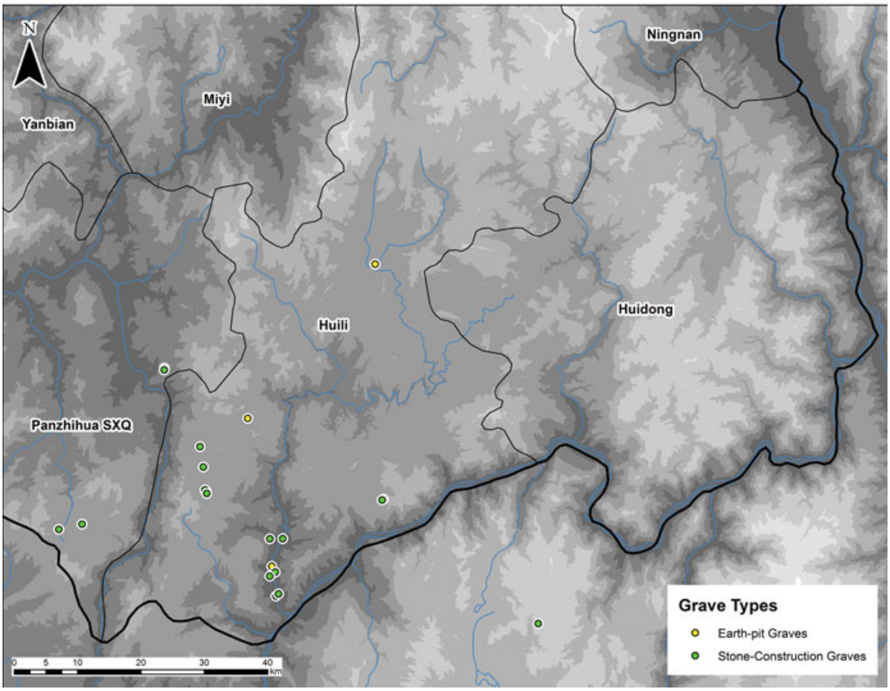

Fig. 8.7 Distribution of graves by grave type in the Southeast

the stone-construction graves of Huili Xiaotuanshan, Xiaoyingpan, and Luquan Yingpanbao. The ceramics found at the latter three sites are similar to objects from Chuxiong Yongdingzhen in northeast Yunnan, while at the same time bearing some resemblance to objects from the earth-pit graves at Huili Fenjiwan. The burying communities of Xiaotuanshan, Xiaoyingpan, and Yingpanbao therefore likely belonged to an early local cultural group that spanned both Huili and northeast Yunnan, and which had emerged from the group to which the communities of Huili Houzidong, Hewanwan, Liantang, Guantianshan/Yingpanshan, Tangjiaba, and Tianbacun belonged.

Nevertheless, the graves at Huili Xiaoyingpan and Luquan Yingpanbao show some idiosyncrasies in burial practice that were seemingly not shared by the inhabitants of other sites in the research area or neighboring regions: all graves contained a single skeleton in extended-supine position, but in a few cases the head had been placed in the stomach area and in one case the skull was missing completely. As these graves are otherwise identical in form and content to the other graves surrounding them, it is likely that the special body treatment was connected to the circumstances of the death of the buried individuals and/or their behavior [e.g., committing a sin such as suicide, murder, or witchcraft as seen with the LaDooga (Goody 1962)] rather than with their social standing or cultural affiliation.

The ceramic forms and decoration patterns from later settlement material from Huili Dongzui remind somewhat of Dechang Wangjiaping but even more so of various sites in Yunnan. The ceramic quality (sand-tempered, low-fired, yellowish material) is largely identical with what is known from most other sites in Huili, but the forms and decoration motives are remarkably different from what is common at either earlier or later sites in Huili proper. This indicates that Dongzui might have been home to a nonlocal population coming from Yunnan. This suggestion is supported by the fact that the ceramics from later sites in Huili (i.e., Fenjiwan, Washitian, and Leijiashan) are largely different from the Dongzui assemblage.

What happened to the local population during this time period is unclear, but they or at least their ceramic traditions seem to have remained as the finds from the graves of Fenjiwan show. The vessel forms without handles from Fenjiwan strongly resemble ceramics from earlier sites in Huili, but some elements are of distinct Xichang Lizhou origin, such as the footed bowls, goblets, and the fish-bone and net-pattern bands decorating some vessel bodies. The ceramics found in the single grave at Huili Leijiashan are similar to what was found at Fenjiwan, even though the Fenjiwan vessels are only sparingly decorated and of low-fired sand-tempered material, while the Leijiashan ceramics are of high-fired fine ware with surface-covering decoration. The main difference between these two sites therefore lies in date, while the cultural affiliation is likely the same. The assemblage from the grave site of Huili Miaozi Laobao is nearly identical with those from Leijiashan in spite of the distance of nearly 40 km between them, but both differ greatly from what we see at Huili Guojiabao, a grave site located adjacent to Miaozi Laobao.

The earth-pit and stone-construction graves of Huili Guojiabao are characterized by an assemblage consisting of ceramic vessels resembling objects from Leijiashan combined with a considerable number of bronze weapons, ornaments, and horse gear, and double-handled jars largely identical with objects from Yanyuan. As discussed in Chap. 7, various personal ornaments and weapons show close resemblance to objects found in stone-cist graves on the Upper Min River but also earth-pit graves Yunnan. Buttons and belt hooks similar to those at Guojiabao have been recovered from megalithic graves in the Anning River Valley as well.

Apart from Guojiabao, both grave and settlement assemblages observed in Huili are usually poor in metal objects. A few of the later graves at Fenjiwan contain a few simple bracelets, *yue* axes, and one possibly imported spearhead, while otherwise ceramic spindle whorls and stone arrowheads are the most common tools found both in graves and settlement sites. Huili is remarkably rich in metal resources, and at least simple weapons and tools such as metal axes, spearheads, and arrowheads were clearly produced in Huili itself, as shown by the molds from Washitian. Complex weapons and ornaments such as those seen at Guojiabao, on the other hand, were not local products, and it seems generally not to have been customary to deposit large amounts of metal objects in graves.

It therefore seems likely that the large cemetery and settlement site of Fenjiwan as well as the settlement and smelting site of Washitian, which yielded ceramics and metal and stone tools similar to those found in late Fenjiwan graves, were inhabited by communities of local origin that saw themselves as belonging to the same culture group, a group probably relating back to those people living at Huili Hewanwan, Guantianshan, and the other early sites described earlier. Although during this earlier phase contacts with northern Yunnan seem to have been most common, during the time of Fenjiwan contacts with the Anning River Valley seem to have been close, albeit not so close that the custom of erecting megalithic burials would have reached Huili. It is curious that megalithic graves were erected at the southernmost tip of the Anning River Valley in Miyi but not Huili. After all, Huili is located only about 15–20 km further south, and earlier ceramic traditions from the Anning River Valley clearly found their reflection in Huili, showing that there was a connection between the two subregions.

The answer probably lies both in geographic preconditions and differences in the mode of transmission of ritual customs and ceramic forms. Even today, the road between Huili and the Anning River Valley or vice versa is cumbersome to take (particularly from Huili into the Anning River Valley as it means a steep ascent). Furthermore, the Anning River Valley does not have much to offer in terms of natural resources to people from lush and fertile Huili with its rich metal deposits. The road more often might have been traveled in the opposite direction. The transmission of customs requiring a considerable communal effort such as the building of megalithic graves for use in special rituals is not likely to travel by word of mouth; instead, it requires either the migration of a whole group from the place of origin of this custom to the new "destination," or the personal and preferably frequent encounter with those rituals by considerable parts of the population at said "destination" (in this case people from Huili). Otherwise they would hardly choose to implement such complex and cumbersome practices.

In other words, the custom of building megalithic graves and conducting complex rituals in and around them likely was taken up by various groups in the Anning

River Valley and neighboring regions who were in frequent contact with those people who first built megalithic graves. The personal experience of seeing these impressive monuments and witnessing and probably participating in the rituals surrounding them led to the adoption of this practice throughout all of the Anning River Valley and even Puge and Xide. Groups living further east, west, and south, who would rarely venture into the Anning River Valley, may have heard of this practice, but hearsay alone would not induce them to adopt this custom. For most groups in Huili, it seems, the contact with the areas that are now part of Yunnan was much more important, and communities belonging to the same cultural group lived on both sides of the Jinsha River.

Being a fertile place with ample flat land and natural resources as well as a mild climate, Huili was naturally inhabited early on, and groups who moved there seem to have stayed, as the lack of typical Huili objects in most other parts of Southwest China indicate. Local particularities are thus strong, and intrusive groups are easily identifiable. It is furthermore interesting to note that the tool and weapon assemblages even at late sites in Huili combine considerable numbers of projectile points with spindle whorls, woodworking and grinding tools, and sometimes net weight, but hardly any perforated knives or other clear signs of agricultural activities. It is therefore likely that the groups living in Huili made use of the particularly congenial environment by exploiting it in mixed economic practices instead of completely relying on the labor-intensive and risky subsistence practice of agriculture.

It is equally noteworthy that—in spite of the rich metal resources that were obviously exploited—local metal production techniques remain rudimentary and the few high-quality objects such as the single decorated spear-head at Fenjiwan, all metal objects at Guojiabao, and the bronze drums at Guoyuan and Luoluochong are clearly imports. The nature of the few metal objects found in graves at Fenjiwan—mostly plain axes, arrowheads, and bracelets—and the lack of metal objects in the later (!) grave of Leijiashan M1 indicate that for the definition of cultural or personal identity (at least as reflected in the grave), metal objects and especially weapons cannot have been very important. If is of course conceivable that high-quality metal objects were in wide use in daily life and that it was not customary to inter them in graves; however, the deposition, in special pits, of imported bronze drums and clumsy local imitations of bronze bells speaks against such an interpretation.

It is puzzling that high-quality bronze drums would have been prized but no attempt been made to master the skills necessary to recreate the process. This seeming contradiction indicates that it was probably not the metal working technology that was admired, but a special meaning or power associated with the drums and bells themselves; hence their interment in special pits. Considering that the bells produced locally were not actually usable and the drums likely functioned as containers, it is very likely that the local people were probably not even sure of the actual use of these objects. This lack of interest in metal working in spite of the rich local resources and the considerable interest that outside groups probably had in them can be seen as one of the special characteristics of the people of Huili.

At most sites in Huili only a small number of graves have been excavated; the 150 graves at the large cemetery of Fenjiwan therefore remain the main source of information on social structure. As shown earlier, the form and decoration of the ceramic assemblage combined with the presence/absence of stone and metal objects allows for distinguishing between three grave groups with subgroups, the main groups probably representing chronological phases, and the subgroups identity groups, be they defined by social status, gender, or other factors. Considering the small number of burial goods, the limited differentiation in form and content between different graves, and the lack of human bones that would otherwise have given clues as to age and sex of the deceased, this interpretation is necessarily tentative.

The large number of graves does suggest that a significant part at least of the adult population of the settlement of Fenjiwan was buried here. Overall it thus seems that at least in the grave and therefore potentially in the afterlife differences in social status, occupation, and possibly even gender seems to have played no significant role. The large number of objects found in the single grave of Leijiashan M1, however, indicates that this may not have applied to later phases of cultural development in Huili or at least not to all places. What connects all grave sites in Huili except for Guojiabao, however, is the great importance of ceramic vessels accompanied by a limited number of tools (spindle whorls, arrowheads) and/or plain personal ornaments worn on arms and neck (bracelets, chains). Weapons, clothing applications, and lavishly decorated ornaments as seen at Guojiabao, on the other hand, are otherwise uncommon. Such objects were important to groups living in the Southwest, who will be discussed as follows.

8.2.4 A Different World: The High-Altitude Mountains, Plateaus, and Valleys of the West

Just as the finds from Huili Guojiabao, the assemblages of earth-pit graves with or without stone installations in the Yanyuan Basin and in the high mountains of Yanyuan and Ninglang show a clear emphasize on metal weapons and ornaments combined with one or two double-handled vessels and sometimes special ritual objects (i.e., drums, bells, staff heads), and/or horse gear, while tools are rare (Fig. 8.8). By contrast, graves in all other parts of the research area are characterized by a preponderance of ceramic vessels sometimes accompanied by a few tools, arrowheads, or limited amounts of simple personal ornaments such as bracelets, beads, or pendants. Even in the wide valley around Lake Chenghai in Yongsheng, the assemblages in early earth-pit graves are analogous.

The grave material in Yanyuan/Ninglang thus emphasizes armed combat, in case of the graves in the Yanyuan Basin combined with horse-riding, in a clearly stratified society where in death some people were adorned with a large number of personal and clothing ornaments buried in complex grave constructions under rituals involving fire and cinnabar, and equipped with substantial sets of objects. These could include weapons, ritual objects, armor, horses, and horse gear, and the deceased could even be accompanied by one or two people, be they servants, fighting men, or relatives. Either the main interment or the subsequent interments in such graves

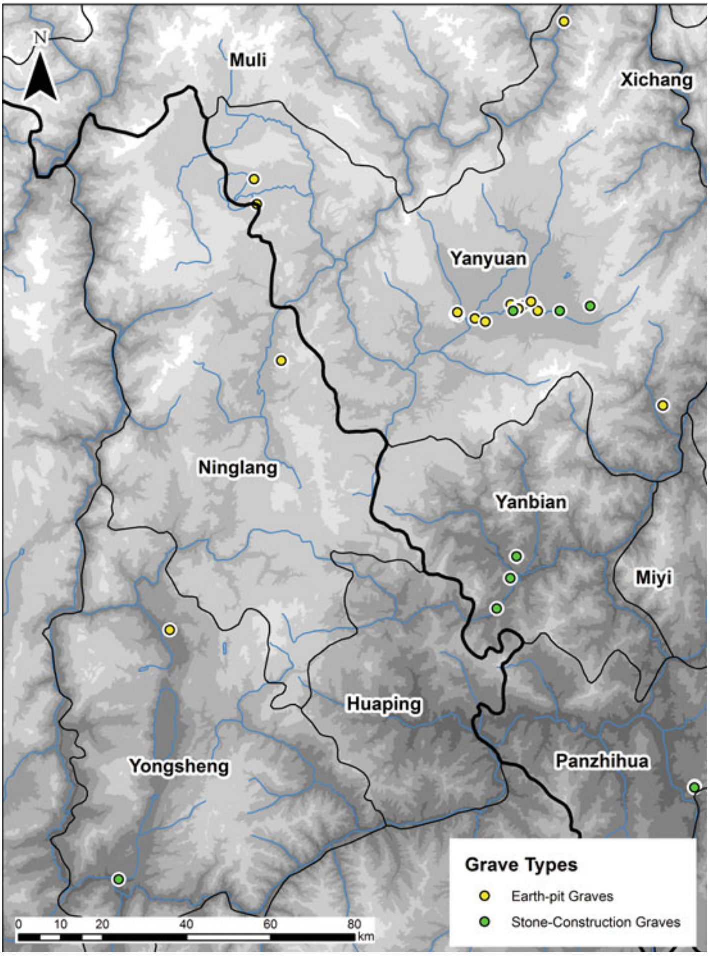

Fig. 8.8 Distribution of graves by grave type in the Southwest

entered the grave as secondary burials, indicating that they had died at different points in time and were then reburied together. The accompanying people were thus not slaves or sacrificial victims, but probably related by blood or other forms of dependence that required their interment with the main tomb occupant.

It is remarkable that all of these especially rich graves were observed in the Yanyuan Basin, while the graves in the mountains all show more humble yet comparable assemblages. Tools occur rarely in either of those locations and never in the most elaborate graves. Spindle whorls are completely missing both from settlements and graves in Yanyuan and Ninglang, but net weights, arrowheads, and woodworking tools are common. Settlements and graves in Yongsheng, by contrast, frequently contain spindle whorls, double-perforated stone knives, finely polished woodworking tools, and grinding equipment, and the dead are buried either in group interments or single graves with modest equipment consisting of a few simple personal ornaments and tools indicating food-procurement and processing activities.

Apart from the middle support in the handles of some vessels from Yanyuan, the sets of objects accompanying the dead into the stone-construction graves in Yongsheng Duizi and the mode of multiple interments show a close resemblance to the megalithic graves in the Anning River Valley. The custom of cremating the children and burying the ashes in separate urn graves were reported from both places as well, although the reliability of this information remains dubious. The grave construction of the stone graves themselves and some of the objects, however, are reminiscent of graves in Zhaojue, but similar graves have also been observed in Xiangyun in Dali (Dalizhou and Xiangyunxian 1993). Interestingly, the ceramics in the graves from Xiangyun are virtually identical with some of those observed in Yongsheng, but they are associated with rabbit-head shaped ornaments and bells similar to objects found at Yanyuan Laolongtou and Huili Guojiabao.

The tools observed in the various layers of Duizi and at other settlement and grave sites of Yongsheng generally show at least partially an agricultural way of subsistence with no special emphasis on combative activities. The different types of ceramics as well as their quality and execution strongly resemble objects known from adjacent parts of Yunnan such as Dali. The people who inhabited the sites in Yongsheng therefore probably identified themselves with one or several other groups in Yunnan, even though connections both to Yanyuan and the Anning River Valley may have existed. All of these graves contained vessels probably holding food and drink offerings (*Beigaben*) as well as some personal ornaments and tools (*Mitgaben*) that may be interpreted as markers of personal or social identity.

The people living in Yanyuan and Ninglang, on the other hand, belonged to a clearly separate cultural group for whom armed combat—sometimes combined with horseback-riding—was a central part of their life and identity. People engaged in object production and food procurement—probably through mixed forms of subsistence—seem to have played a lesser role in society. Considering that Yanyuan is rich in salt, a resource that was exploited at least since Han times or even earlier (Zhou and Jiang 2011), it is likely that it was the salt that brought wealth to the elite of the Yanyuan Basin, allowing the inhabitants to acquire considerable amounts of different kinds of high-quality metal objects from other places (Hein 2014b).

Their own metal products were feeble, most of them idiosyncratic bird-shaped applications and staff heads of particular ritual meaning that were produced locally, as well as a small number of personal tools and simple ornaments. The salt lords of Yanyuan—if one may call them that—thus needed raw copper and tin, which they could have received from Huili. The Yanyuan-type grave at Huili Guojiabao might thus be associated with people from Yanyuan involved in such exchange. The richness of the graves at Guojiabao, which furthermore contained horse gear and other objects associated with the elite of Yanyuan, indicates that exchange of salt and metal—if it really took place—was not the business of merchants but an elite transaction.

The emphasis on horse-riding, the interment of horse heads and sheep shoulder blades in graves and the overall metal assemblage (in particular the staff heads) seen at Yanyuan are essentially foreign to the research area. Pictorial evidence for horse-riding is known from the Dian culture context, but horse skulls or long bones have never been. The interment of horse bones is instead common in the Northern Steppe and the Ordos region, and elements of horse gear similar to those seen in Yanyuan have been reported from there as well. The ceramics and many of the personal ornaments, weapons, and the specific type of double-handled vessels from Yanyuan show a close connection with the stone-cist graves on the Upper Min River, as well as graves in northern Yunnan. None of the graves in Yunnan, however, contained horse bones, let alone other animal bones. This phenomenon has so far only been reported from Yanyuan, various graves in northwest Sichuan,[5] and the steppe zone.

It is therefore likely that the burying group of the "warrior graves" in Yanyuan was of a northern origin, be it the Upper Min River or even the steppe. It is unclear whether this group replaced or merged with an existing population, or whether it moved into previously unoccupied territory. Considering that the adjacent areas to the East and South had been occupied as early as the Paleolithic, and that the Yanyuan Basin is a flat terrain crisscrossed by watercourses and receiving much sunlight, it seems unlikely that it should have been unoccupied for so long. The local idiosyncrasies in burial ritual might be a reflection of traditions of a local group that was absorbed by the dominant immigrant group. At the current stage of limited fieldwork, these suggestions are necessarily only tentative and need to be tested through future excavations.

Considering the stark contrast with other finds from Huili and the strong resemblance with graves from the Yanyuan Basin, the graves of Huili Guojiabao likely belong to the same tradition as those from Laolongtou and other grave sites in Yanyuan. Huili Guojiabao itself is located close to the Jinsha River, which provides a connection to Yanyuan, and it is therefore overall not unlikely that Guojiabao is the cemetery of a foreign population that settled down in Huili. Where they settled is unclear, but further survey work and excavations around Guojiabao might help to answer this question.

8.3 Summary

As I have shown throughout this chapter, the local geography is an important factor shaping the appearance of graves and their content as well as their spatial distribution. Most importantly, the limited availability of level ground in the research area has

5 The interment of horse bones together with dog and cow skulls has been observed at Ganzi Jililong 甘孜縣吉裏龍, and Guri Munianggang, Xinlong County, 新龍縣谷日木娘崗 in stone-construction graves containing single- and double-handled jars, bronze knives, and personal ornaments (Sichuansheng and Ganzi 1986; Ge Le 1987).

resulted in the dense clustering of grave sites in specific areas. The high north–south running mountain ridges channeling both the rivers and the connections between different areas have furthermore led to a clear spatial separation between different burial customs with limited overlap only in the border regions. Additionally, the particular landscape was clearly a point of reference for grave placement and orientation, indicating the religious importance of the natural surroundings, especially mountains and/or water courses. The very particular landscape of the Liangshan Region thus forces us to take into consideration the influence of the natural environment on human behavior, making this area particularly suited for studies on human–environment interaction. At the same time, we have to be careful not to overemphasize the importance of environmental preconditions. As shown by ethnographic studies and also throughout this book, burial rituals tend to be more dependent on cultural/religious factors than on practical issues. For choice of settlement location and subsistence practices, on the other hand, the natural environment and its potential and limitations are crucial.

As I have shown elsewhere (Hein 2015), the choice of settlement location depends very much on the kind of subsistence practiced by its inhabitants: settlements of communities relying on agriculture for subsistence (such as most groups inhabiting the central Anning River Valley) tend to be located on or close to flat, fertile land and a water supply. Groups relying on hunting and gathering, such as the early inhabitants of Puge, are probably more concerned with finding spots protected from view and weather, which could well be on steeper slopes. Conversely, not all types of environment allow for all types of subsistence. The forests of Puge, for example, are best suited for hunting and gathering, while most of the Anning River Valley is ideal for agriculture but was also used for fishing, gathering, and hunting as well. Differences in subsistence practice can also be a marker of differences in cultural identities; these distinguishing characteristics may be reflected in burial remains as well. The inhabitants of the mountains of Puge, for example, shared the custom of building megalithic graves with the people in the Anning River Valley, but the inclusion of perforated teeth of wild animals in the graves (likely talismanic pendants worn by the people buried therein) shows that hunting and relations to the pray (especially dangerous opponents such as wild boar) were identity-building factors for the people of Puge.

Depending on the subsistence system, the choice of grave location may have been more or less concerned with leaving flat, fertile land open for agricultural pursuits; cultural/spiritual concerns naturally played an important role as well. Although graves in the Northeast generally slope up the hills, in Zhaojue, where flat ground is rare, locations high up the slopes were chosen. In Huili in the Southeast with its wide and fertile river valleys, by contrast, graves often occur right next to settlement sites and only a little further up the slope. The location of megalithic graves in the middle of river valleys on the most fertile land, where they would be visible from afar, is clearly a cultural choice. The increasing size of later graves indicates that they were meant to be used for a large number of interments and/or extensive rituals requiring such a large space. At that point, megalithic graves had developed into central places of congregation and markers of communal identity and possibly even territory, as it is generally suggested for megalithic graves in Europe (Beinhauer 1999; Midgley 2008; Furholt 2011).[6]

The use of stone elements in the construction of burials throughout the region may have been connected with a special meaning attached to stone or the mountains they came from, although speaking of a custom of revering stones might be going too far.[7] Nevertheless, the fact that at least some of the stones used in the construction of megalithic graves did come from farther away indicates that certain places and the stone retrieved from them carried a special meaning. The natural environment is therefore more than a stage, and more than a limiting or enabling factor, but it can have a deep spiritual meaning as well. Furthermore, practical concerns can be ignored and natural boundaries overcome if cultural or other reasons demand it.

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[6] For present-day examples of megalithic traditions in Indonesia see Adams (2007).

[7] Such ideas have been discussed by various authors, mostly based on the importance of stones in ritual practice by the Yi who are the largest minority currently living in the Liangshan area (e.g., Shen 1982; Jing 1986; Yang 1996). Various stone monuments are known throughout East Asia, some of which have been erected in fairly recent times (Yu 1985); however, comprehensive research on this topic is still lacking.

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Chapter 9
Taking Stock and Moving Forward

The realities of past societies and individual lives are highly complex and their pictures as derived from archaeological data can therefore hardly be homogeneous. Nevertheless, in the interest of telling a coherent and compelling story, the general tendency in archaeological research is to reduce inherent heterogeneities as much as possible in order to explain the material at hand in terms of neat geographically and temporarily delineated archaeological cultures. Research into past identities continues to be as limited in its conclusions as it is in the scope of data it employs; the majority of archaeological material at our disposal are frequently left aside, simply because it tends to be scattered over a large number of smaller sites that are often not well preserved, completely excavated, or fully published. In this study of the border regions of Southwest China, I have embraced this patchiness in the local mortuary data through a structured analytical scheme that accommodates a wide variety of burial data in different states of preservation. This new approach is geared toward particularly complex datasets of uneven quality and aims to infer on past human behaviors in and around graves and cemeteries in a way that accentuates rather than mutes variability.

This book provides a thorough description and analysis of all available archaeological remains from the Liangshan Region, thus telling a rich story of local prehistoric cultural developments and their interconnectedness with the environment of Southwest China. The aim was to form as complete a picture as possible of prehistoric and early historic human behavior in this region, focusing particularly on mortuary traditions but including intergroup interaction and, to a lesser extent, choice of settlement location and other actions in everyday life. To fully accomplish this, I first analyzed the evidence separately for the three spheres of grave (Chap. 4), body (Chap. 5), and objects (Chap. 6). I then evaluated the connections among these categories of evidence in time and space using various types of statistical and spatial analyses (Chap. 7). In this fashion, I was able to identify spatial and chronological variation in various spheres of mortuary behavior and kinds of ritual actions (Chap. 8).

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These analyses demonstrate that the research area can be divided into several subregions that correspond not only to fairly distinctive archaeological assemblages and burial patterns but also to the climate-geographical zones identified at the outset of this study. Nevertheless, these two sets of subregions—one geographically the other archaeologically defined—are not completely identical, and overlaps occur between subregions in elements such as specific ceramic types or burial traditions that transcend environmental boundaries or sometimes even chronological divisions. It thus has become clear that environmental factors, chronological developments, and inter- and intragroup interactions all play an important role in shaping burial behavior and in turn the archaeological record at large. Based on these findings, I was able to suggest a chronological scheme for the Liangshan Region—something that had been acutely lacking prior to this study—and provide a general outline of prehistoric and early historic cultural developments and human movements throughout Southwest China (Chaps. 7 and 8). The model for mortuary analyses introduced and applied in this book (see esp. Chap. 2) thus helps us to infer complex behavioral patterns of the people associated with the material remains and, in the case of the Liangshan Region, to understand the mechanisms of intra- and intergroup delineations and their expressions in the material record.

9.1 Mechanisms of Intra- and Intergroup Demarcations and Their Reflection in the Burial Record

This study of remains from the Liangshan Region demonstrates several major mechanisms of intra- and intergroup demarcation and their reflection in the burial record, identifying ways in which burial practices (rituals, offerings, structures, etc.) are utilized to 'construct' social as well as cultural delineations. The comprehensive analyses proposed in this book demonstrate the necessity of such complex approaches in order to elucidate the intricate ways in which expressions of social and cultural differentiations overlap and intertwine in mortuary realms—a necessary approach for surpassing overly normative descriptions of areas such as Southwest China.

Throughout this study, it has become clear that the natural environment has considerable influence on cultural developments and intergroup interactions without predetermining them outright. Cultural and environmental factors thus have to be viewed together. Because of the great diversity in geomorphology and climate between its subregions, the Liangshan Region offers an excellent case study for shining light on the reasons for cultural practices overriding practical concerns and environmental constraints. For instance, the choice of grave location and grave building material can have practical reasons or be culturally predetermined. In the Northeast where arable land is sparse, building graves on high mountain slopes away from the fertile river valleys is a sensible course of action induced by environmental preconditions. In the nearby mountains of Puge and Xide, on the other hand, where the geomorphology is similar, megalithic graves were built in the narrow river valleys, blocking some of the rare patches of fertile land. Similarly, in the Northeast, the stone material used in grave building was harvested on site, but in the Southeast and the Anning River Valley, even large stones were transported over considerable distances to be used in grave construction. Practical concerns thus can be ignored and natural boundaries overcome if cultural reasons demand it.

Likewise, the spread of certain customs depends on geographic preconditions, but also on the nature of those customs and on the susceptibility of the people on the other end of the influence. The most striking example for this phenomenon is the case of the megalithic graves and their distribution. The extent of the spread and the differences in the degree of adaptation of this grave form in different regions seem to be determined by spatial vicinity and intensity of contact with the "heartland" of the megalithic graves around Xichang. Throughout the Anning River Valley itself, we see a complete replacement of previous customs by various groups; in the mountains of Puge and Xide, grave form and burial objects were adapted but not of all related ritual practices; and beyond the Center and the nearby mountains, the custom of building megalithic graves was not adopted, likely because the inhabitants only rarely if at all made their way into the Anning River Valley. That such a labor-intensive custom as erecting megalithic graves was taken up by groups that were originally culturally distinct is likely the outcome of the personal encounter with the powerful rituals surrounding these monuments and the bonds these rituals created between the participants. These shared rituals then formed a supra-local sense of community throughout the Anning River Valley and neighboring regions, leading to the emergence of a new kind of identity that transcended the previous cultural and local group boundaries without necessarily destroying them, as the continuation of local particularities in each of the various location indicates. The case of the megalithic graves thus shows that religious beliefs or traditions can transgress natural and cultural boundaries but do not travel completely freely either. Depending on their nature and depending on the character of the groups involved, the adoption of foreign religious practices and beliefs may require personal experience and participation in group practices rather than a recounting or teaching of abstract "ideas" transmitted from mouth to mouth. If such an experience is given, foreign practices can be adopted by people with a different cultural identity living in a region where the same practices are exceedingly more cumbersome to conduct or disadvantageous to the group in the pure economic sense.

As to the Liangshan Region itself, this study has highlighted the great diversity of local identities and the variety of ways in which they influence the material record. The Anning River Valley is a case in point that the same community or culture group can be characterized by a variety of different burial practices, in this case megalithic graves for older people, cremation burials for infants, and earth-pit graves for another not clearly defined part of the population. As described earlier, the graves throughout the Southeast were largely homogenous in grave form and content as well as burial ritual; only a few graves at Huili Xiaoyingpan and Luquan Yingpanbao in the utmost Southeast contained individuals whose heads were removed. This phenomenon can most readily be interpreted as differential treatment due to special circumstances of death and/or fear of the deceased. In both cases, carefully chosen ethnographic examples open one's mind to the wide variety of possible explanations.

Both the ethnographic examples and the archaeological material thus clearly show the aptness of Ucko's (1969) warning that one group may practice a range of different burial practice, and that the same burial practice may be common to different groups. Religiously motivated practices such as the orientation of burial monuments and/or the deceased toward a river or a mountain (seen in the Northeast, Southeast, and in the Anning River Valley), or the interment of cobbles for the life-giving river running through the region into the grave (seen in Southeast and Northwest) may arise in different places independently. The same holds true for the similarity in the cultural importance of horses in grave contexts seen in places as far apart from each other as Yanyuan and the northern steppe or Central Asia (Hein 2014). Such similarities may imply an actual connection, or they may be based on similarities in social structure and/or geoecological preconditions, or even entirely accidental. Similarly, the parallels in grave construction and burial practice between in the Northeast and the utmost Southwest may well be the outcome of two independent developments imbued with different meanings. By contrast, the use of megalithic graves for burials and related rituals throughout the Anning River Valley and neighboring mountains was not a case of independent development but the custom originated around Xichang and then was taken up by various groups that previously did not share a common cultural identity.

Adopting another culture's burial practice—be it only some aspects or part and parcel—seems like a major step, but it is not uncommon as a plethora of ethnographic and historical examples show. In the Northeast, for instance, aspects of the grave construction and burial objects were adopted from groups that were clearly culturally different, but these foreign customs were combined with local ritual practices apparently too essential to be discarded. This material indicates that dogmatism in burial customs or even personal attire was likely foreign to this "place in-between," where people and groups of different origin met and intermingled, some in transit, others remaining. In the Northeast, various forms of identity and their material expressions seem to have been rather fluid and negotiable, possibly even changing within a person's lifetime, as he or she moved into another region, or with the advent of a new group in the neighborhood. Such changes may not necessarily have been conscious; instead, they were a form of adaptation to and negotiation of identities and connections between people in a harsh environment with constantly changing inhabitants such as the Northeast.

On the level of small-scale identities, the material from the research area shows that each person and even each community can have various identities at the same time, which are related to various aspects of life (and death) and come to be of importance in different situations. Speaking of a "megalithic grave culture" (which links cultural identity to burial mode) or of "Anning River Culture" or "Henglanshan Culture" (which links cultural identity to a specific place) thus simply falls short of the actual complexity of human behavior and implies a false sense of simplicity. Imagining the existence of strict boundaries in such cases inhibits a proper interpretation and understanding of the material record. Instead of identifying archaeological cultures and assigning them names and specific territories, it therefore promises to be much more useful to identify various *traditions*, e.g., of grave construction, burial mode, or related rituals, as well as settlement and burying *communities*, and the spatial distribution of various *behavioral patterns* connected to different forms of *identity*.

On the micro-level of objects, common raw material characteristics, such as the yellow clay used for ceramic production in Huili in the Southeast, can show cohabitation within the same region; common technologies indicate subgroups of different communities related through common technological practices that may be referred to as *schools* or *traditions* of production, or communities of practice (Lave and Wenger 1991; Wendrich 2012); common object forms (particularly in vessels and tools) show commonalities in subsistence practices, food consumption, and object production, and other necessities of daily life that can either be circumstantial (i.e., due to similar responses to a similar environment or situation) or point to a common *cultural identity*. Single objects occurring in many different places associated with a variety of different objects, on the other hand, reflect different forms of contact rather than a shared identity. On the intermediate level of features and site units such as settlements, graves, or special deposits, the combination of object forms and types, their execution, and the traces left by their use as well as by other behavioral patterns, allow inferences on *communities of practice* and therefore various kinds of group identity (e.g., *settlement community*, *burying community*, *family/lineage/clan*, *religious group*, *cultural group*).

Graves furthermore allow a glimpse at intergroup differentiation related to *occupation*, *gender*, *social position*, or other forms of *small-group* or *personal identity* uniting certain people while drawing a boundary between others. Nevertheless, ethnographic cases (including present-day customs of burying all people indiscriminately in the same position in earth graves without burial objects) as well as the archaeological case of the megalithic graves warn us that social or other differentiations that are important in life do not necessarily translate into differential treatment after death. People serving as shamans in life may be buried next to people wearing a sword as sign of an elevated status, who in turn may be placed right next to people wearing only a standard set of one or two ornaments and/or personal tools or carrying no personal attributes at all. At the same time, members of different families or lineages may have been separately, and not all age groups were buried in megalithic graves.

Additionally, social or personal forms of identity, including material wealth, access to raw material, special skills, occupation, and social status may be reflected in the burial record as shown, for instance, in the material from the Yanyuan Basin in the Northwest (Hein 2014). Important indicators are differences in grave construction, body treatment, skeleton position and orientation, number of interred, personal attire, i.e., *Beigaben*, as well as *Mitgaben*. The lack of clearly identifiable *Nachgaben*, as seen in Yanyuan, may show that the deceased and his position in society were in the center of interest more so than rituals reaffirming group bonds. The focus point for such a form of burial as seen in the Yanyuan Basin therefore was not the buried individual in the sense of a person with his or her own taste and preferences but the social or family group to which he or she belonged. It is likely that the decorum with which a certain person was buried was an important expression of and affirmation (or way of establishing) the status of his or her kin group, but concrete material evidence for this plausible assumption is necessarily lacking. The only indicator lies in the strong differentiation in wealth, kind of objects, and other attributes associated with the various graves indicating the presence of a strict set of rules as to who should be buried in which way that left not much space for personal notes such as spontaneous *Liebesgaben*.

The multifaceted approach taken in this study that distinguishes between different types of object functions in graves and treats various aspect of the burial record separately before discussing their interconnectedness with each other and with the local environment has thus proven to be extremely useful in identifying various kinds of identity groups.

At the same time, it has become clear that the natural environment has considerable influence on cultural developments and intergroup interactions without predetermining them outright. I have also shown that the various subregions—although separated from each other by high mountains and characterized by their own particularities in local environment and archaeological assemblage—are by no means isolated but in constant contact both with each other and with places lying outside of the research area. Consequently, the boundaries between the different groups inhabiting the region are far from firm but in constant flux. The same naturally applies to intragroup, interfamily, and maybe even interpersonal demarcations that may have been negotiated anew with every single instance of burial. The highly complex case of the prehistoric Liangshan Region has thus shown that past intra- and intergroup demarcations and relations were never static but fluid and in constant development. The ethnographic examples discussed in Chap. 3 have served to highlight that a wide variety of actions take place in connection with a burial and that often a considerable number of people, variety of material, and behavioral patterns are involved. The separation in different spheres and aspects has allowed me to identify a number of separate actions and factors in the wide range of processes that shape the individual graves. This dissection and reassembling of all elements made it possible to assess their relationship to each other as well as their relative significance as expressions of past identities, beliefs, and material preconditions.

9.2 Impact of the Approach and the Model

The approaches put into practice in this book were developed in response to the particularly patchy and overall problematic dataset of prehistoric and early historic Liangshan Region. However, they may easily be transferred to other bodies of material that are deemed too uneven in preservation and/or research or too heterogeneous in nature to be fruitfully analyzed. In spite of problematic material evidence, the index for reliability of archaeological information helped me to select and analyze the appropriate range of data, and the separation of analyses of various subsections of the material made it possible to apply several different statistical and spatial analysis. In this manner, I have been able to embrace the heterogeneities of the archaeological record instead of trying to smooth them out.

The model and scheme of analysis for burial material that I developed and employed here, likewise emphasizes the variability of human behavior in connection with burials. To be able to distinguish between the many different patterns of human behavior—and natural processes—that form the burial record, I treated the graves as composite objects consisting of grave structure, body, and object(s) which are connected in time and space through various human actions. This separate analysis of the three spheres indeed enabled me to reveal underlying structures in the material record that before were blurred by variability. For grave structures, for example, the separate investigation of measurements, various construction elements, and external and internal features helped establishing a grave typology that previously had been lacking.

For various types of body treatment and other kinds of rituals, the results of my analyses were somewhat more limited for lack of evidence or detailed reports. In other regions with better preservations and reporting conditions, this avenue of research is more promising. For the separate analysis of objects and assemblages, considerably more material was available. The great variability in object types and combinations at first made it difficult to distinguish patterns, but the picture became clearer once I analyzed the object assemblages separately by grave types, subregions, and in some cases even single sites and then compared these subsets with each other. For a different body of data that encompasses only a small geographical area, a short time period, a single cultural sphere, or preferably even only one large cemetery, an entirely separate analysis of the spheres and the temporal and spatial components should be possible and fruitful.

Similarly, it proved surprisingly difficult to keep time and space separate from the analysis of the three spheres of grave, body, and objects, again largely because material from different subregions and time periods was viewed together and the various overlapping patterns thus became blurred in outline. In future studies, it might be useful to analyze the aspects of grave, body, and objects separately by subregions and/or time periods. In the Liangshan region it was not possible to do so simply because a chronological scheme and an identification and description of culture-geographic subregions had to be established first.

Throughout the analyses described earlier, it also has become clear that burial behavior is never entirely separate from other spheres of life such as settlement patterns, subsistence systems, and techniques of object production. In particular, this study has served to show that the range of burial objects is best assessed in comparison with material found in archaeological contexts other than the grave, taking into account not only form but also details of production, potential previous use life, and function in daily life and burial. In my model, I have included the premortuary life history of objects produced for other purposes, encompassing object production, use, maintenance, modification, transportation, exchange, reuse, and transportation (Figs. 2.1, 2.2, and 2.3), but connections with objects produced for and used exclusively in everyday life are not explicitly mentioned; instead, it is up to the scholar using the model to recognize that their analysis may have to include than just the life history of the single object itself but that burial assemblages can only be fully understood when reflected against items used by the burying group in everyday life.

In spite of this importance of context and the usefulness of contextualization, this study has also shown that it is useful to first analyze the three spheres (grave, body, objects) separately as they go through different "life histories" and are touched by different ranges of human behavior. This separation has helped to distinguish between various spheres of behavior and overlapping developmental patterns that otherwise might become a single blur of endless variation. In the case of the Liangshan Region, the separate analysis of the three spheres followed by an integrated view assessing their relationship in time and space allowed me to distinguish between various steps in the burial proceedings, especially for the megalithic graves with their often extended use lives.

In this context, certain aspects of the model that I originally viewed with some skepticism have proven surprisingly useful. This concerns in particular the theoretical concept that various types of objects may enter the grave for a variety of reasons. Integrating Hachmann's and Penner's (1999: 173–177) functional categories of *Beigaben* (objects meant to be used in the afterlife by the deceased), *Mitgaben* (objects belonging to the dead), *Nachgaben* (objects discarded after the burial as ritually untouchable or objects left in the grave during later rituals), *Traditionsgaben/Liebesgaben* (gifts given by mourners for individual personal reasons), and *Zeremonialgerät* (tools used during the burial but without function in the afterworld) and adding the further category of objects left in the grave by tomb robbers into my model, I emphasized that objects in each of these categories underwent different life histories before, during, and after burial. Especially in case of the megalithic graves, the state and placement of different kinds of objects allowed to distinguish between *Mitgaben* and *Nachgaben* while *Beigaben* were apparently missing. Most ceramics had been employed in communal drinking, entering the grave as *Nachgaben*. I could therefore infer that the burying community was the focus of the burial rituals more so than the deceased. The lack of clearly identifiable *Nachgaben*, as seen in the case of Yanyuan, indicate that the deceased and his position in society were in the center of interest more so than rituals reaffirming group bonds. The great variability in object assemblages in the Northeast, on the other hand, left space for spontaneous *Liebesgaben* as they were uncommon elsewhere in the research area. The material at hand thus shows very clearly that it is not only possible but useful to distinguish between *Beigaben*, *Mitgaben*, *Nachgaben*, and *Traditions-/Liebesgaben*: this approach can indeed help us to ascertain the reasons behind some of the pattern we see in the material record and the believes and different forms of identity they may reflect. Although not identified in this case, the additional category of objects left behind by grave robbers—one may call them *Fundsachen* (lost property)—can be useful to distinguish between objects that genuinely belong to the grave and rituals conducted for the dead and their descendants and objects randomly left behind by strangers with no direct relations with the deceased.

Another tool that I found particularly helpful was the application of spatial analysis, both in connecting different spheres of human behavior and their traces in the material record, and in ascertaining the influence of the natural environment on these actions. While practical issues such as material availability and geographic preconditions indeed play an important role in the choice of grave location or construction, I determined that such factors may be disregarded on occasion. For instance, megalithic graves were usually built on flat open space where they are highly visible but block off soil that was ideal for agriculture. In the eastern mountains where flat ground was extremely sparse, such a decision carries a very different weight than it did in the Anning River Valley where fertile ground is ample. Nevertheless, in both regions we see megalithic graves on some of the best agricultural soil; however, in the eastern mountains these graves are usually small and occur only at a few sites while in the Centre some graves are very large and occur at many sites throughout the entire region. The local environment thus influences but does not completely predetermine human decision making.

Furthermore, raw material availability and subsistence practices—which are in turn strongly influenced by geographic preconditions—have been identified as influencing various types of identity and their expression in the burial record. The basic assumption that meanings associated with artifacts are not fixed but transform according to context and may express different modes of identity at various points in their life histories has been proven time and again throughout this book. The importance of context can thus not be overestimated. Context not only refers to the geographic surroundings but also to cultural, social, and temporal connections. To this end, I have adopted a methodology that does not try to establish firm boundaries or define archaeological "cultures," but instead identifies various behavioral patterns, traditions, communities, and their intersections and exclusions, and it has worked well in identifying various types of past identities. Indeed, as far as the archaeological finds from the Liangshan region are concerned, the life histories/*chaîne opératoire* approach to archaeological remains, and the treatment of graves as composite objects have proven to be not merely a useful but a nearly imperative means for understanding this complex body of material.

This book thus provides a case study of how a particularly complex set of material may be approached in a strictly methodical manner, working from the micro level of single elements to the macro level of their interconnectivity and overall placement in time and space. The wide variety of different grave forms, interment customs, and burial objects that do not fall into clearly separate sets but appear in a variety of different combinations defy a categorization in neatly bounded archaeological cultures; instead, this particular set of material challenges established notions of culture, group, and community, and forcing us to treat various types of identity as constantly shifting units that may or may not be reflected in the material record. The Liangshan Region itself as well as the present study of its archaeological evidence thus provide ample material for theoretical and methodological discussions on basic concepts of archaeology, but it does naturally not provide clear-cut answers. After all, the interconnections between culture, community, identity, and the material world (both natural and man-made) are manifold and constantly shifting, and so we are addressing a moving target that promises to provide much material for further thoughts and research.

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Chapter 10
Online material

The online material consists of 24 figures and six Excel tables with multiple tabs each. Figures 1–8 show close-up views of the distribution of grave sites in the various sub-regions of the research area. Figures 9–13 show the distribution of megalithic graves by grave sub-type in various parts of the research area. Figures 14–20 show close-up views of the orientation of the graves in the various sub-regions of the research area. Figures 21–23 are schematic diagrams showing the orientation of the graves separate by grave type. Figure 24 shows the number of graves on each site displayed on a map.

The first Excel table (Assemblages) shows the grave assemblages, in the first tab all of them together, the second to fourth tab special sub-sections of the material.

The second Excel table (Correspondence Tables) displays the co-occurrence of various types of grave objects for various types of graves and objects including all objects in multiple consecutive interments (tab 1), ceramics from megalithic graves (tab 2), other objects from megalithic graves (tab 3), and combination of objects in graves at Xichang Lizhou (tab 4).

The third Excel table (Graves: All Information) contains a list of all graves by location with details on orientation, measurements, preservation, content, and the like.

The fourth Excel table provides location information, the first tab listing location accuracy, the second the reliability index, and the third the distance between graves and closest settlement for sites where that distance is less than 2 km.

The fifth Excel table contains information on the size and shape of each object analyzed in this study; the material is displaced separate by material including ceramics (tab 1), stone tools (tab 2), metal ornaments (tab 3), other ornaments (tab 4), metal objects (tab 5), metal ritual objects (tab 6), and arrowheads (tab 7).

Electronic supplementary material: The online version of this chapter (doi:10.1007/978-3-319-42384-5_10) contains supplementary material, which is available to authorized users.

A. Hein, *The Burial Record of Prehistoric Liangshan in Southwest China*,
DOI 10.1007/978-3-319-42384-5_10

The sixth Excel table displays all information used to assess the likelihood of reopening of the graves, in the first tab listing the graves by site name, in the second by likelihood of reopening.

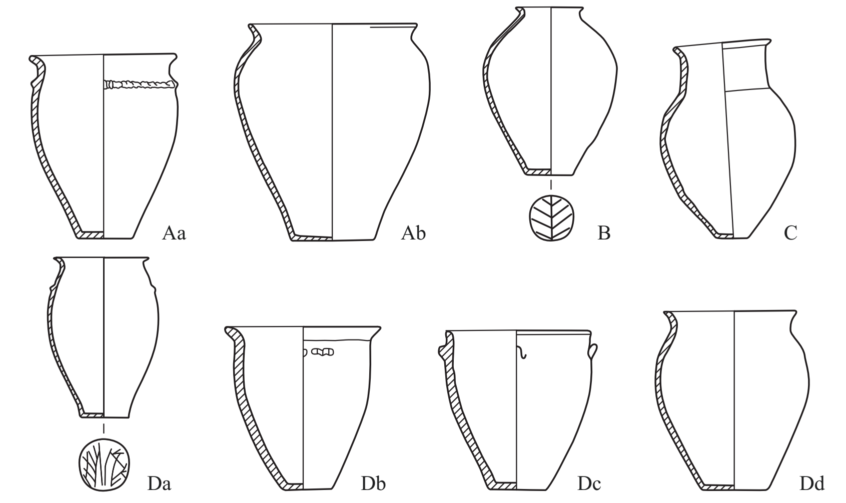
Furthermore, there is a pdf document with a list of all references cited throughout the monograph.

Appendix A: Plates

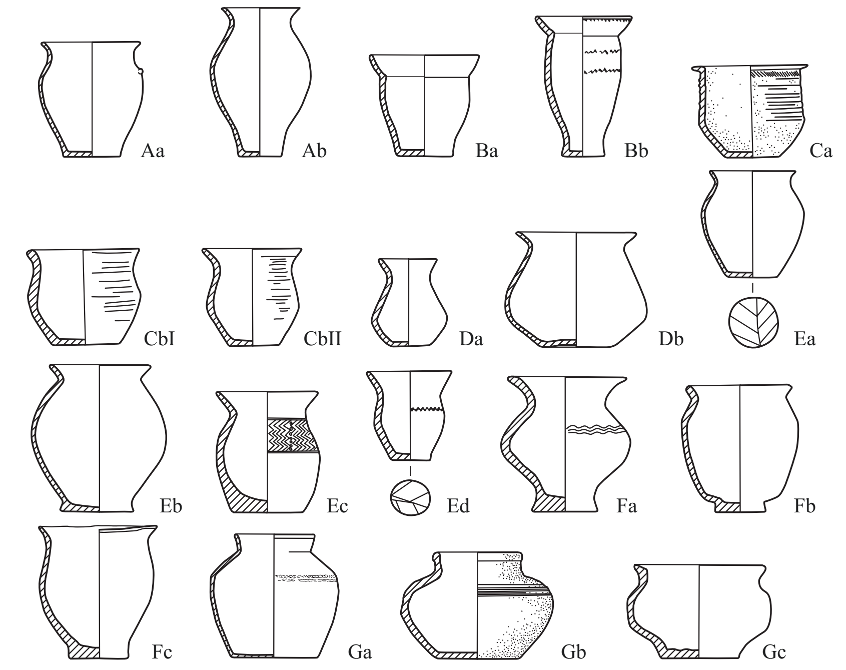
A. Hein, *The Burial Record of Prehistoric Liangshan in Southwest China*,
DOI 10.1007/978-3-319-42384-5

Plate A.1 *Guan* types

Plate 1: *Guan* types



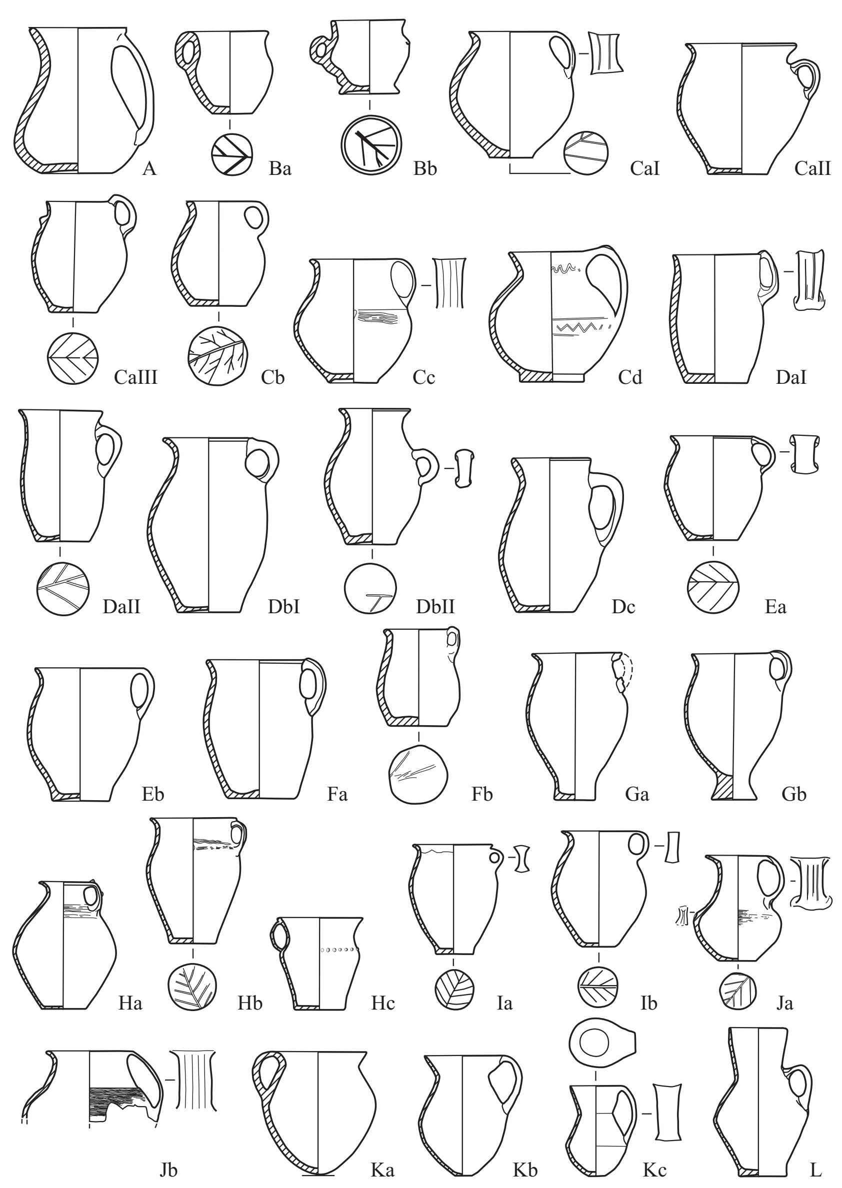
Guan urn types: Aa: XDYDM2.1, Ab: XYPW9.1, B: XLZHM1.42, C: HFJM26.7, Da: YDZM134.1, Db: HFJM28.1, Dc: XDYKa3.2, Dd: XDYKa15.1



Guan jar types: Aa: HFJ76, Ab: LYZM3.2, Ba: XDYH2.2, Bb: XDH2.4, Ca: XYGM3.3, CbI: XYGM3.9, CbII: XZGM3.7, Da: XDYM8.3, Db: ZCBM1.7, Ea: HFJM2.1, Eb: ZFQM3.1, Ec: XLHM1.1, Ed: NDXM2.7, Fa: ZEKM3.14, Fb: XLZBM5.9, Fc: ZJPM8.2, Ga: XMSM1.1, Gb: XLZHM2.16, Gc: XYJM1.2

Plate A.2 *Guan* jar types

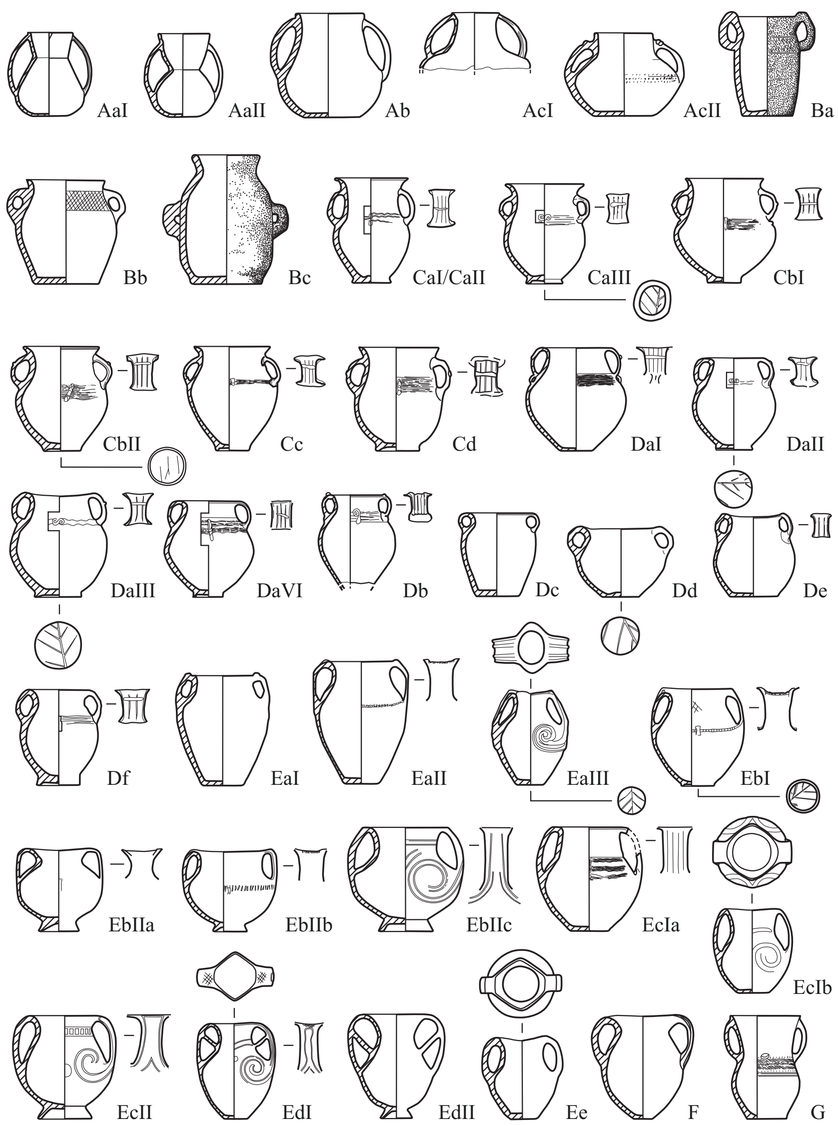
Plate 2: *Guan* jar types



Single-handled *guan* jar types: A: DYM9.3, Ba: NDXM5.12, Bb: NDXM5.23, CaI: MWQM1.57, CaII: HLJM1.123, CaIII: HLJM1.42, Cb: HFJM148.13, Cc: YGJC218, Cd: YGJC357, DaI: MWQM1.31, DaII: HLJM1.125, DbI: HLJM1.43, DbII: HLJM1.52, DcI: HLJM1.14, Ea: MWQM1.56, Eb: HLJM1.112, Fa: HLJM1.126, Fb: HLJM1.7, Ga: HLJM1.62, Gb: DARM3.4, Ha: DARM3.8, Hb: HGJM1.2, Hc: HGJ74, Ia: HFJM3.1, Ib: HFJM144.3, Ic: NDXM4.1, Ja: MWQM2.49, Jb: YLLM4.14, Ka: XHTM1.2, Kb: XQGM2.26, Kc: XLKM8.4, L: HLJM1.2

Plate A.3 *Guan* jar types

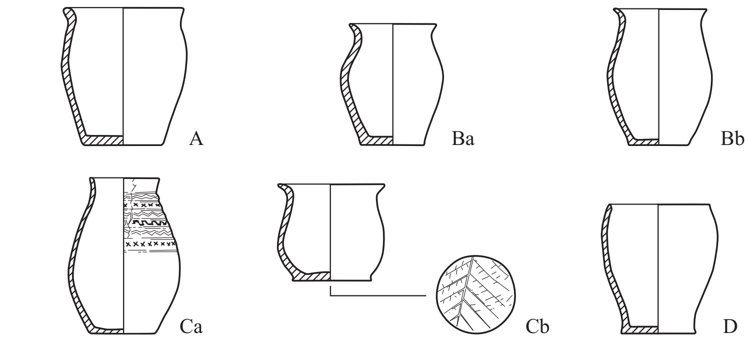
Plate 3: *Guan* jar types



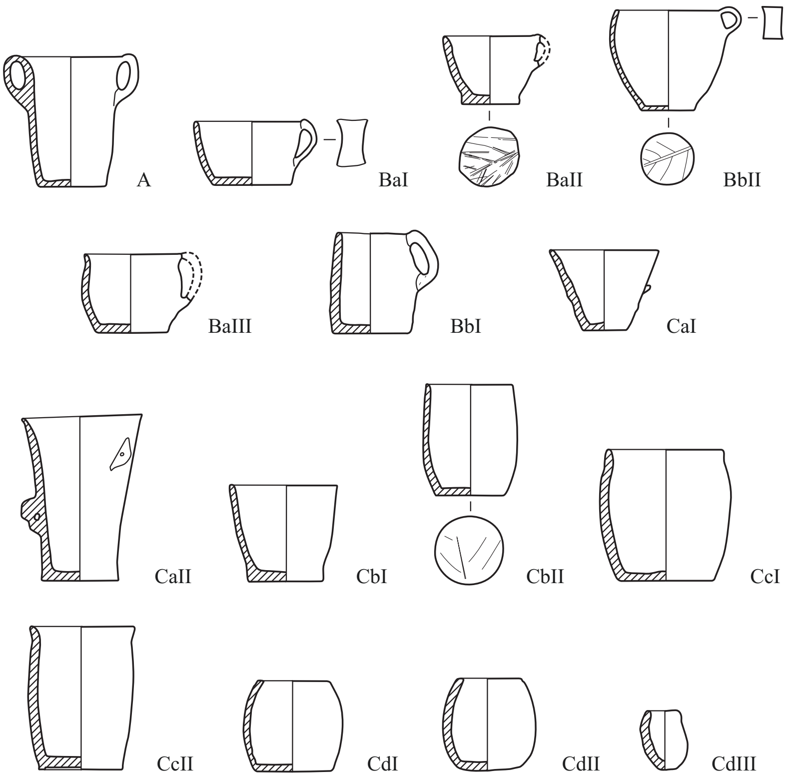
Double-handled *guan* jar types: AaI: XDYM9.2, AaII: XDYM9.1, Ab: XDYKa13.5, AcI: XDYM2.1, AcII: XDYM3.1, Ba: XLZBM2.6, Bb: HFJM33.2, Bc: XLZBM3.26, CaI: MWQM1.30, CaII: MWQM1.66, CaIII: MWQM2.96, CbI: MWQM2.35, CbII: MWQM2.104, Cc: MWQM1:51, Cd: MWQM2.12, DaI: YGJC257, DaII: MWQM2.52, DaIII: MWQM1.8, DaIV: MWQM2.106, Db: DARM4.19, Dc: MWQM2.20, Dd: MWQM2.92, De: MWQM1.34, Df: MWQM2.126, EaI: YGJC741, EaII: YGJC250, EaIII: YGJC247, EbI: YGJC539, EbIIa: YGJC252, EbIIb: YGJC740, EbIIc: YGJC278, EcIa: YGJC210, EcIb: YGJC221, EcII: YGJC354, EdI: YLLM4.28, EdII: YGJC243, Ee: NDXM2.6, F: XXJM1.4, G: XLKM6.4

Plate A.4 *Guan* beaker and *Bei* cup types

Plate 4: *Guan* beaker and *Bei* cup types:



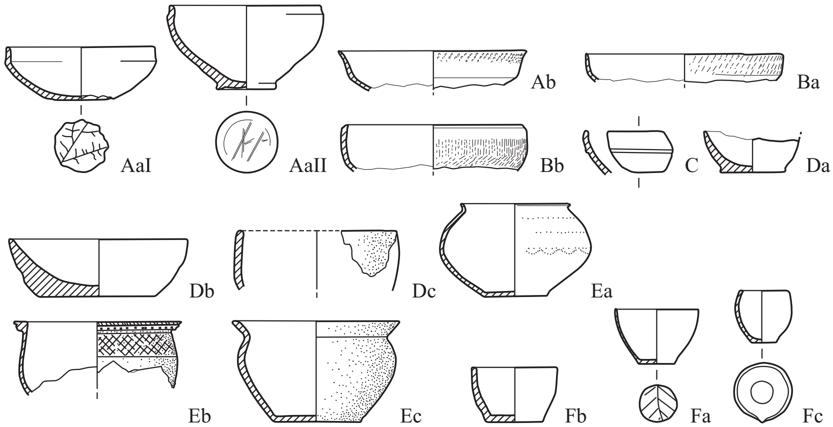
Guan beaker types: A: XDYDM2.4, Ba: MWQM2.111, Bb: MWQM2.1, Ca: XLKM6.5, Cb: MWQM1.28, D: MWQM1.38



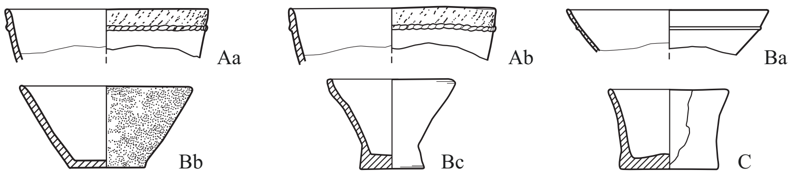
Bei cup types: A: MWQM2.43, BaI: MWQM2.43, BaII: MWQM2.129, BaIII: MWQM2.44, BbI: MWQM1.108, BbII: HFJM140.2, CaI: XLKM6.8, CaII: XXM6.37, CbI: XLKM6.7, CbII: MWQM1.60, CcI: MWQM2.120, CcII: MWQM2.17, CdI: XDYH1.13, CdII: MSKM1.1, CdIII: XXHM1.1

Plate A.5 *Bo* bowl, *Wan* bowl, *Pen* basin and stemmed *Dou* bowl types

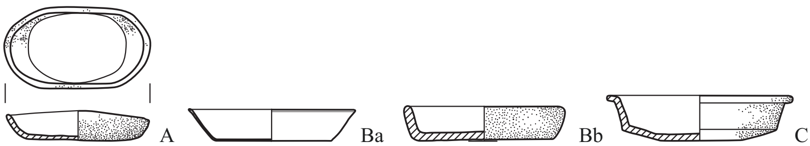
Plate 5: *Bo* bowl , *Wan* bowl, *Pen* basin and stemmed *Dou* bowl types:



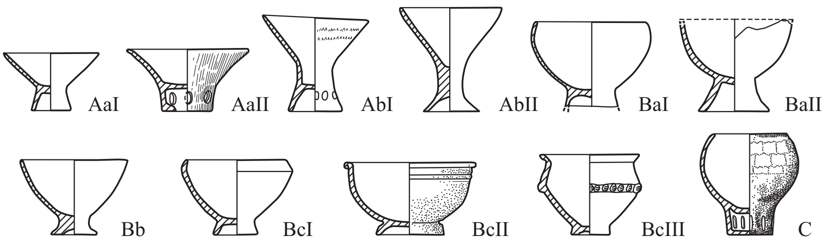
Bo bowl types: AaI: MGP3.3, AaII: MGP3.9, Ab: XMS8.11, Ba: XMSH1.7, Bb: XYPH2.2, C: XMS8.9, Da: XBBM4.16, Db: XWNM2.10, Dc: PXC0.5, Ea: XLZAM10.97, Eb: XHS0.10, Ec: XLZBM8.2, Fa: HJFM26.4, Fb: XDYKa3.4, Fc: DYM2.3



Wan bowl types: Aa: XHS4.24, Ab: XHS4.25, Ba: XHSH3.21, Bb: XLZBM3.11, Bc: XLZAM1.9, C: XYGM1.5



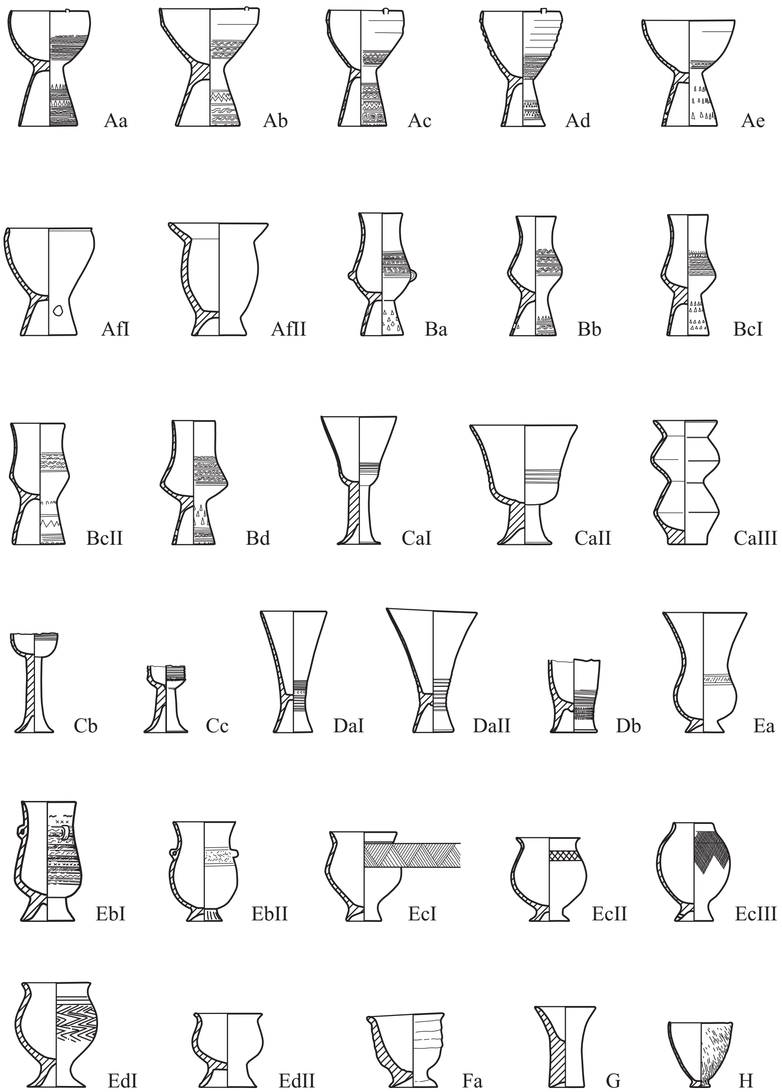
Pen basin types: A: XLZBM2.4, Ba: DARM4.6, Bb: XLZBM2.3, C: XLZHM1.14



Stemmed *Dou* bowl types: AaI: XDYM8.2, AaII: XLZAM9.70, AbI: XDYH2.1, AbII: MWQM2.118, BaI: XYPM1.1, BaII: ZFQM1.5, Bb: HFJM4.5, BcI: XDYM3.2, BcII: XLZHM1.30, BcIII: XDYKa13.1, C: XLZBM8.3

Plate A.6 *Goblet* types

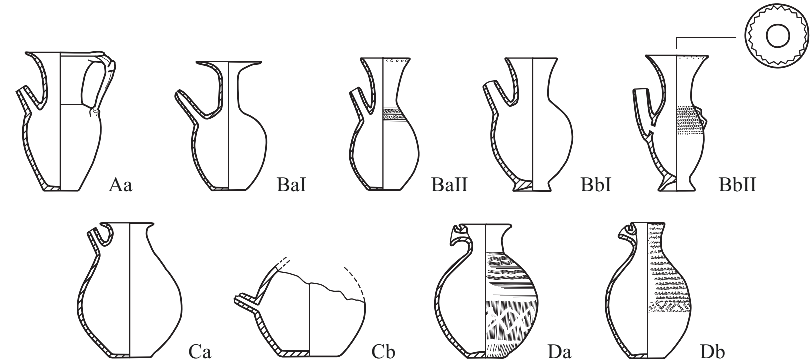
Plate 6: *Goblet* types



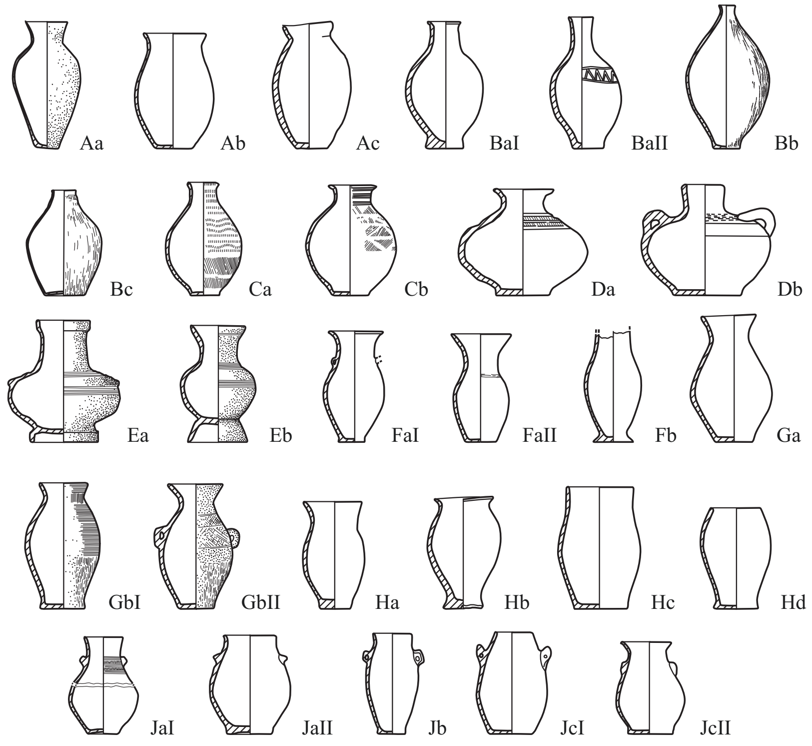
Goblet types: Aa: HLJM1.131, Ab: HLJM1.103, Ac: HLJM1.5, Ad: HLJM1.133, Ae: HLJM1.127, AfI: XDYM8.1, AfII: XDYH2.6, Ba: HLJM1.123 Bb: HLJM1.67, BcI: HLHM1.39, BcII: HLJM1.64, Bd: HLJM1.98, CaI: XQGM1.5, CaII: XBBM6.33, CaIII: XQGM1.9, Cb: XQGM2.3, Cc: XQGM2.4, DaI: XYJM3.2, DaII: XQGM1.7, Db: XQGM2.8, Ea: XBBM4.2, EbI: XLKM1.2, EbII: XHGM3.6, EcI: HFJM148.4, EcII: HFJM4.3, EcIII: HLJM1.53, EdI: HFJM29.1, EdII: MWQM2.102, Fa: XHGM3.6, G: XBBM6.35, H: HXPM5.1

Plate A.7 *Hu* ewer types and *Ping* vase types

Plate 7: *Hu* ewer types and *Ping* vase types



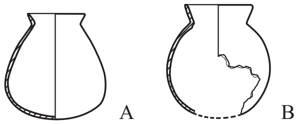
Hu ewer types: A: MWQM1.61, BaI: XXJM1.5, BaII: XBBM6.27, BbI: PXAM1.9, BbII: XLKM6.2, Ca: HFJM148.2, Cb: M26.2, Da: XLZAM10.107, Db: M10.103



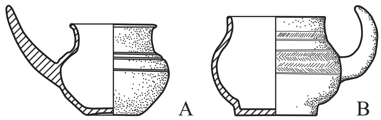
Ping vase types: Aa: HXPM13.1, Ab: DARM4.10, Ac: XHTM10.2, BaI: ZJPM3.2, BaII: ZJPM4.2, Bb: HXSM21.1, Bc: HXPM20.1, Ca: XLZAM10.99, Cb: XLZAM10.102, Da: XYGM1.4, Db: XYWM1.1, Ea: XLZHM2.4; Eb: XLZHM3.5, FaI: MWQM1.13, FaII: MWQM2.103, Fb: LYAM1.1, Ga: XGSM1.3, GbI: XLZBM5.5, GbII: XLZBM2.23, Ha: YGJC541, Hb: ZJPM2.1, Hc: HFJM138.1, Hd: LYAM8.1, I: HLJM1.14,JaI: HLJM1.10, JaII: HLJM1.82, Jb: HLJM1.1, JcI: HLJM1.36, JcII: HLJM1.97

Plate A.8 *Fu* pot types, Jar types, Metal vessel types, and Wooden bowl objects

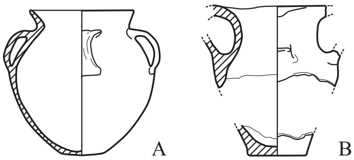
Plate 8: *Fu* pot types, Jar types, Metal vessel types and Wooden bowl objects



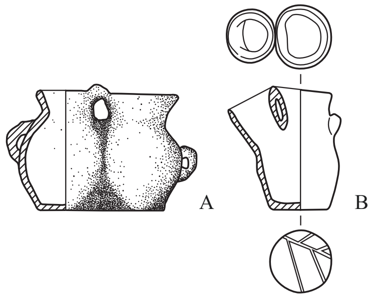
Fu pot types: A: XMSM1.3, B: XLKM1.5



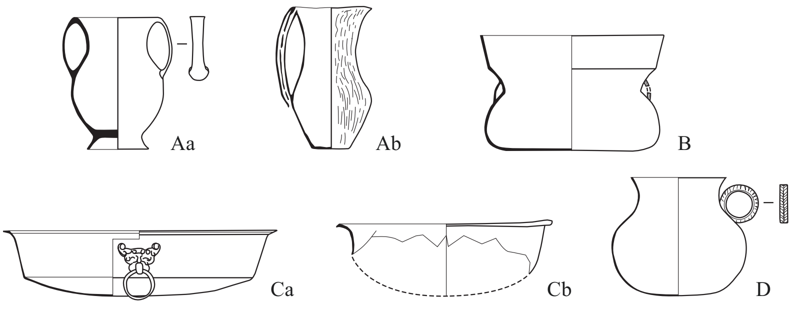
Jar types with horn-shaped handle: A: XLZHM4.26, B: XLZBM3.1



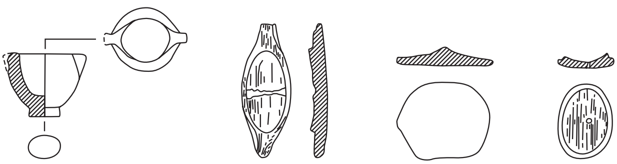
Double jar types: A: XLZBM3.13, B: HLJM1.114



Four-handled jar types: A: XHGM3.4, B: DARM4.3



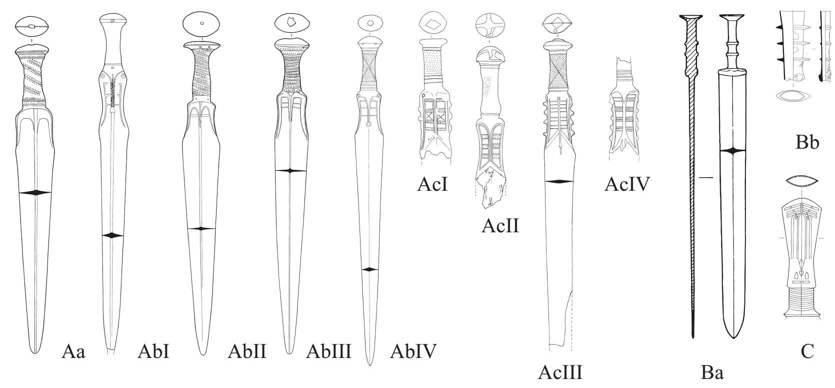
Metal vessel types: Aa: YGJC1016, Ab: YLSM1.4, B: YLLM4.10, Ca: ZJEM1.1, Cb: YLXM1.5, D: YGJC665



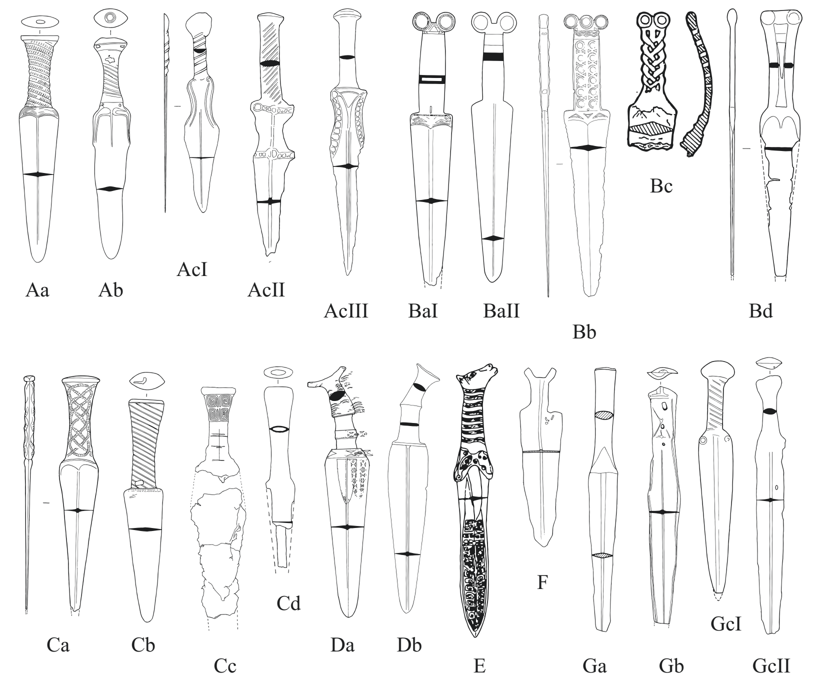
Wooden bowl (NDXM5.11), lid (NDXM5.2), oval object (NDXM5.5) and quiver bottom (NDXM5.3)

Plate A.9 Sword and dagger types

Plate 9: Sword and dagger types



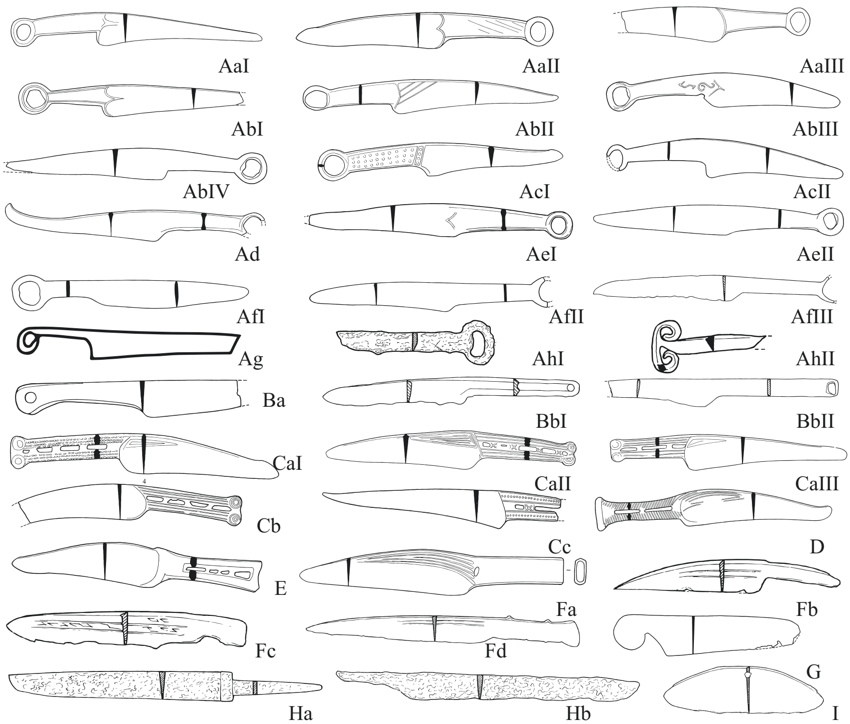
Sword types: Aa: YGJC288, AbI: YGJC490, AbII: YGJC121, AbIII: YGJC548, AbIV: YGJC545, AdI: YGJC491, AdII: YBJC57, AdIII: YGJC694, AdIV: YGJC960, Ba: HGJC66, Bb: YLLM6.51, C: HGJC60



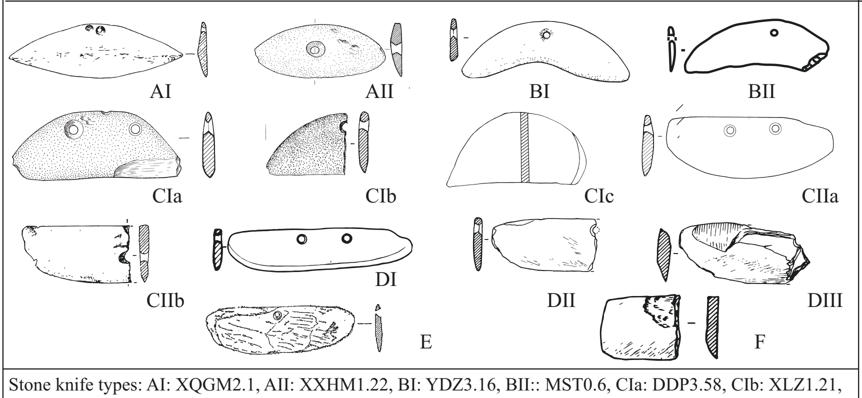
Dagger types: Aa: YGJC513, Ab: YGJC136, AcI: YGJC60, AcII: YGJC200, AcIII: YGJC201, BaI: YGJC345, BaII: YGJC194, Bb: YGJC227, Bc: NDXC1, Bd: YGJC227, Ca: YGJC447, Cb: YGJC469, Cc: YLLM9.5, Cd: HGUC4, Da: YLLM11.24, Db: YLLM7.1, E: HGUC4, F: HGJC28, Ga: HGJC62, Gb: YGJC156, GcI: YGJC9, GcII: YGJC7

Plate A.10 Knife ty*pe*s

Plate 10: Knife ty*pe*s



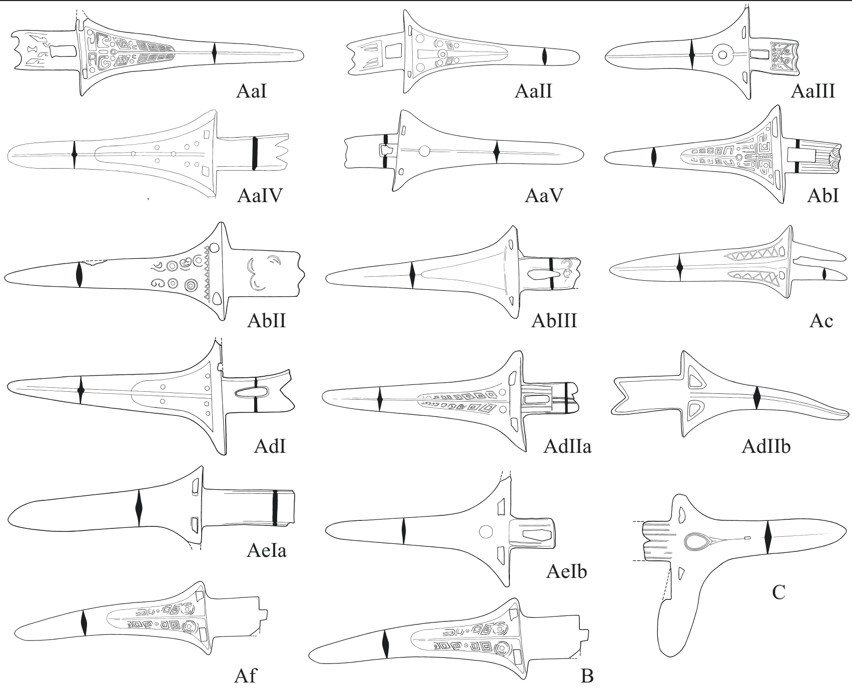
Metal knife types: AaI: YGJC315, AaII: YGJC372, AaIII: YGJC373, AbI: YGJC316, AbII: YGJC36, AbIII:YGJC477, AbIV: YGJC424, AcI: YGJC97, AcII: YGJC41, Ad: YGJC276, AeI: YGJC102, AeII: YGJC620, AfI: YGJC585, AfII: YGJC100, AfIII: HGJC29, Ag: YLSM1.54, AhI: XGQM1.9, AhII: XXHM1.21, Ba: YGJC106, BbI: HGJC91, BbII: HGJC58, CaI: YGJC35, CaII: YGJC609, CaIII: YGJC42, Cb: YGJC298, Cc: YGJC614, D: YGJC151, E: YGJC92, Fa: YLLM11.4, Fb: XBBM1.52, Fc: DGYM2.1, Fd: PXAM1.3, G: YGJC617, Ha: XGQM1.3, Hb: XGQM1.2, I: XXHM1.13



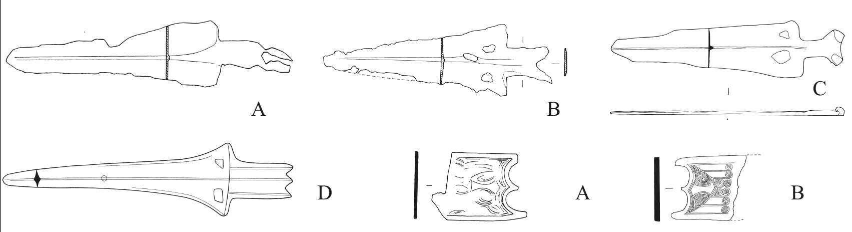
Stone knife types: AI: XQGM2.1, AII: XXHM1.22, BI: YDZ3.16, BII:: MST0.6, CIa: DDP3.58, CIb: XLZ1.21, CIc: YLM11.10, CIIa: XMSH3.4, CIIb: XHS0.36, DI: XYP5.14, DII: DMK0.14, DIII: DMK0.15, E: XYG0.7, F: DWTH3.1

Plate A.11 Dagger axes and scabbards

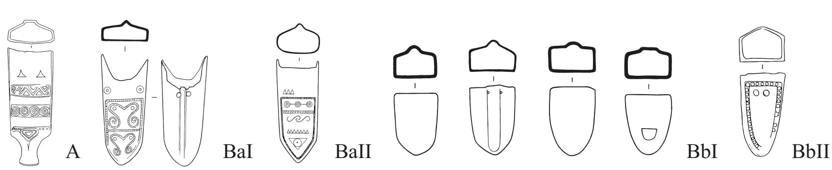
Plate 11: Dagger axes and scabbards



Ge dagger-axe types: AaI: YGJC68, AaII: YGJC522, AaIII: YGJC58, AaIV: YLLM11.7, AaV: YGJC34, AbI: YGJC556, AbII: YGJC219, AbIII: YGJC60, Ac: YGJC294, AdI: YGJC442, AdIIa: YGJC14, AdIIb: YGJC555, AeIa: GJC433, AeIb: YGJC346, Af: YGJC320, B: YLLM11.1, C: YGJC523



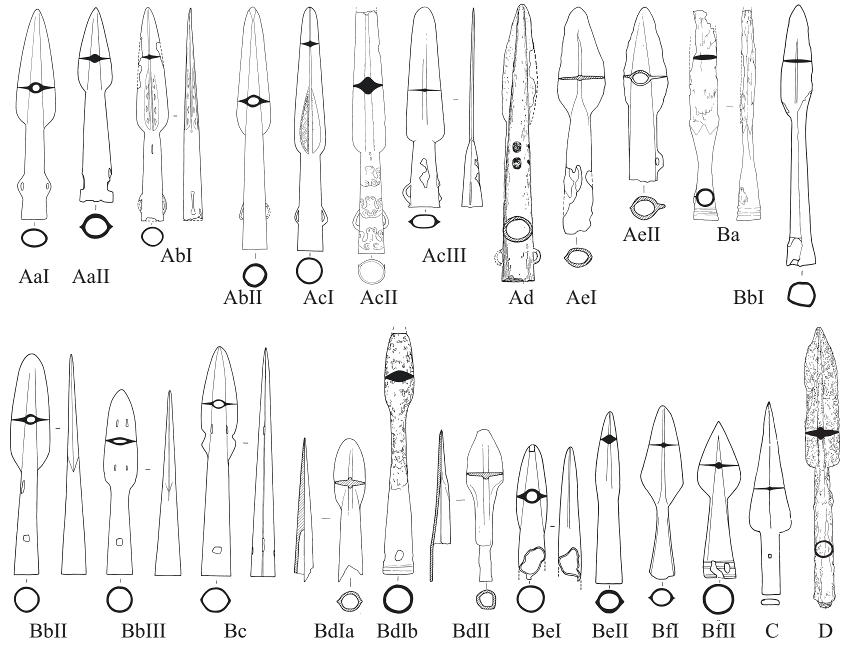
Mingqi ge dagger-axe types: A: HGJC24, B: HGJC25, C: YJGC583, D: YGJC436; 3; Ge butt: A: YLLM6.50, B: YLLM9.22



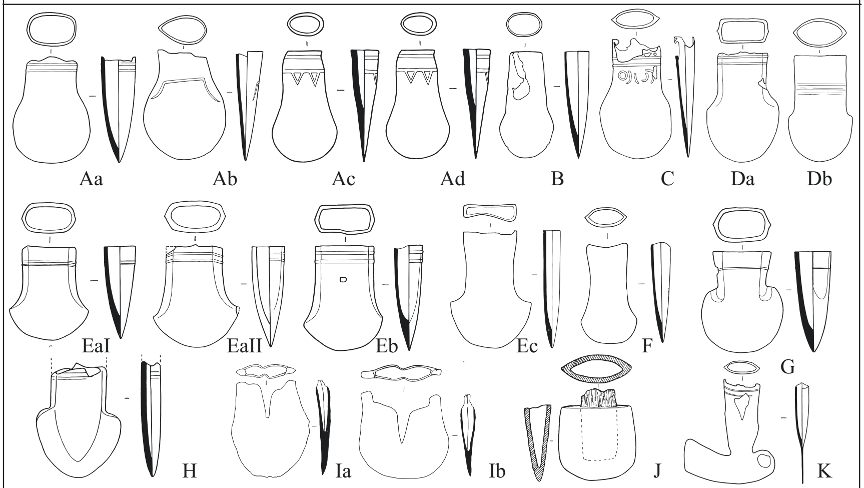
Scabbard types: A: YGJC178, BaI: YGJC107, BaII: YGJC458, BbI: YGJC302, YGJC289, YGJC491, BbII: YGJC455

Plate A.12 Spearheads and axes

Plate 12: Spearheads and axes



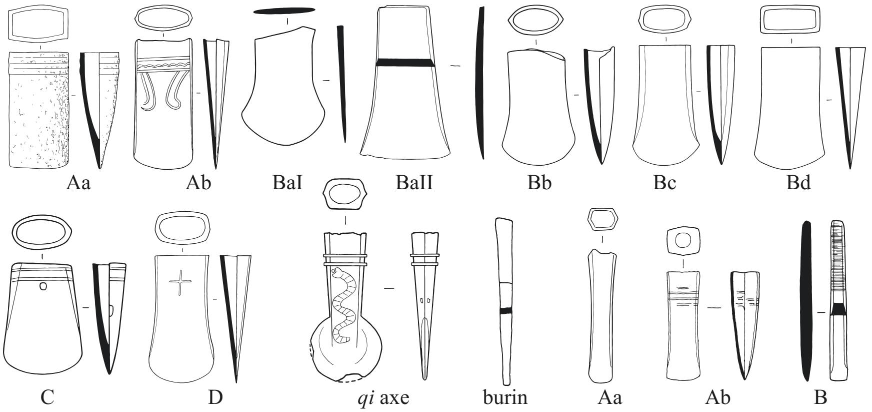
Mao spearhead types: AaI: YGJC337, AaII: YGJC157, AbI: YGJC734, AbII: YLLM11.2, AcI: YGJC514, AcII: YGJC38, AcII: YGSM1.13, Ad: HGJC4, AeI: HGJC14, AeII: YGJC174, Ba: YGJC190, Bb: YGJC1043, BbII: YGJC528, BbIII: YGJC40, Bc: HGJC8, BdI: YGJC322, BdII: HGJC6, BeI: YGJC1168, BeII: YGJC610, BfI: YGJC329, BfII: YGJC432, C: HGUC55, D: YLLM11.6



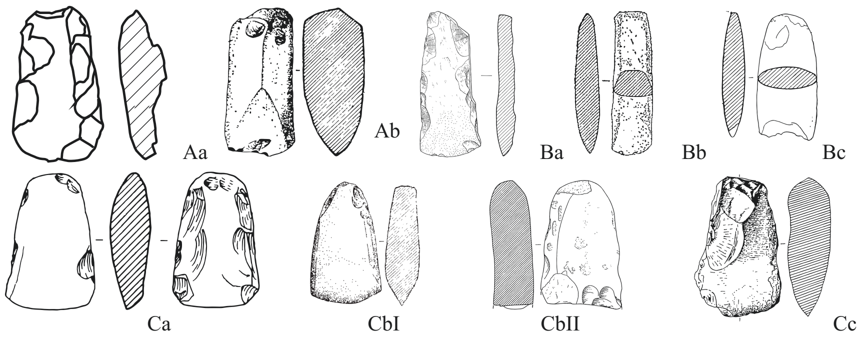
Yue axe types: Aa: YGJC63, Ab: YGJC47, Ac: YGJC488, Ad: YGJC287, B: YGJC62, C: YGJC557, Da: YGJC418, Db: YGJC71, EaI: YGJC7, EaII: YGJC489, Eb: YGJC485, Ec: YGJC737, F: NDXM2.4, G: YGJC349, H: YGJC607, Ia: HGJM4.2, Ib: HGJM29.7, J: ZJEM3.2, K: YGJC1167

Plate A.13 Axes, adzes, and chisels of metal and stone

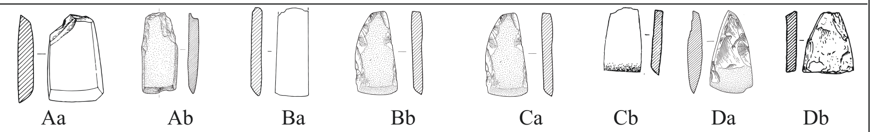
Plate 13: Axes, adzes, and chisels of metal and stone



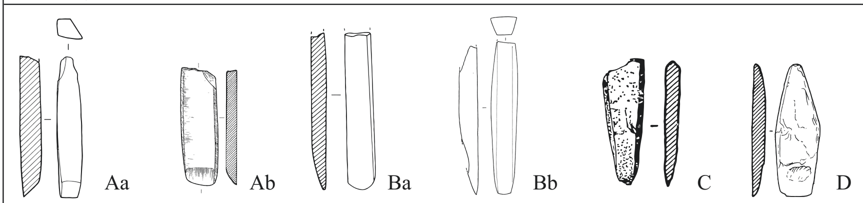
Metal *fu* axes: Aa: YGJC701, Ab: YGJC668, BaI: YGJC126, BaII: YLLM11.3, Bb: YGJC126, Bc: YGJC310, Bd: YGJC167, C: YGJC667, D: YGJC669; *qi* axe: YLLM9:20; bronze burin: YLLM6:51; metal chisels: Aa: YGJC597, Ab: YLLM6.29, B: YLLM11.13



Stone axes: Aa: HDZ0.25, Ab: PWL0.6, Ba: DDP0.5, Bb: PTB0.4, Bc: XWD0.12, Ca: HXPM6.1, CbI: ZEKM4.3, CbII: HLJM1.47, Cc: XHS0.32



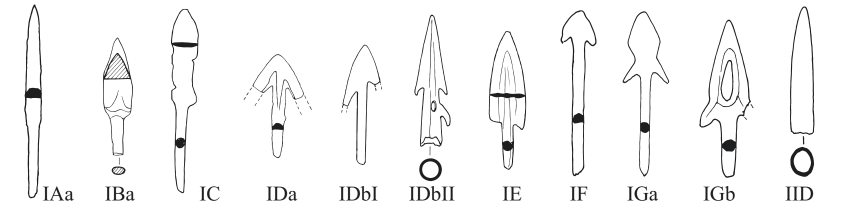
Stone adzes: Aa: XHS4.33, Ab: MWQM1.116, Ba: XMSH3.4, Bb: HZD0.34, Ca: XHS0.38, Cb: ZFQM2.1, Da: DWP3.21, Db DMK1.7



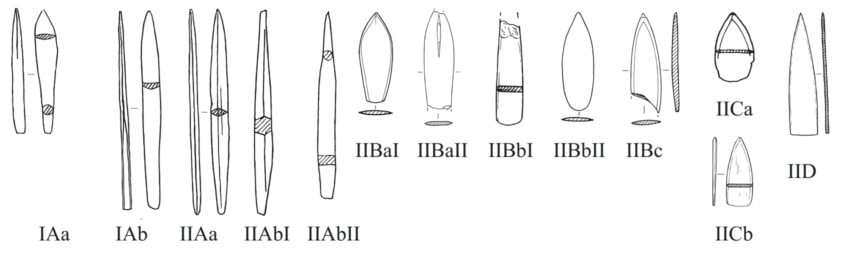
Stone chisels: Aa: XMS8.13, Ab: XLKM8.75, Bb: XHS4.36, Bc: XMS7.20, C: XLZ1.68, D: DMK4.13

Plate A.14 Arrowheads, net weights, and spindle whorls

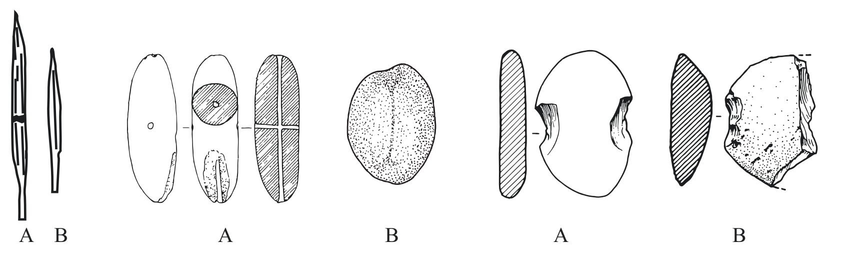
Plate 14: Arrowheads, net weights, and spindle whorls



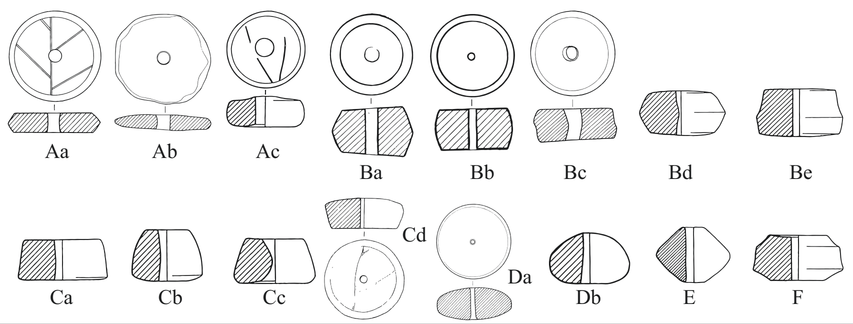
Metal arrowhead types: IAa: YLLM6.52, IBa: HGJC48, IBb: YDZM77.12, IC: PXAM1.5, IDa: YLLM6.42, IDbI: YLLM9.23-2, IDbII: YGJC637, IE: MWQM1.23, IF: YGJC634b, IGa: YGJC633, IGB: YGJC223, IID: YGJC626



Stone arrowhead types: IAa: YGJC714, IAb: YGJC710, IIAa: YGJC712, IIAbI: YLLM6.55-15, IIAbII: YLLM6.55-1, IIBaI: XMI4.23, IIBaII: XMI3.40, IIBbI: XYJM3.1, IIBbII: XMSH4.7, IIBc: XHS3.78, IICa: HFJM26.10, IICbI: YDZM9.1, IICbII: XLKM5.4, IICBIII: YDZM2.1-2, IID: XLKMM1.24



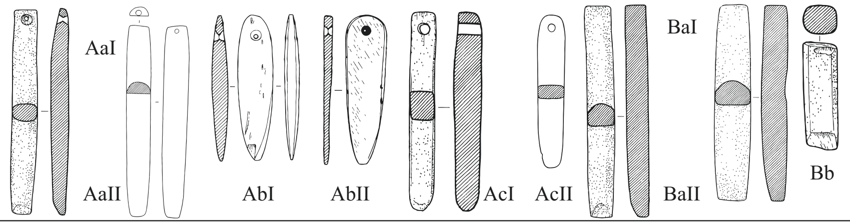
Wooden arrowheads: A: NDXM5.7.1, B: NDXM5.7.2; Ceramic net weight types: A: XQG3.30, B: XBBM6.8; A: XYPW12, B: XQG0.1



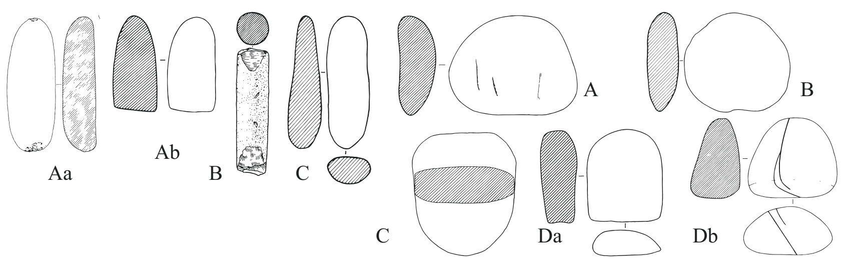
Ceramic spindle whorls: Aa: XMI5.13, Ab: XMI3.30, Ac: HLJM1.28, Ba: HFJM42.3, Bb: M37.7, Bc: MST0.9, Bd: HLJM1.108, Be: HLJM1:33, Ca: HLJM1;73, Cb: HLJM1.117, Cc: HLJM1.49, Cd: HWTM4.5, Da: XHGM4.8, Db: HLJM1.26, E: MST0.2, F: HLJM1.91

Plate A.15 Tools and armor

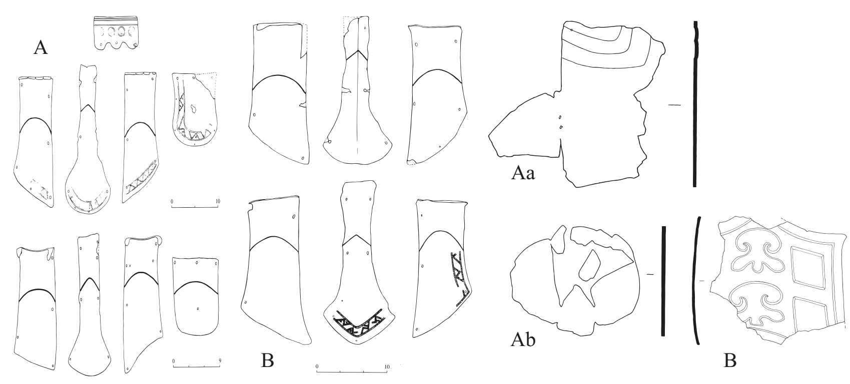
Plate 15: Tools and armor



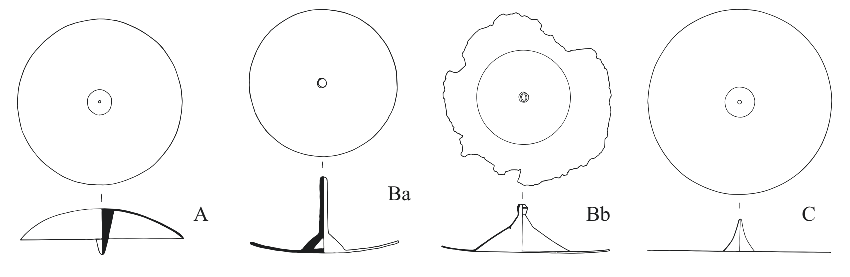
Grinding rollers: AaI: PXCBM4.48, AaII: YGJC0.342, AbI: HLJM1.38, AbII: HML0.3, AcI: XGQM1.27, AcII: YGJ0.286, BaI: XHGM2.6, BaII: XHGM4.7, Bb: DWT3.112



Stone pestles: Aa: XQG3.46, Ab: HLJM1.23, B: MST6.8, C: XYP6.15; Handstones: A: HLJM1.32, B: XYP5.19, C: YLLM11.22, Da: HLJM1.76, Db: HLJM1.14



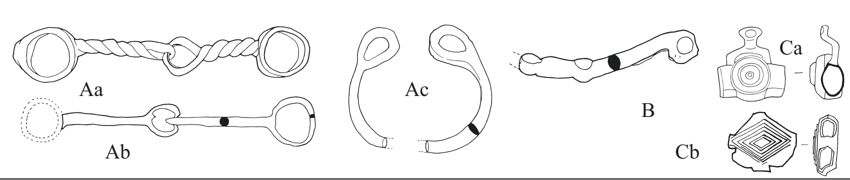
Arm guards: A: YLLM5.1, B: YLLM5.2; Body armor: Aa: YLLM5.2, Ab: YGJC1017, B: YLLM5.1



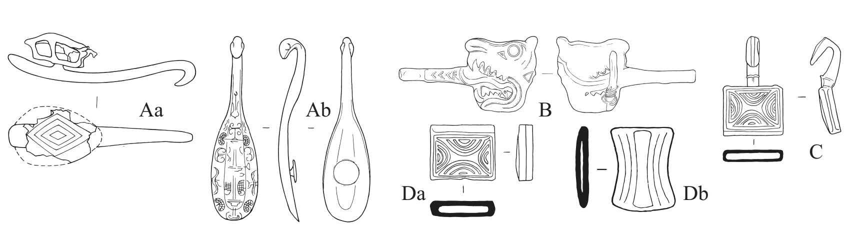
Round ornaments with thorn/shield bosses: A: YLLM4.19, Ba: YGJC731, Bb: YGJC164, C: YGJC415

Plate A.16 Horse harness and clothing parts

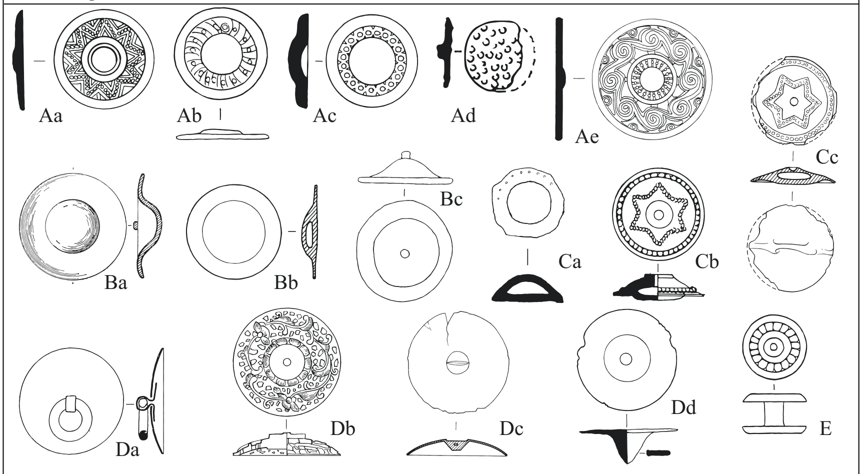
Plate 16: Horse harness and clothing parts



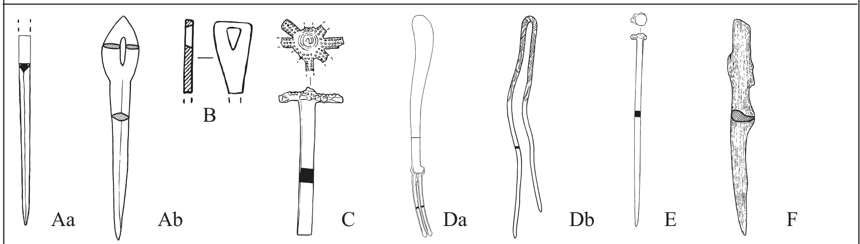
Horse harness: Aa: YGJC475, Ab: YGJC74, Ac: YGJC267, B: YGJC265, Ca: YLLM4.23-4, Cb: YGJC784



Metal belt parts: Aa: HGJC63, Ab: YGJC670, B: XXJM1.63, C: YGJC130, Da: YGJC131, Db: YLLM9.14



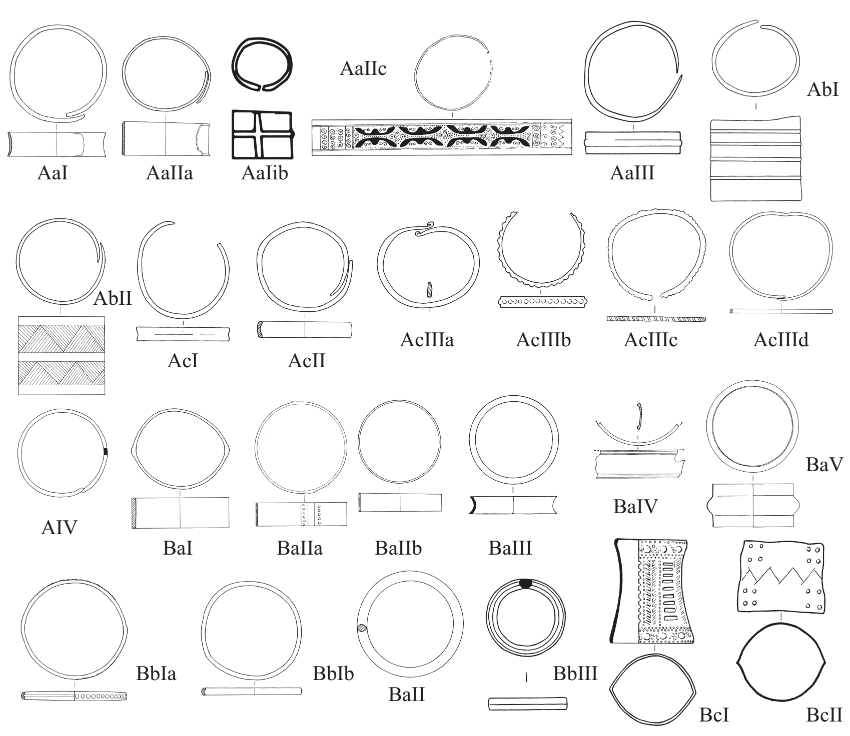
Button-shaped applications: Aa: YLLM6.4-7, Ab: YGJC671-1, Ac: YLLM9.16, Ad: XWNM1.19, Ae: YLLM6.39, Ba: XXLKM6.26, XGQM1.71, YLLM6.45, YLLM4.6, YLLM4.5, Cb: YGJC755, Cb1: HGJC18, Da: XGQM1.70, Db: XXHM1.25, Dc: HGJC16, Dd: YGJC682, E: YGJC732



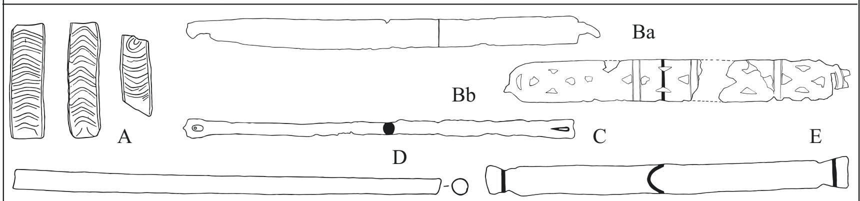
Hair needles: Aa: XXJM1.28, Ab: YLLM6.56, B: YGJC139, C: XBBM1.21, Da: YDZM10.1, Db: YDZM62.4, E: XLKM6.19, F: XLKM6.19

Plate A.17 Bracelets and rings

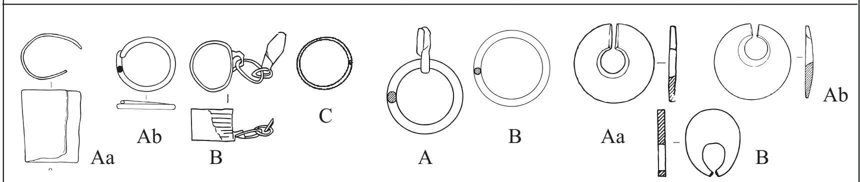
Plate 17: Bracelets and rings



Metal bracelet types: AaI: PXAM1.1, AaIIa: DARM4.8, AaIIb: DARM4.7, AaIIc: YLXM1.1, AaIII: PXAM2.6, AbI: YGJC677, AbIa: YGJC91, AcI: YGJC55, AcII: XXJM1.9, AcIIIa: XGQM1.4, AcIIIb: XLKM6.29, AcIIIc: YGJC204, AcIIId: HGJC30, AV: XGQM1.67, BaI: HGJC14, BaIIa: YGJC153, BaIIb: PXBM1.51, BaIII: PXBM4.36, BaIV: PXBM1.52, BaIV: HFJM149.2, BaV: XHGM2.16, BbIa: YGJC94, BbIb: PXBM1.54, BbII: PXBM1.55, BbII: PXAM2.6, BbIII: YGJC82, BcI: XLKM6.31, BcII: MBBM1.4



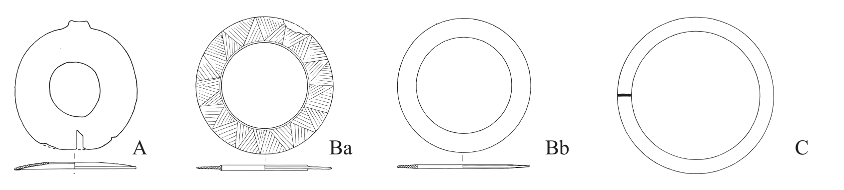
Decorative metal bands: A: YGJC703, Ba: YLLM4.24, Bb: YGJC689, C: YLLM4.2, D: YGJC685-2, E: YGJC4132



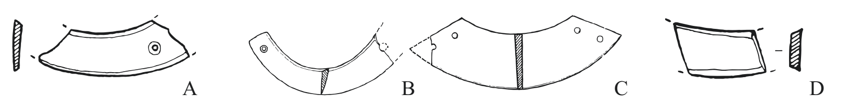
Finger-ring types: Aa: PXBM1.41, Ab: XBBM1.84, B: YGJC679, C: ZCBM6.3; other decorative metal rings: A: XQGM1.11, B: XQGM1.69; slit rings made of bone or nephrite: Aa: XBBM1.86, Ab: XXJM1.36, B: YLLM11.17

Plate A.18 Flat rings, pendants, and beads

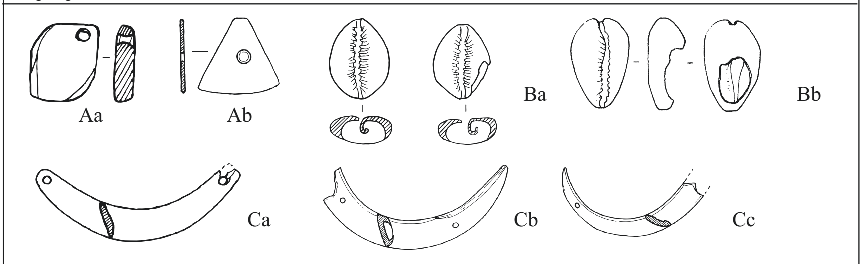
Plate 18: Flat rings, pendants, and beads



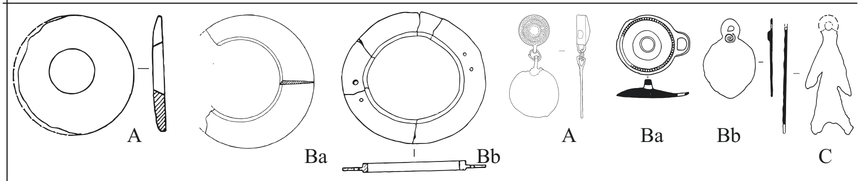
Flat rings: Aa: XGQM1.5, Ba: XLKM8.28, Bb: XGQM1.68, C: BBM1.83



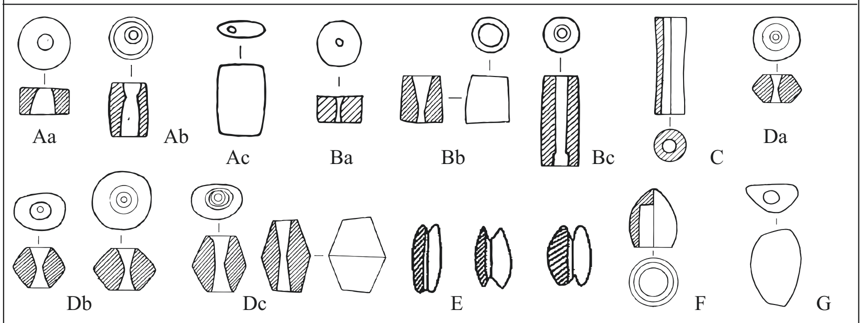
Ring segments made of bone or stone: A: ZJEM1.4, B: XBBM1.87, C: XLKM6.18, D: ZJEM1.5



Pendant Types: Aa: ZJEM2.1, Ab: XWNM2.5, Ba: YGJC37038, Bb: YDZM77.1-3, YDZM94.7-9, Ca: PXBM4.40, Cb: PXBM2.28, Cc: PXBM1.58



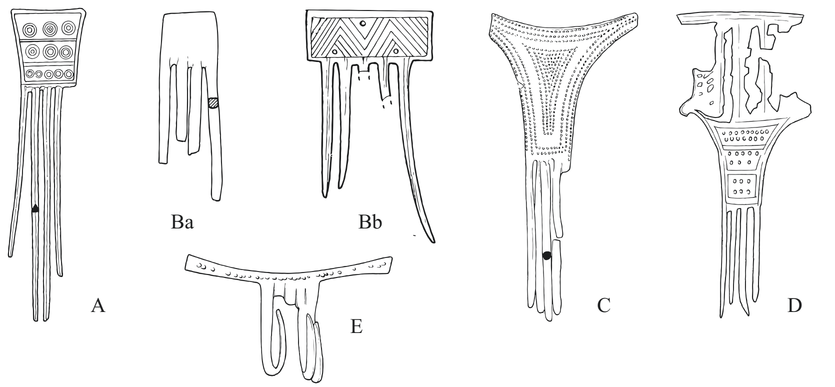
Closed rings made of bone: A: XHGM4.13, Ba: PXBM1.29, Bb: HFJM3.3; metal pendants: A: YGJC1011, Ba: YGJC147, Bb: YGJC148, C: YGJC1023-1



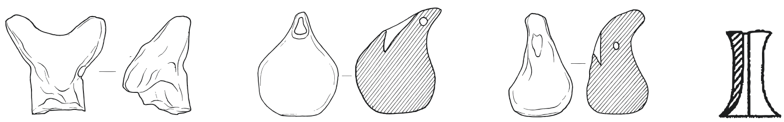
Beads: Aa: YLLM4.34, Ab: XXJM1.44, Ac: YLLM4.34-1, Ba: YLLM6.54, Bb: DARM4.6, Bb: XWNM2.1, Bc: HGJM2.3, C: DGYM2.3, Da: MWQM1.84, Db: DGYM2.2, Dc: BBM1.76, Dc: DARM3.3, E: ZCBM1.5, F: BBM1.90, G: YLLM11.21

Plate A.19 Various ornaments

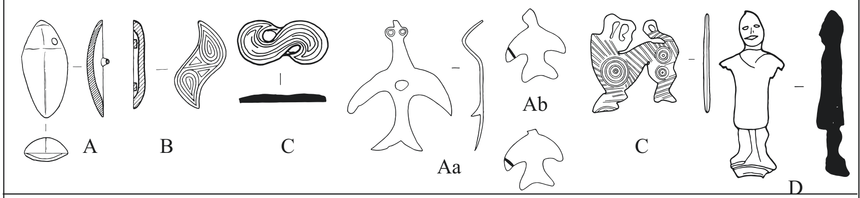
Plate 19: Various ornaments



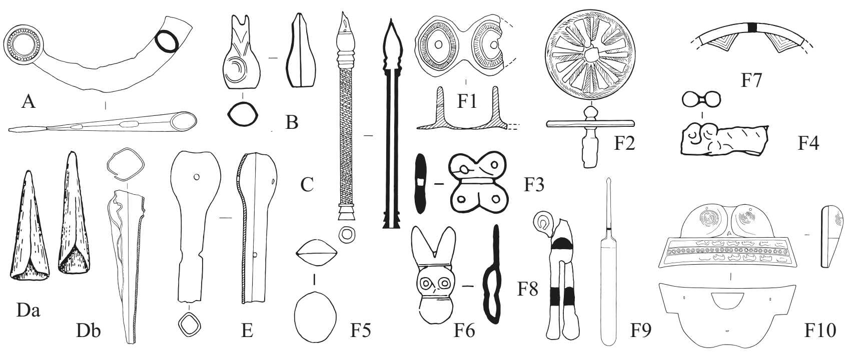
Hair combs: A: PXBM4.15, Ba: XXJM1.22, Bb: PXBM4.9, C: XXJM1.23, D: XXJM1.26, E: XXJM1.27



Ceramic objects: ram's-head shaped object (XYGM2.8), drop-shaped pendants (XYGM2.5, 4), glazed ear pendant (ZCBM6.2)



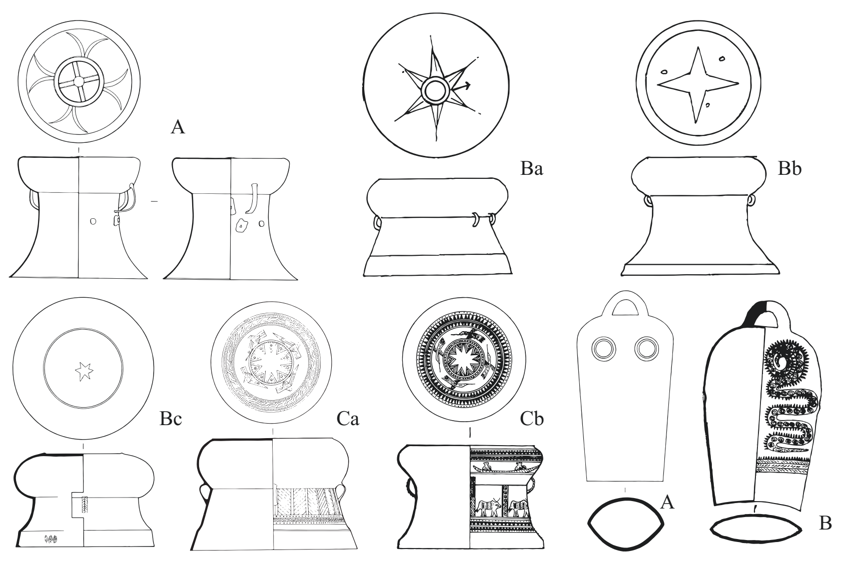
Geometric applications: A: XXJM1.17, B: HGJC49-1, C: YGJC79; zoomorphic and anthropomorphic decoration elements: Aa: YGJC380, Ab: YGJC1169, B: YGJC568, C: YGJC304



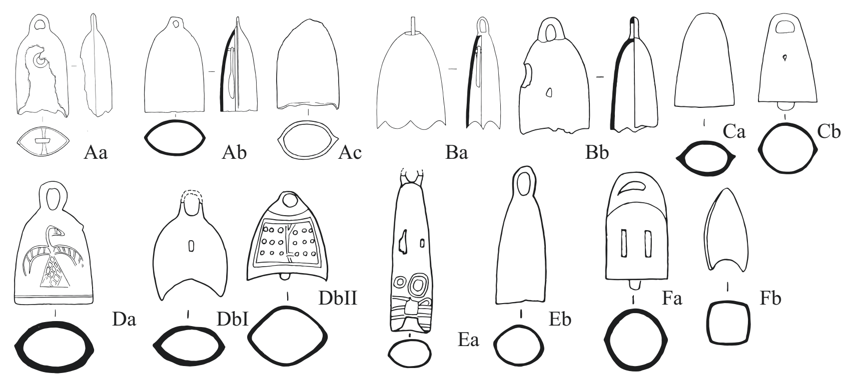
Other metal ornaments: A: YGJC465, B: YGJC686, C: YGJC413, D: XLKM6.26, E: XXHM1.18-19, Da: XXJM1.18, F1: HGJM13.2, F2: YGJC690, F3: YLLM6.53, F4: YLLM11.25, F5: YLLM4.26-1, F6: YLLM9.14, F7: YLLM9.9, F8: YLLM11.15, F9: YLLM6.23, F10: YLLM6.5

Plate A.20 Drums, bells, coins, and seals

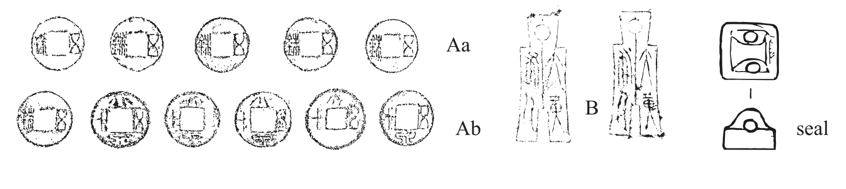
Plate 20: Drums, bells, coins, and seals



Drums: A: YMBM2.2, Ba: YMBM1.19, Bb: YMBM1.20, Bc: YGJC1025, Ca: YLLM4.11, Cb: HLLC1; *bianzhong* bells: A: YLLM4.12 9, B: HZC



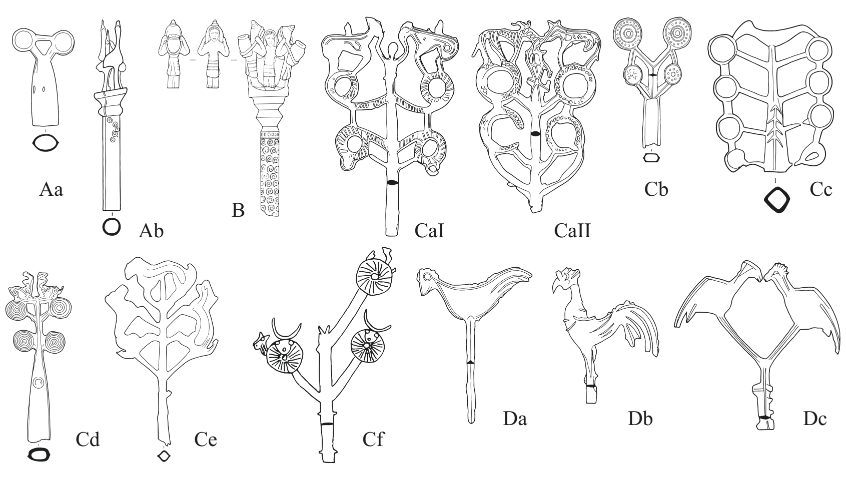
Ling bell types: Aa: XHGM2.4, Ab: XLKM8.80, Ac: XXJM1.12, Ba: YDZM15.1-2, Bb: YLLM6.15-2, Ca: YGJC268, Cb: YGJC442, Da: YGJC5, DbI: YGJC113, DbII: YGJC152, Ea: YGJC89, Eb: YGJC183, Fa: YGJC570-1, Fb: YGJC597



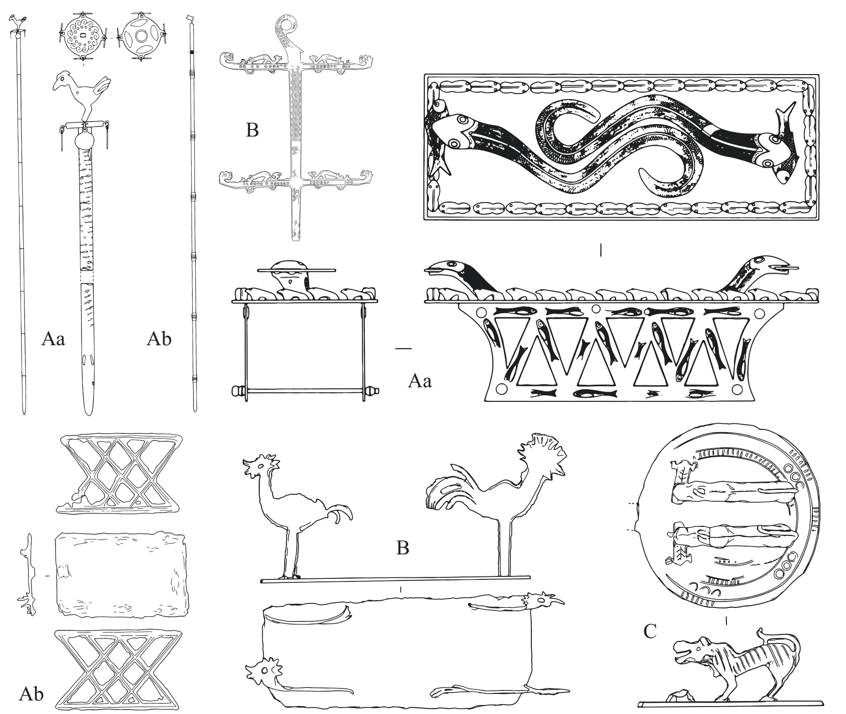
Coins: Aa: ZCBM3.7, Ab: ZCBM1.4-1-3, B: YGJC1029; seal: XLKM8.24

Plate A.21 Drums, bells, coins, and seals

Plate 21: Drums, bells, coins, and seals



Staff heads: Aa: YGJC343, Ab: YGJC645, B: YGJC643, CaI: YGJC651, CaII: YGJC657, Cb: YGJC28, Cc: YGJC27, Cd: YGJC328, Ce: YGJC502, Cf: HGYC80, Da: YGJC396, Db: YGJC735, Dc: YGJC482



Staffs: Aa: YGJC8, Ab: YGJC1013, B: YGJC419; bronze stands: Aa: YGJC642, Ab: YGJC375, B: YGJC1012, C: YGJC1014

Appendix B: Tables and Figures

Table B.1 Grave sites by site name

Site name	County	Other features	No.
Ada Bobu 阿打波補	Zhaojue County 昭覺縣		273
Amucun 阿木村	Puge County 普格縣		129
Arong 阿榮	Dechang County 德昌縣		1
Ayong 阿雍	Dechang County 德昌縣		2
Ayue 阿月	Dechang County 德昌縣		3
Azu Bugu 阿足	Meigu County 美姑縣		92
Bagu Erjue 巴古爾覺	Zhaojue County 昭覺縣		274
Bahe Baozi 垻河堡子	Xichang County 西昌縣	Settlement	144
Baihushan 白虎山	Renhe County 仁和縣		137
Baijiazhai 白家寨	Xichang County 西昌縣		145
Baila Gucun 白拉古村	Renhe County 仁和縣		138
Bakeku Cun 巴克苦村	Zhaojue County 昭覺縣		275
Bei Ganhaixiang 北干海乡	Yanyuan County 鹽源縣		233
Beishan 北山	Xichang County 西昌縣		146
Beishanba 北山垻	Mianning County 冕寧縣		100
Boshucun 博樹村	Yanyuan County 鹽源縣		234
Caojiawan 曹傢灣	Yanyuan County 鹽源縣		235
Changcun 長村	Xichang County 西昌縣		148
Chengguan 城関	Mianning County 冕寧縣		101
Chenyuancun 陳遠村	Xichang County 西昌縣		149
Chike Boxixiang 齒可波西鄉	Zhaojue County 昭覺縣		276
Cizhuiping 茨竹坪	Dechang County 德昌縣		4
Daba 大垻	Dechang County 德昌縣		5
Daba Gongshe 大垻公社	Zhaojue County 昭覺縣		277
Dabaobao 大包包	Xichang County 西昌縣		150
Dabaozi 大堡子	Xichang County 西昌縣		151
Dabaozi Geze 大堡子格則	Zhaojue County 昭覺縣		278
Dacaoba 大草垻	Xichang County 西昌縣		152

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DOI 10.1007/978-3-319-42384-5

Site name	County	Other features	No.
Dachangba 大廠垻	Dechang County 德昌縣		6
Da'edou Gezi 大俄都格則	Zhaojue County 昭覺縣		279
Dashiban 大石板	Xichang County 西昌縣		155
Dashipai Graves 大石排	Dechang County 德昌縣		7
Dawenquan 大溫泉	Zhaojue County 昭覺縣		280
Daxingzhen 大興鎮	Ninglang County 寧蒗縣		123
Dayangdui 大洋堆	Xichang County 西昌縣	Settlement, object pits	156
Dianma 點馬	Dechang County 德昌縣		9
Dipo Cier 氐坡此爾	Zhaojue County 昭覺縣		281
Duizi 堆子	Yongsheng County 永勝縣	Settlement	260
Eba Buji 俄巴佈吉	Zhaojue County 昭覺縣		282
Erba Keku 尓巴克苦	Zhaojue County 昭覺縣		284
Ergu Zege 尓姑	Zhaojue County 昭覺縣		285
Erwu 二五	Zhaojue County 昭覺縣		286
Fangjiacun 方家村	Dechang County 德昌縣		11
Fenjiwan 糞箕湾	Huili County 會理縣	Settlement	54
Fenjiwan Stone Graves 糞箕灣石棺葬	Huili County 會理縣		53
Fuchengqu 附城區	Zhaojue County 昭覺縣		287
Ganhai 干海	Dechang County 德昌縣		12
Gesa 格撒	Yanyuan County 鹽源縣		237
Geze Yangpeng 格則羊棚	Zhaojue County 昭覺縣		288
Guadi 瓜地	Dechang County 德昌縣		13
Guanshan 関山	Xichang County 西昌縣	Settlement	160
Guantianshan 觀田山	Huili County 會理縣	Settlement	56
Guihuacun 桂花村	Xichang County 西昌縣		161
Guluqiao 軲轤橋	Xide County 喜德縣		216
Guojiabao 郭傢堡	Huili County 會理縣	Settlement	57
Guoyuan 果園	Dechang County 德昌縣		14
Guoyuancun 果園村	Xide County 喜德縣		217
Haba Qiehe 哈巴切合	Zhaojue County 昭覺縣		289
Haimatang 海馬塘	Yanyuan County 鹽源縣		239
Hangan Yide 汗干依德	Zhaojue County 昭覺縣		290
Hedongtian 河東田	Huili County 會理縣		59
Heiluo 黑洛	Zhaojue County 昭覺縣		292
Hejia Fenshan 何家墳山	Dechang County 德昌縣		15
Hejiashan 何傢山	Dechang County 德昌縣		16
Heping 和平	Puge County 普格縣		130
Hexi Gongshe 河西公社	Xichang County 西昌縣		163
Hongmiao 紅廟	Dechang County 德昌縣		18
Hongmiaocun 紅廟村	Dechang County 德昌縣		19
Hongqi 紅旗	Xichang County 西昌縣		164
Houzidong 猴子洞	Huili County 會理縣	Settlement	62

Site name	County	Other features	No.
Huangjiaba 黄家垻	Dechang County 德昌縣		20
Huangshuitang 黄水塘	Xichang County 西昌縣		165
Huayang 華陽	Yuexi County 越西縣		269
Huimin 惠民	Yanbian County 鹽邊縣		227
Jianxin 建新	Xichang County 西昌縣		167
Jiaodingshan 轎頂山	Yanyuan County 鹽源縣	Settlement	240
Jiejiafen 解傢墳	Yanyuan County 鹽源縣		241
Jike Jiejue 吉克傑覺	Zhaojue County 昭覺縣		293
Jinzi Niaobu 金子鳥佈	Zhaojue County 昭覺縣		294
Jiukou Jiaogu 九口腳谷	Meigu County 美姑縣		93
Keri Watuo 克日瓦托	Zhaojue County 昭覺縣		296
Kujia Ebu 庫家俄佈	Zhaojue County 昭覺縣		297
Lake Sihe 拉克公社四合	Xide County 喜德縣		218
Lanfenba 爛墳垻	Xide County 喜德縣		219
Laolongtou 老龍頭	Yanyuan County 鹽源縣		242
Laoniuchang 老牛場	Xide County 喜德縣		220
Leijiashan 雷傢山	Huili County 會理縣		66
Liangsanpo 涼傘坡	Dechang County 德昌縣		21
Liaojiashan 聊家山	Yuexi County 越西縣		270
Liguoshan 李果山	Xichang County 西昌縣		168
Lijiagou Cun 李傢溝村	Xichang County 西昌縣		167
Lizhou 禮州	Xichang County 西昌縣	Settlement	170
Luojiaba 儸家堡	Dechang County 德昌縣		22
Luowa 洛瓦	Yanyuan County 鹽源縣		243
Luzhuishan 盧嘴山	Xichang County 西昌縣		171
Ma'anshan 馬鞍山	Xichang County 西昌縣	Settlement	172
Ma'anzi 馬鞍子	Dechang County 德昌縣		23
Machu Nawo 馬処鈉窩	Zhaojue County 昭覺縣		298
Malilang Zhanbei 痲栗糧站北	Dechang County 德昌縣		24
Maliliang Zhannan 痲栗糧站南	Dechang County 德昌縣		25
Maliucun 痲柳村	Xichang County 西昌縣	Settlement, object pit	175
Manshuiwan 漫水灣	Mianning County 冕寧縣		105
Maojiaba 毛傢垻	Yanyuan County 鹽源縣		244
Maomaoshan 帽帽山	Xichang County 西昌縣		176
Meiyu Bacun Sanzu 梅雨八村三組	Yanyuan County 鹽源縣		245
Miaozi Laobao 廟子老堡	Huili County 會理縣		69
Mimilang 咪咪啷	Xichang County 西昌縣	Settlement	177
Minzhucun 民主村	Dechang County 德昌縣		28
Mucuo Naijie 木措乃姐	Zhaojue County 昭覺縣		299
Muergguo 木爾果	Zhaojue County 昭覺縣		300
Mujueke 莫覺柯	Zhaojue County 昭覺縣		301
Naituo 乃托	Zhaojue County 昭覺縣		302

Site name	County	Other features	No.
Nanbianhe 南边河	Yanyuan County 鹽源縣		247
Nanhua Baobao 南華包包	Dechang County 德昌縣		29
Nanhuagong 南華官	Dechang County 德昌縣		30
Niaopo 鸟坡	Zhaojue County 昭覺縣		303
Puling 普隆	Huili County 會理縣		70
Pulingcun 普隆村	Yanbian County 鹽邊縣		228
Pusu Bohuang 濮蘓波湟	Zhaojue County 昭覺縣		304
Qianjinshe 前進社	Zhaojue County 昭覺縣		305
Qiaodiping 蕎地坪	Yongsheng County 永勝縣		265
Qimugou 棲木沟	Xichang County 西昌縣	Settlement, object pits	179
Qingli 清理	Xide County 喜德縣		221
Qu'ershan 雀兒山	Yuexi County 越西縣		271
Reshuitang West 熱水塘西	Xichang County 西昌縣		181
Ruoshuicun 若水村	Mianning County 冕寧縣		107
Sanjingxiang 三井巷	Miyi County 米易縣		117
Sankuaishi 三塊石	Mianning County 冕寧縣		109
Shaba 沙垻	Dechang County 德昌縣		31
Shajiapo 沙家坡	Xichang County 西昌縣		183
Shangxiang 上香	Xichang County 西昌縣		184
Shaorenba 燒人垻	Dechang County 德昌縣		32
Shengdu Wage 聖都瓦各	Meigu County 美姑縣		94
Shengli 勝利	Dechang County 德昌縣		33
Shijia Baozi 施傢堡子	Xichang County 西昌縣		187
Shizuizi 石嘴子	Xichang County 西昌縣		188
Shuanggudui 雙谷堆	Xichang County 西昌縣		189
Shuijingwan 水井灣	Dechang County 德昌縣		34
Shuitangcun 水塘村	Dechang County 德昌縣		35
Siyi Ergu 司益爾古	Zhaojue County 昭覺縣		307
Songlin Laojie 松林老街	Mianning County 冕寧縣		110
Tangguan Liandi 唐光連地	Yanyuan County 鹽源縣		248
Tangjiaba 唐傢垻	Huili County 會理縣	Settlement	74
Tangjiapo 唐傢坡	Huili County 會理縣		75
Tangshidi 唐氏地	Yanyuan County 鹽源縣		249
Teluocun 特洛村	Zhaojue County 昭覺縣		308
Tianba 田垻	Miyi County 米易縣		118
Tianbacun 田垻村	Xichang County 西昌縣		191
Tianwangshan 天王山	Xichang County 西昌縣	Settlement	192
Tiaowoba 跳窩垻	Zhaojue County 昭覺縣		309
Tuanbao 團堡	Xichang County 西昌縣		193
Wadaluo 瓦打洛	Puge County 普格縣	Settlement, object pit	134
Wadegu 瓦得姑	Xide County 喜德縣	Settlement	222
Wagujue Cunnan 瓦姑覺村南	Meigu County 美姑縣		95

Site name	County	Other features	No.
Wagujue Dongbei 瓦姑覺東北	Meigu County 美姑縣		96
Wagujue Dongnan I 瓦姑覺東南 I	Meigu County 美姑縣		97
Wagujue Dongnan II 瓦姑覺東南 II	Meigu County 美姑縣		98
Wajimu 瓦吉木	Yuexi County 越西縣		272
Waluo Geci 瓦洛格側	Zhaojue County 昭覺縣		310
Wanao 窪塯	Xichang County 西昌縣		196
Wangsuo 王所	Dechang County 德昌縣		38
Wanqiu 彎丘	Miyi County 米易縣		119
Washitian 瓦石田	Huili County 會理縣	Settlement	77
Watuo 瓦托	Zhaojue County 昭覺縣		311
Wazhaishan 瓦寨山	Zhaojue County 昭覺縣		312
Wenjiaba 溫傢埧	Xide County 喜德縣		224
Wuguishan 烏龜山	Xichang County 西昌縣		197
Wuhe 伍合	Xide County 喜德縣		225
Wuhuangqing 吳黃箐	Huili County 會理縣		78
Wujia 吳傢	Dechang County 德昌縣		39
Wuming Baobao 無名包包	Yanyuan County 鹽源縣		250
Wushidi II 伍氏地	Yanyuan County 鹽源縣		252
Wushidi III 吳氏地	Yanyuan County 鹽源縣		253
Xiangshi 响石	Mianning County 冕寧縣		112
Xiaogao 小高	Dechang County 德昌縣		40
Xiaogoudi 小溝地	Mianning County 冕寧縣		113
Xiaoguan Liangzi 小官梁子	Yanyuan County 鹽源縣	Settlement	254
Xiaohebian 小河邊	Yanyuan County 鹽源縣		255
Xiaohuashan 小華山	Xichang County 西昌縣	Settlement	198
Xiaoliusuo 小六所	Dechang County 德昌縣		41
Xiaomiaoshan 小廟山	Dechang County 德昌縣		42
Xiaotuanshan Graves 小團山石棺葬	Huili County 會理縣		80
Xiaoxingchang 小興場	Puge County 普格縣	Settlement	135
Xiaoyingpan 小營盤	Huili County 會理縣		82
Xicaodi 蓆草地	Huili County 會理縣		83
Xicaodi 席草地	Yanbian County 鹽邊縣		229
Xijiao Gongshe 西郊公社	Xichang County 西昌縣		200
Xingsuo 星宿	Xichang County 西昌縣		201
Xinmin Wujia 新民吳家	Dechang County 德昌縣		43
Xinxingcun 新興村	Xichang County 西昌縣		202
Xinying 新營	Xichang County 西昌縣		203
Xixicun 西溪村	Xichang County 西昌縣		204
Yangjiashan 楊傢山	Xichang County 西昌縣	Settlement	205
Yanjiashan 燕家山	Xichang County 西昌縣		206
Yezhugou 野豬溝	Xichang County 西昌縣		208
Yibijia 依比甲	Zhaojue County 昭覺縣		313

Site name	County	Other features	No.
Yihe Geci 依合格側	Zhaojue County 昭覺縣		314
Yingpanbao 營盤寶	Luquan County 祿勸縣		91
Yingpanshan 營盤山	Huili County 會理縣		86
Yingpanshan 營盤山	Xichang County 西昌縣	Settlement, object pits	209
Yingpanshan (North) 營盤山(北區)	Yanyuan County 鹽源縣	Settlement	257
Yingpanshan (South) 營盤山(南區)	Yanyuan County 鹽源縣	Settlement	258
Yingzipo 銀子坡	Dechang County 德昌縣		44
Yongxing 永興	Dechang County 德昌縣		45
Yongxing 永興	Yanbian County 鹽邊縣		231
Yuanjiashan 袁家山	Xichang County 西昌縣		210
Yuejin 躍進	Dechang County 德昌縣		46
Yumen Wanxiao 漁門完小	Yanbian County 鹽邊縣	Settlement	232
Yunduanshan 云斷山	Xichang County 西昌縣		211
Yunshancun 云山村	Huili County 會理縣		88
Zhangjiaba 張家壩	Dechang County 德昌縣		47
Zhengjiafen 鄭傢墳	Xichang County 西昌縣		213
Zhushiba 豬屎壩	Yanyuan County 鹽源縣		259

The number serves as reference number on all maps

Table B.2 All sites by reference number and name

Number	ID	Name	Accuracy	Site type
1	DAR	Dechang Arong	5	Grave site
2	DAX	Dechang Ayong	2	Grave site
3	DAU	Dechang Ayue	5	Grave site
4	DCZ	Dechang Cizhuiping	2	Grave site
5	DDB	Dechang Daba	2	Grave site
6	DCB	Dechang Dachangba	2	Grave site
7	DDG	Dechang Dashipai Graves	5	Grave site
8	DDS	Dechang Dashipai Settlement	5	Settlement site
9	DDM	Dechang Dianma	2	Grave site
10	DDP	Dechang Dongjiapo	5	Settlement site
11	DFJ	Dechang Fangjiacun	5	Grave site
12	DGH	Dechang Ganhai	2	Grave site
13	DGD	Dechang Guadi	5	Grave site
14	DGY	Dechang Guoyuan	2	Grave site
15	DHF	Dechang Hejia Fenshan	2	Grave site
16	DHS	Dechang Hejiashan	2	Grave site
17	DHZ	Dechang Hezui	1	Settlement site
18	DHM	Dechang Hongmiao	2	Grave site
19	DHC	Dechang Hongmiaocun	2	Grave site

Number	ID	Name	Accuracy	Site type
20	DHJ	Dechang Huangjiaba	2	Grave site
21	DLS	Dechang Liangsanpo	2	Grave site
22	DLJ	Dechang Luojiaba	4	Grave site
23	DMA	Dechang Ma’anzi	2	Grave site
24	DML	Dechang Maliliang Zhanbei	2	Grave site
25	DMN	Dechang Maliliang Zhannan	5	Grave site
26	DMB	Dechang Maojiaba	2	Settlement site
27	DMK	Dechang Maojiakan	3	Settlement site
28	DMZ	Dechang Minzhucun	2	Grave site
29	DNB	Dechang Nanhua Baobao	1	Grave site
30	DNH	Dechang Nanhuagong	2	Grave site
31	DSB	Dechang Shaba	1	Grave site
32	DSR	Dechang Shaorenba	5	Grave site
33	DSL	Dechang Shengli	2	Grave site
34	DSJ	Dechang Shuijingwan	2	Grave site
35	DSC	Dechang Shuitangcun	2	Grave site
36	DWP	Dechang Wangjiaping	4	Settlement site
37	DWT	Dechang Wangjiatian	2	Settlement site
38	DWS	Dechang Wangsuo	5	Settlement site
39	DWJ	Dechang Wujia	2	Grave site
40	DXG	Dechang Xiaogao	1	Grave site
41	DXL	Dechang Xiaoliusuo	5	Grave site
42	DXM	Dechang Xiaomiaoshan	4	Grave site
43	DXW	Dechang Xinmin Wujia	1	Grave site
44	DYZ	Dechang Yingzipo	2	Grave site
45	DYX	Dechang Yongxing	5	Grave site
46	DYJ	Dechang Yuejin	2	Grave site
47	DZJ	Dechang Zhangjiaba	2	Grave site
48	HDS	Huidong Dashanbao	2	Settlement site
49	HLW	Huidong Liujiawan	2	Settlement site
50	HDG	Huili Dachonggou	2	Settlement site
51	HDZ	Huili Dazhaizi	4	Settlement site
52	HDJ	Huili Dongzui	4	Settlement site
53	HFJ	Huili Fenjiwan Stonecist Graves	4	Grave site
54	HFS	Huili Fenjiwan	4	Settlement and grave site
55	HGU	Huili Gong’anju (Huili94)	0	Single find
56	HGS	Huili Guantianshan/Yingpanshan	1	Settlement and grave site
57	HGJ	Huili Guojiabao	5	Settlement and grave site
58	HGY	Huili Guoyuan (Huili drum 4)	1	Single find
59	HHT	Huili Hedongtian	5	Grave site
60	HHK	Huili Hekoucun	1	Single find
61	HHW	Huili Hewanwan	0	Settlement site

Number	ID	Name	Accuracy	Site type
62	HZD	Huili Houzidong	5	Settlement and grave site
63	HHS	Huili Hunshuitang	4	Settlement site
64	HJM	Huili Jinmei	2	Settlement site
65	HKP	Huili Kangzipo	1	Settlement site
66	HLJ	Huili Leijiashan	4	Grave site
67	HLT	Huili Liantang	5	Settlement site
68	HLL	Huili Luoluochong (Huili drum 3)	1	Object pit
69	HML	Huili Miaozi Laobao	5	Grave site
70	HPL	Huili Puling	1	Grave site
71	HQB	Huili Qiaobo	5	Settlement site
72	HRJ	Huili Raojiadi	5	Settlement site
73	HSJ	Huili Shenjiafen	2	Settlement site
74	HTJ	Huili Tangjiaba	1	Settlement and grave site
75	HTP	Huili Tangjiapo	2	Grave site
76	HTC	Huili Tianbacun	5	Settlement site
77	HWT	Huili Washitian	2	Settlement and grave site
78	HWH	Huili Wuhuangqing	2	Grave site
79	HXA	Huili Xiao'aozi	4	Settlement site
80	HXS	Huili Xiaotuanshan Graves	4	Grave site
81	HXT	Huili Xiaotuanshan Settlement	4	Settlement site
82	HXP	Huili Xiaoyingpan	3	Grave site
83	HXC	Huili Xicaodi	2	Grave site
84	HYW	Huili Yangjia Wuji	2	Settlement site
85	HYX	Huili Yimen Xiacunxiang	1	Single find
86	HYP	Huili Yingpanshan	2	Grave site
87	HYB	Huili Yuanbaoshan	5	Settlement site
88	HYS	Huili Yunshancun	2	Grave site
89	HZC	Huili Zhuanchangba	2	Object pit
90	JMG	Jinyang Munagou	2	Settlement site
91	LYB	Luquan Yingpanbao	3	Grave site
92	MAB	Meigu Azu Bugu	2	Grave site
93	MJJ	Meigu Jiukou Jiaogu	2	Grave site
94	MSW	Meigu Shengdu Wage	5	Grave site
95	MWG	Meigu Wagujue Cunnan	2	Grave site
96	MWC	Meigu Wagujue Dongbei	2	Grave site
97	MWB	Meigu Wagujue Dongnan I	2	Grave site
98	MWD	Meigu Wagujue Dongnan II	2	Grave site
99	MWT	Meigu Wagujue	2	Grave site
100	MBB	Mianning Beishanba	2	Grave site
101	MCG	Mianning Chengguan	1	Grave site
102	MGP	Mianning Gaopo	5	Settlement site
103	MGW	Mianning Gaopo Wanwan	3	Settlement site

Number	ID	Name	Accuracy	Site type
104	MHJ	Mianning Huijiazui	5	Settlement site
105	MMW	Mianning Manshuiwan	4	Grave site
106	MMS	Mianning Miaoshan	2	Settlement site
107	MRS	Mianning Ruoshuicun	2	Grave site
108	MST	Mianning Sanfentun	5	Settlement site
109	MSK	Mianning Sankuaishi	2	Grave site
110	MSL	Mianning Songlin Laojie	1	Grave site
111	MWJ	Mianning Wenjiatun	1	Settlement site
112	MXS	Mianning Xiangshi	5	Grave site
113	MXG	Mianning Xiaogoudi	2	Grave site
114	MZJ	Mianning Zhaojiawan	5	Settlement site
115	MHB	Miyi Hejiaba	2	Settlement site
116	MLG	Miyi Lianhua Gongshe	1	Settlement site
117	MSJ	Miyi Sanjingxiang	2	Grave site
118	MTB	Miyi Tianba	2	Grave site
119	MWQ	Miyi Wanqiu	2	Grave site
120	MYJ	Miyi Yuanjiabao	2	Settlement site
121	MZS	Miyi Zhaizishan	1	Settlement site
122	NDX	Ninglang Cunyi	2	Single find
123	NJY	Ninglang Daxingzhen	2	Grave site
124	NKJ	Ninglang Jingyangcun	2	Settlement site
125	NPJ	Ninglang Kaijicun	2	Settlement site
126	NCY	Ninglang Pijiacun	2	Settlement site
127	NHG	Ningnan Heinigou	5	Settlement site
128	NTW	Ningnan Tangjiawan	5	Settlement site
129	PAM	Puge Amucun	2	Grave site
130	PHP	Puge Heping	2	Grave site
131	PKL	Puge Kangli	1	Settlement site
132	PTB	Puge Tianba	2	Settlement site
133	PTT	Puge Tuantian	2	Settlement site
134	PWL	Puge Wadaluo	2	Settlement and grave site
135	PXC	Puge Xiaoxingchang	2	Settlement and grave site
136	PZC	Puge Zhongcun	2	Settlement site
137	RBH	Renhe Baihushan	2	Grave site
138	RBG	Renhe Baila Gucun	2	Grave site
139	RGH	Renhe Gonghe	2	Settlement and grave site
140	RHD	Renhe Huilongwa Cave	2	Settlement site
141	RXW	Renhe Xiawan	2	Settlement site
142	RXP	Renhe Xicaoping	2	Settlement site
143	RYJ	Renhe Yangjiashan	2	Settlement site
144	XBB	Xichang Bahe Baozi	2	Settlement and grave site

Number	ID	Name	Accuracy	Site type
145	XBJ	Xichang Baijiazhai	2	Grave site
146	XBS	Xichang Beishan	2	Graves site and object pits
147	XBT	Xichang Bengtukan	2	Settlement site
148	XCC	Xichang Changcun	2	Grave site
149	XCY	Xichang Chenyuancun	2	Grave site
150	XDA	Xichang Dabaobao	2	Grave site
151	XDB	Xichang Dabaozi	5	Grave site
152	XDC	Xichang Dacaoba	2	Grave site
153	XDL	Xichang Damaliu	2	Settlement site
154	XDN	Xichang Daniba	1	Settlement site
155	XDS	Xichang Dashiban	2	Grave site
156	XDY	Xichang Dayangdui	5	Settlement, graves, object pits
157	XDP	Xichang Dongping	5	Smelting site
158	XDM	Xichang Dongyuemiao	2	Settlement site
159	XGJ	Xichang Guanjiashan	2	Settlement site
160	XGS	Xichang Guanshan	2	Settlement and grave site
161	XGH	Xichang Guihuacun	2	Grave site
162	XHS	Xichang Henglanshan	5	Grave site
163	XHG	Xichang Hexi Gongshe	2	Grave site
164	XHQ	Xichang Hongqi	2	Grave site
165	XHT	Xichang Huangshuitang	4	Grave site
166	XJB	Xichang Jiangjiabao	2	Settlement site
167	XJX	Xichang Jianxin	2	Grave site
168	XLG	Xichang Liguoshan	2	Grave site
169	XLJ	Xichang Lijiagou cun	2	Grave site
170	XLZ	Xichang Lizhou	5	Settlement and grave site
171	XLS	Xichang Luzhuishan	2	Grave site
172	XMS	Xichang Ma’anshan	5	Settlement and grave site
173	XMH	Xichang Mahuangkan	1	Settlement site
174	XMT	Xichang Majialin	2	Smelting site
175	XML	Xichang Maliucun (Zhaoshanbei)	5	Settlement and grave site
176	XMM	Xichang Maomaoshan	5	Settlement and grave site
177	XMI	Xichang Mimilang	5	Settlement and grave site
178	XNT	Xichang Nantan	2	Smelting site
179	XQG	Xichang Qimugou	5	Settlement, graves, object pits

Number	ID	Name	Accuracy	Site type
180	XJJ	Xichang Qujia Laokan	1	Grave site
181	XRS	Xichang Reshuitang West	2	Grave site
182	XSH	Xichang Sanhe	1	Settlement site
183	XSJ	Xichang Shajiapo	2	Grave site
184	XSX	Xichang Shangxiang	2	Grave site
185	XST	Xichang Shantou	1	Settlement site
186	XSK	Xichang Shaojia Gaokan	1	Settlement site
187	XSB	Xichang Shijia Baozi	5	Grave site
188	XSZ	Xichang Shizuizi	2	Grave site
189	XSG	Xichang Shuanggudui	2	Grave site
190	XTS	Xichang Tanshan	2	Settlement site
191	XTC	Xichang Tianbacun	2	Grave site
192	XTH	Xichang Tianwangshan	5	Settlement and grave site
193	XTE	Xichang Tuanbao	5	Grave site
194	XTU	Xichang Tuanshanbao	2	Settlement site
195	XTB	Xichang Tu’ershan	1	Settlement site
196	XWN	Xichang Wanao	4	Grave site
197	XNG	Xichang Wuguishan	2	Grave site
198	XXH	Xichang Xiaohuashan	2	Settlement and grave site
199	XXG	Xichang Xiaojia Gaokan	2	Settlement site
200	XXJ	Xichang Xijiao Gongshe	2	Grave site
201	XXS	Xichang Xingsuo	2	Grave site
202	XXC	Xichang Xinxingcun	2	Grave site
203	XXY	Xichang Xinying	2	Grave site
204	XXX	Xichang Xixicun	2	Grave site
205	XYG	Xichang Yangjiashan	2	Settlement and grave site
206	XYJ	Xichang Yanjiashan	2	Grave site
207	XYS	Xichang Yangshanpo	2	Settlement site
208	XYZ	Xichang Yezhugou	2	Grave site
209	XYP	Xichang Yingpanshan	5	Settlement, graves, object pits
210	XYU	Xichang Yuanjiashan	2	Grave site
211	XYD	Xichang Yunduanshan	2	Grave site
212	XZJ	Xichang Zengjiabao	2	Settlement site
213	XZF	Xichang Zhengjiafen	2	Grave site
214	XZP	Xichang Zhongguanpo	1	Settlement site
215	XZS	Xichang Zhongjia Shanzui	2	Settlement site
216	XGQ	Xide Guluqiao	5	Grave site
217	XGY	Xide Guoyuancun	2	Grave site
218	XLK	Xide Lake Sihe	5	Grave site
219	XLF	Xide Lanfenba	2	Grave site

Number	ID	Name	Accuracy	Site type
220	XLN	Xide Laoniuchang	2	Grave site
221	XQL	Xide Qingli	1	Grave site
222	XWD	Xide Wadegu	2	Settlement and grave site
223	XWM	Xide Wamu	2	Settlement site
224	XWJ	Xide Wenjiaba	2	Grave site
225	XWH	Xide Wuhe	5	Grave site
226	XYW	Xiqu Yanwan	2	Settlement site
227	YHM	Yanbian Huimin	1	Grave site
228	YPC	Yanbian Pulongcun	1	Grave site
229	YXD	Yanbian Xicaodi	1	Grave site
230	YXL	Yanbian Xinlin	2	Settlement site
231	PYX	Yanbian Yongxing	1	Grave site
232	YYW	Yanbian Yumen Wanxiao	2	Settlement and grave site
233	YBG	Yanyuan Bei Ganhaixiang	2	Grave site
234	YBS	Yanyuan Boshucun	2	Grave site
235	YCJ	Yanyuan Caojiawan	2	Grave site
236	YGH	Yanyuan Ganhai Sandadui	1	Settlement site
237	YGS	Yanyuan Gesa	2	Grave site
238	YGJ	Yanyuan Gong’anju	0	Single find
239	YHT	Yanyuan Haimatang	2	Grave site
240	YJD	Yanyuan Jiaodingshan	2	Settlement and grave site
241	YBI	Yanyuan Jiejiafen	2	Grave site
242	YLL	Yanyuan Laolongtou	5	Grave site
243	YLW	Yanyuan Luowa	2	Grave site
244	YMB	Yanyuan Maojiaba	2	Grave site
245	YMY	Yanyuan Meiyu Bacun Sanzu	5	Grave site
246	YNH	Yanyuan Meiyuzhen	2	Smelting site
247	YMZ	Yanyuan Nanbianhe	2	Grave site
248	YTL	Yanyuan Tangguan Liandi	2	Grave site
249	YTS	Yanyuan Tangshidi	2	Grave site
250	YWM	Yanyuan Wuming Baobao	2	Grave site
251	YWQ	Yanyuan Wuqiu	2	Settlement site
252	YWS	Yanyuan Wushidi II	2	Grave site
253	YBIII	Yanyuan Wushidi III	2	Grave site
254	YXG	Yanyuan Xiaoguan Liangzi	2	Settlement and grave site
255	YXH	Yanyuan Xiaohebian	2	Grave site
256	YXF	Yanyuan Xifan	2	Settlement site
257	YYN	Yanyuan Yingpanshan (North)	2	Settlement and grave site
258	YYS	Yanyuan Yingpanshan (South)	2	Settlement and grave site

Number	ID	Name	Accuracy	Site type
259	YZS	Yanyuan Zhushiba	2	Grave site
260	YDZ	Yongsheng Duizi	4	Settlement, graves, object pits
261	YHC	Yongsheng Haiyancun	2	Settlement site
262	YLY	Yongsheng Laoying	2	Single find
263	YLZ	Yongsheng Longtan	2	Single find
264	YLJ	Yongsheng Lujiajie	2	Settlement site
265	YQD	Yongsheng Qiaodiping	2	Grave site
266	YSK	Yongsheng Sankuaishi	2	Settlement site
267	YTY	Yongsheng Taoyingcun	2	Settlement site
268	YYJ	Yongsheng Yanjiaqing	2	Grave site
269	YYH	Yuexi Huayang	2	Grave site
270	YLS	Yuexi Liaojiashan	2	Grave site
271	YQS	Yuexi Qu'ershan	5	Grave site
272	YWJ	Yuexi Wajimu	2	Grave site
273	ZAB	Zhaojue Ada Bobu	5	Grave site
274	ZBE	Zhaojue Bagu Erjue	1	Grave site
275	ZBK	Zhaojue Bakeku cun	1	Grave site
276	ZCB	Zhaojue Chike Boxixiang	1	Grave site
277	ZDG	Zhaojue Daba Gongshe	1	Grave site
278	ZDZ	Zhaojue Dabaozi Geze	5	Grave site
279	ZDD	Zhaojue Da'edou Gezi	5	Grave site
280	ZDQ	Zhaojue Dawenquan	1	Grave site
281	ZDC	Zhaojue Dipo Cier	2	Grave site
282	ZJE	Zhaojue Eba Buji Shigaimu	5	Grave site
283	ZJE	Zhaojue Eba Buji Shiguanmu	5	Grave site
284	ZEK	Zhaojue Erba Keku	2	Grave site
285	ZEZ	Zhaojue Ergu Zege	5	Grave site
286	ZEW	Zhaojue Erwu	2	Grave site
287	ZFC	Zhaojue Fuchengqu	1	Grave site
288	ZGY	Zhaojue Geze Yangpeng	5	Grave site
289	ZHQ	Zhaojue Haba Qiehe	5	Grave site
290	ZHY	Zhaojue Hangan Yide	5	Grave site
291	ZHB	Zhaojue Hebo	4	Settlement site
292	ZHL	Zhaojue Heiluo	5	Grave site
293	ZLY	Zhaojue Jike Jiejue (also: Layimu)	4	Grave site
294	ZJN	Zhaojue Jinzi Niaobu	3	Grave site
295	ZJT	Zhaojue Juntun	5	Settlement site
296	ZKW	Zhaojue Keri Watuo	2	Grave site
297	ZKE	Zhaojue Kujia Ebu	5	Grave site
298	ZME	Zhaojue Machu Nawo	2	Grave site
299	ZMC	Zhaojue Mucuo Naijie	5	Grave site

Number	ID	Name	Accuracy	Site type
300	ZMK	Zhaojue Muergguo	2	Grave site
301	ZMJ	Zhaojue Mujueke	2	Grave site
302	ZNT	Zhaojue Naituo	2	Grave site
303	ZNP	Zhaojue Niaopo	1	Grave site
304	ZJP	Zhaojue Pusu Bohuang	5	Grave site
305	ZQJ	Zhaojue Qianjinshe	5	Grave site
306	ZXS	Zhaojue Sikaixiang	2	Single find
307	ZSE	Zhaojue Siyi Ergu	2	Grave site
308	ZTL	Zhaojue Teluocun	1	Grave site
309	ZTW	Zhaojue Tiaowoba	2	Grave site
310	ZWG	Zhaojue Waluo Geci	2	Grave site
311	ZWT	Zhaojue Watuo	2	Grave site
312	ZWS	Zhaojue Wazhaishan	1	Grave site
313	ZYB	Zhaojue Yibijia	5	Grave site
314	ZYG	Zhaojue Yihe Geci	2	Grave site
273	ZAB	Zhaojue Ada Bobu	5	Grave site
274	ZBE	Zhaojue Bagu Erjue	1	Grave site
275	ZBK	Zhaojue Bakeku cun	1	Grave site
276	ZCB	Zhaojue Chike Boxixiang	1	Grave site
277	ZDG	Zhaojue Daba Gongshe	1	Grave site

Accuracy refers to the precision of the location on the map (5: coordinates taken myself; 4: exact coordinates published; 3: rough coordinates published; 2: map published; 1: location description published; 0: exact location unclear)

Table B.3 Overview of source material for information on grave sites

Name	Sources
Dechang Arong	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Sichuansheng Wenwu Kaogu Yanjiusuo 四川省文物考古研究所等, Liangshanzhou Bowuguan 涼山州博物館, & 西昌市文物管理所, X. W. G. (2006). Sichuan Xichang Wanao, Dechang Arong dashimu 四川西昌窪堖、德昌阿榮大石墓 [The megalithic graves of Xichang Wanao and Dechang Arong, Sichuan]. *Wenwu* 文物 [Cultural Relics] (2), 10–20
	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji*: *Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
	Data collection
Dechang Ayong	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji*: *Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社

Name	Sources
Dechang Ayue	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji*: *Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Cizhuiping	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji*: *Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Daba	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji*: *Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Dachangba	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji*: *Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Dashipai	Liu Hong 劉弘 (2009). *Cong shan junling zhong de* "*lüzhou*" *- Anning hegu wenhua yicun diaocha yanjiu* 从山峻岭中的"绿洲"——安宁河谷文化遗存调查研究 [From the "oasis" in between the mountains: a survey of cultural relics in the Anning River Valley]. Chengdu: Bashu Shushe 巴蜀书社
	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
	Data collection
Dechang Dianma	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Fangjiacun	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
	Data collection

Name	Sources
Dechang Ganhai	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Dechang Guadi	Data collection
Dechang Guoyuan	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Xichang Diqu Bowuguan 西昌地區博物館 (1978). Dechangxian Wuyi Gongshe Guoyuan dadui gu muzang qingli fajue jianbao 德昌縣五一公社果園大隊古墓葬清理發掘簡報. *Liangshan Yizu nulizhi yanjiu* 涼山彝族奴隸制研究 [Research on the slave-owner society of the Yi ethnic group] (2), 81–84
	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
	Data collection
Dechang Hejia Fenshan	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Hejiashan	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Hongmiao	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Dechang Hongmiaocun	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Huangjiaba	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Name	Sources
Dechang Liangsanpo	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Dechang Luojiaba	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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	Data collection
Dechang Ma'anzi	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Maliliang Zhanbei	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Maliliang Zhannan	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
	Data collection
Dechang Minzhucun	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Nanhua Baobao	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社

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Dechang Nanhuagong	Zhongguo Wenwuju 中國文物偈 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Shaba	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Shaorenba	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Data collection
Dechang Shengli	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Shuijingwan	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Shuitangcun	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Zhongguo Wenwuju 中國文物偈 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Wujia	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Zhongguo Wenwuju 中國文物偈 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Xiaogao	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Xiaoliusuo	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
	Data collection

Name	Sources
Dechang Xiaomiaoshan	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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	Data collection
Dechang Xinmin Wujia	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Yingzipo	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Dechang Yongxing	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
	Data collection
Dechang Yuejin	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Dechang Zhangjiaba	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Huili Fenjiwan Stonecist Graves	Huilixian Wenguansuo 會理縣文管所, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Sichuansheng Wenwu Kaogu Yanjiusuo 四川省文物考古研究所 (2004). Sichuan Huilixian Fenjiwan muqun fajue jianbao 四川會理縣糞箕灣墓群發覺簡報 [Preliminary excavation report of the cemetery of Sichuan Huili County Fenjiwan]. *Kaogu* 考古 [Archaeology] (10), 36–46
	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Huilixian Wenwu Guanlisuo 會理縣文物管理所 (2009). Sichuan Huilicheng heliuyu kaogu diaocha baogao 四川會理城河流域考古調查報告 [Report of a survey conducted in the Huilicheng River Valley, Sichuan]. *Sichuan wenwu* 四川文物 [Sichuan cultural relics] (4), 15–22

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Puge Xiaoxingchang	Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Pugexian Wenhuaguan 普格縣文化館 (1982). Sichuan Pugexian xinshiqi shidai yizhi diaocha jianbao 四川普格縣新石器時代遺址調查簡報. [Preliminary report on a survey of Neolithic sites in Puge County, Sichuan] *Kaogu yu wenwu* 考古與文物 [Archaeology and cultural relics] (5), 1–4
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Renhe Baihushan	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
Renhe Baila Gucun	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社

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Xichang Baijiazhai	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Xichang Changcun	Zhongguo Wenwuju 中國文物偈 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社

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Xichang Dabaobao	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
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Xichang Dacaoba	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Xichang Dashiban	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Xichang Guanshan	Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館 (1983). Sichuan Xichang yihaomu fajue jianbao 四川西昌一號墓發掘簡 [Preliminary excavation report of Sichuan Xichang grave number 1]. *Kaoguxue jikan* 考古學集刊 [Archaeological Bulletin] (3), 143–149
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Xichang Guihuacun	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Xichang Hexi Gongshe	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Xichang Huangshuitang	Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館 (1990). Sichuan Xichang Beishan, Xiaohuashan, Huangshuitang dashimu 四川西昌北山、小花山、黃水塘大石墓 [The megalithic graves of Sichuan Xichang Beishan, Xiaohuashan, and Huangshuitang]. *Wenwu* 文物 [Cultural relics] (5), 64–67
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Xichang Jianxin	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Xichang Liguoshan	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
Xichang Lijiagou cun	Zhongguo Wenwuju 中國文物侷 (2009). *Zhongguo wenwu dituji: Sichuan fence* 中國文物地圖集·四川分冊 [Cultural atlas of China: Sichuan]. Beijing: Wenwu Chubanshe 文物出版社
Xichang Lizhou	Huang Jiaxiang 黃家祥 (2000). Xichang Lizhou xinshiqi shidai yizhi zhi jianlun 西昌禮州新石器時代遺址之檢論 [Discussion of the Neolithic site of Xichang Lizhou]. *Sichuan wenwu* 四川文物 [Sichuan cultural relics] (4), 3–9
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Xichang Ma'anshan	Chengdu Wenwu Kaogu Yanjiusuo 成都文物考古研究所, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2007). Sichuan Xichangshi Jingjiuxiang Ma'anshan yizhi diaocha shijue jianbao 四川西昌市經久縣馬鞍山遺址調查試掘見報 [Preliminary report on trial excavation at Ma'anshan site in Sichuan Xichang City Jingjiu Township]. *Chengdu kaogu faxian* 成都考古發現 [Chengdu archaeological discoveries] *2005*, 88–113
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Xichang Maomaoshan	Sichuansheng Wenwu Kaogu Yanjiuyuan 四川省文物考古研究院, Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). *Anninghe liuyu dashimu* 安寧河流域大石墓 [The megalithic graves of the Anning River Valley]. Beijing: Wenwu Chubanshe 文物出版社
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Xichang Mimilang	Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, Chengdu Wenwu Kaogu Yanjiusuo 成都文物考古研究所, & Xichangshi Wenwu Guanlisuo 西昌市文物管理所 (2006). Sichuan Xichangshi Mimilang yizhi diaocha shijue jianbao 四川西昌市咪咪啷遺址調查試掘簡報 [Preliminary report on survey and trial excavations conducted at Mimilang site, Xichang City, Sichuan]. *Chengdu kaogu faxian* 成都考古發現 [Chengdu archaeological discoveries] *2004*, 39–52
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Zhaojue Hangan Yide	Personal communication Zhao Deyun 04/2011
Zhaojue Heiluo	Personal communication Zhao Deyun 04/2011
Zhaojue Jike Jiejue/ Layimu	Liangshan Yizu Zizhizhou Bowuguan 涼山彝族自治州博物館, Sichuan Daxue Kaoguxue Xi 四川大學考古學係, & Zhaojuexian Wenwu Guanlisuo 昭覺縣文物管理所 (2009). Sichuan Zhaojuexian Haogucun gumuqun de diaocha he qingli 四川昭覺縣好谷村古墓群的調查和清理 [Survey and excavation at the ancient cemetery of Haogucun in Sichuan Zhaojue County]. *Kaogu* 考古 [Archaeology] (4), 30–40

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The words “data collection” indicates for which sites I had access to original material

Table B.4 Number, position, and body treatment of skeletons by grave

County	Number skeletons	Number category	Skeleton position	Body treatment
Huili Xiaoyingpan M15	1	Single	Extended supine	
Huili Xiaoyingpan M16	1	Single	Extended supine	Detachment of skull, placed in stomach area
Huili Xiaoyingpan M17	1	Single	Extended supine	
Huili Xiaoyingpan M18	1	Single	Extended supine	
Huili Xiaoyingpan M19	1	Single	Extended supine	
Huili Xiaoyingpan M20	1	Single	Extended supine	
Huili Xiaoyingpan M5	1	Single	Extended supine	
Huili Xiaoyingpan M6	1	Single	Extended supine	
Huili Xiaoyingpan M7	1	Single	Extended supine	
Huili Xiaoyingpan M4	1	Single	Extended supine	
Huili Xiaoyingpan M21	1	Single	Extended supine	
Huili Guojiabao M3	1	Single	Unclear	
Huili Xiaoyingpan M1	1	Single	Extended supine	
Huili Xiaoyingpan M10	1	Single	Extended supine	
Huili Xiaoyingpan M11	1	Single	Extended supine	
Huili Xiaoyingpan M12	1	Single	Extended supine	
Huili Xiaoyingpan M13	1	Single	Extended supine	Detachment of skull, placed in stomach area
Huili Xiaoyingpan M14	1	Single	Extended supine	Detachment of skull, placed in stomach area
Huili Xiaoyingpan M2	1	Single	Extended supine	
Huili Xiaoyingpan M3	1	Single	Extended supine	
Huili Xiaoyingpan M8	1	Single	Extended supine	Detachment of skull
Huili Xiaoyingpan M9	1	Single	Extended supine	
Luquan Yingpanbao M1	1	Single	Extended supine	
Luquan Yingpanbao M2	1	Single	Extended supine	
Luquan Yingpanbao M3	1	Single	Extended supine	
Luquan Yingpanbao M4	1	Single	Extended supine	
Luquan Yingpanbao M5	1	Single	Extended supine	Detachment of skull, placed in stomach area
Luquan Yingpanbao M6	1	Single	Extended supine	
Luquan Yingpanbao M7	1	Single	Extended supine	
Luquan Yingpanbao M8	1	Single	Extended supine	
Mianning Sankuaishi M1	17	Group	Extended supine	Wrapping
Mianning Xiaogoudi M1	1	Single	In urn	
Mianning Xiaogoudi M2	1	Single	In urn	
Mianning Xiaogoudi M4	1	Single	In urn	

County	Number skeletons	Number category	Skeleton position	Body treatment
Mianning Xiaogoudi M5	1	Single	In urn	
Mianning Xiaogoudi M6	1	Single	In urn	
Mianning Xiaogoudi M7	1	Single	In urn	
Mianning Xiaogoudi M8	1	Single	In urn	
Mianning Xiaogoudi M9	1	Single	In urn	
Miyi Wanqiu M1	5	Multiple	Mostly piled in rear part, some scattered throughout the grave	Stacking of bones
Miyi Wanqiu M2	Several	Several	Mostly piled in rear part, some scattered throughout the grave	Stacking of bones
Puge Xiaoxingchang AM1	10	Group	Mostly piled in rear part, some scattered throughout the grave	Stacking of bones
Puge Xiaoxingchang AM2	4	Multiple	Irregular placement	Rearranging
Puge Xiaoxingchang BM1	82	Mass	Irregular placement	Rearranging
Puge Xiaoxingchang BM2	48	Mass	Irregular placement	Rearranging
Puge Xiaoxingchang BM4	125	Mass	Irregular placement	Rearranging
Xichang Bahe Baozi M1	95	Mass	Mostly piled in rear part, some scattered throughout the grave	Stacking of bones
Xichang Bahe Baozi M2	17	Group	Irregular placement	Rearranging
Xichang Bahe Baozi M3	6	Multiple	Irregular placement	Rearranging
Xichang Bahe Baozi M4	Several	Several	Irregular placement	Rearranging
Xichang Bahe Baozi M5	Several	Several	Irregular placement	Rearranging
Xichang Bahe Baozi M6	55	Mass	Irregular placement	Rearranging
Xichang Dayangdui M1	6	Multiple	Stacked in several layers	Separation of bones by type in several piles
Xichang Hexi Gongshe M1	6	Multiple	Irregular placement	Rearranging

County	Number skeletons	Number category	Skeleton position	Body treatment
Xichang Hexi Gongshe M2	Several	Several	Irregular placement	Rearranging
Xichang Hexi Gongshe M4	Several	Several	Irregular placement	Rearranging
Xichang Huangshuitang M1	Several	Several	Irregular placement	Rearranging
Xichang Wanao M1	Several	Several	Irregular placement	Rearranging
Xichang Wanao M2	Several	Several	Irregular placement	Rearranging
Xichang Xijiao M1	123	Mass	Stacked in several layers	Stacking of bones
Xichang Xixingcun M1	100	Mass	Unclear	Rearranging
Xichang Dayangdui M2	1	Single	In urn	
Xide Luluqiao M1	20	Group	Stacked in several layers	Rearranging
Xide Lake Sihe M1	10	Group	Irregular placement	Rearranging
Xide Lake Sihe M5	10	Group	Irregular placement	Rearranging
Xide Lake Sihe M6	10	Group	Irregular placement	Rearranging
Xide Lake Sihe M7	10	Group	Irregular placement	Rearranging
Xide Lake Sihe M8	10	Group	Irregular placement	Rearranging
Yanyuan Laolongtou M11	1	Single	Extended supine	
Yanyuan Laolongtou M6	4	Multiple	Extended supine	
Yanyuan Laolongtou M9	4	Multiple	Irregular placement	
Yanyuan Laolongtou M4	2	Double	Extended supine	Application of red substance
Yongsheng Duizi M1	Several	Several	Irregular placement	
Yongsheng Duizi M106	Several	Several	Irregular placement	
Yongsheng Duizi M11	2	Double	Extended supine	
Yongsheng Duizi M12	2	Double	Extended supine	
Yongsheng Duizi M139	Several	Several	Irregular placement	
Yongsheng Duizi M15	2	Double	Extended supine	
Yongsheng Duizi M2	1	Single	Extended supine	
Yongsheng Duizi M55	1	Single	Extended supine	
Yongsheng Duizi M57	1	Single	Extended supine	
Yongsheng Duizi M58	1	Single	Extended supine	
Yongsheng Duizi M59	1	Single	Extended supine	

County	Number skeletons	Number category	Skeleton position	Body treatment
Yongsheng Duizi M7	Several	Several	Irregular placement	
Yongsheng Duizi M91	Several	Several	Irregular placement	
Yongsheng Duizi M131	1	Single	Extended supine	
Yongsheng Duizi M16	1	Single	Extended supine	
Zhaojue Chike Boxixian M3	9	Group	Stacked in several layers	Stacking of bones
Zhaojue Eba Buji EM1	1	Single	Unclear	
Zhaojue Erba Keku M10	1	Single	Unclear	
Zhaojue Erba Keku M12	1	Single	Unclear	
Zhaojue Erba Keku M2	1	Single	Unclear	
Zhaojue Erba Keku M3	1	Single	Unclear	
Zhaojue Erba Keku M7	1	Single	Unclear	
Zhaojue Erba Keku M8	1	Single	Unclear	
Zhaojue Pusu Bohuang M1	1	Single	Unclear	
Zhaojue Pusu Bohuang M2	3	Multiple	Stacked in several layers	Stacking of bones
Zhaojue Pusu Bohuang M3	3	Multiple	Irregular placement	
Zhaojue Pusu Bohuang M4	1	Single	Unclear	
Zhaojue Pusu Bohuang M9	3	Multiple	Irregular placement	
Zhaojue Wazahishan M4	4	Multiple	Stacked in several layers	Stacking of bones

Table B.5 Relative frequency of different arrowhead types by raw material

	Stone	Bronze	Wood	Bone	SUM
IAa	1	1	0	0	2
IAb	32	0	2	0	34
IBa	4	4	0	0	8
IBb	5	5	0	0	10
IC	0	5	0	0	5
IDa	0	7	0	0	7
IDbI	0	43	0	0	43
IDbII	0	4	0	0	4
IE	0	6	0	0	6
IF	0	1	0	0	1
IGa	0	16	0	0	16
IGb	0	4	0	0	4
IIA	5	0	0	0	5
IIAa	19	0	0	0	19
IIAbI	15	0	0	0	15

	Stone	Bronze	Wood	Bone	SUM
IIB	11	0	0	0	11
IIBaI	13	0	0	0	13
IIBaI	5	2	0	0	7
IIBaII	12	0	0	0	12
IIBbI	4	0	0	0	4
IIBbII	1	0	0	0	1
IIBc	2	0	0	0	2
IIBd	1	0	0	0	1
IICa	2	0	0	0	2
IICbII	7	0	0	0	7
IICbIII	2	0	0	0	2
IID	2	2	0	0	3
Unknown	4	23	0	4	31
SUM	**147**	**123**	**2**	**4**	**275**

Table B.6 Relationship between bead type and raw material excluding beads in chains

	Aa	Ab	Ac	Ba	Bb	Bc	C	Da	Db	Dc	E	F	G	SUM
Stone	45	3	9	48	15	76	2	2	9	4	0	2	2	**217**
Bone	0	3	0	13	57	5	0	0	0	0	1	0	0	**76**
Frit	0	7	1	5	25	2	0	0	0	0	0	0	0	**40**
Organic	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
SUM	**45**	**13**	**10**	**66**	**98**	**83**	**2**	**2**	**9**	**4**	**1**	**2**	**2**	**334**

Table B.7 Relationship between bead type and raw material including beads in chains

	Aa	Ab	Ac	Ba	Bb	Bc	C	Da	Db	Dc	E	F	G	SUM
Stone	45	3	9	48	15	76	2	2	9	4	0	2	2	**217**
Bone	0	133	0	263	57	5	0	0	0	0	10	0	0	**468**
Frit	0	7	1	5	25	2	0	0	0	0	0	0	0	**40**
Organic	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
SUM	**45**	**143**	**10**	**316**	**98**	**83**	**2**	**2**	**9**	**4**	**10**	**2**	**2**	**726**

Table B.8 Relationship between stone beads and raw material

	Aa	Ab	Ac	Ba	Bb	Bc	C	Da	Db	Dc	E	F	G	SUM
Agate	40	3	9	16	4	10	2	1	0	0	0	0	0	**85**
Turquoise	3	0	0	32	2	64	0	8	4	2	0	1	1	**117**
Nephrite	1	0	0	0	2	0	0	0	0	0	0	1	1	**5**
Blue Stone	0	0	0	0	4	0	0	0	0	0	0	0	0	**4**
Stone	0	0	0	0	2	0	0	0	0	0	0	0	0	**2**
SUM	**44**	**3**	**9**	**48**	**14**	**74**	**2**	**9**	**4**	**2**	**0**	**2**	**2**	**213**

Table B.9 Regional distribution of different raw material groups by number of graves

	Number graves	Ceramics	Bronze	Iron	Composite objects	Silver/gold	Stone	Agate	Turquoise	Nephrite	Bone/tooth	Shell	Organic	Frit
Dechang	4	3	4	2	0	0	1	1	2	0	1	0	0	0
Huili Fenjiwan	81	69	8	0	0	0	41	0	0	1	0	0	0	0
Huili other	17	15	2	0	0	0	3	1	1	1	1	1	0	0
Luquan	5	5	0	0	0	0	0	0	0	0	0	0	0	0
Meigu	1	1	0	0	0	0	1	0	0	0	0	0	0	0
Mianning	16	14	6	0	0	1	3	1	1	0	1	0	0	0
Miyi	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Ninglang	11	10	6	0	1	0	0	0	1	0	0	0	1	0
Puge	10	4	8	0	0	0	3	2	1	0	6	0	0	0
Xichang	62	57	18	9	0	2	22	5	4	2	8	0	0	1
Xide	4	3	4	2	0	0	3	0	0	1	2	0	0	0
Yanyuan	59	48	21	7	1	1	6	3	2	2	1	0	0	0
Yongsheng	59	41	13	3	1	0	9	0	7	4	6	8	0	0
Zhaojue	31	16	9	1	0	2	9	2	0	2	2	1	5	0

Table B.10 Regional distribution of different material groups in graves by number of objects

	Number graves	Ceramics	Bronze	Iron	Composite objects	Silver/gold	Stone	Agate	Turquoise	Nephrite	Bone/tooth	Shell	Organic	Frit
Dechang	4	131	12	2	0	0	1	1	4	0	1	0	0	0
Huili Fenjiwan	81	167	14	0	0	0	57	0	0	1	0	0	0	0
Huili other	17	146	3	0	0	0	42	2	41	1	2	1	0	0
Luquan	5	6	0	0	0	0	0	0	0	0	0	0	0	0
Meigu	1	1	0	0	0	0	1	0	0	0	0	0	0	0
Mianning	16	185	37	0	0	4	4	2	2	0	2	0	0	0
Miyi	1	0	3	0	0	0	1	0	0	0	0	0	0	0
Ninglang	11	53	10	0	1	0	0	0	1	0	0	0	14	0
Puge	10	9	77	0	0	0	10	4	4	0	61	0	0	0
Xichang	62	635	270	19	0	8	42	17	6	2	72	0	0	25
Xide	4	32	28	2	0	0	3	0	0	1	3	0	0	0
Yanyuan	59	79	290	12	1	1	34	56	6	2	21	0	0	0
Yongsheng	59	174	51	4	1	1	18	0	51	4	26	58	0	0
Zhaojue	31	40	25	1	0	2	22	2	0	3	5	1	16	0
SUM		*1658*	*820*	*40*	*3*	*16*	*235*	*84*	*115*	*14*	*193*	*60*	*30*	*25*

Table B.11 Correlation between nonmetal tool/weapon types and raw materials in graves by number of objects

Graves	Serpentinite	Nephrite	Metamorphic rock	Quartzite	Igneous rock	Sedimentary rock	Shale/slate	Stone, unclear	Stone, SUM	Coarse clay	Fine clay	Bone	Wood
Adze	0	1	0	0	2	1	0	1	5	0	0	0	0
Axe	0	1	1	1	6	0	0	4	13	0	0	0	0
Chisel	0	0	1	0	2	0	0	1	4	0	0	0	0
Arrowhead	0	4	1	0	2	1	80	14	102	0	0	3	2
Knife	0	0	0	0	6	0	2	1	9	0	0	0	0
Grinding roller	0	0	0	0	1	16	18	5	40	0	0	0	0
Spindle whorl	0	0	0	0	0	0	0	2	2	59	25	0	0
Production tools	0	0	0	0	1	1	1	0	3	0	0	0	0
Grinding tools	0	0	2	0	0	1	0	16	19	0	0	0	0
Coarse tools	0	0	0	0	8	0	0	0	8	0	0	0	0
Ritual objects	0	0	0	0	1	6	0	6	13	0	0	0	0
SUM	*0*	*6*	*5*	*1*	*29*	*26*	*101*	*50*	*218*	*59*	*25*	*3*	*2*

Table B.12 Correlation between nonmetal tool/weapon types and raw material at settlement sites by number of objects

Settlements	Serpentinite	Nephrite	Metamorphic	Quartzite	Igneous rock	Sedimentary rock	Shale/slate	Stone, unclear	Stone, SUM	Coarse clay	Fine clay	Bone	Wood
Adze	34	0	4	0	59	2	1	5	105	0	0	0	0
Axe	10	0	1	0	117	5	0	10	143	0	0	0	0
Chisel	7	0	4	0	25	0	1	4	41	0	0	0	0
Arrowhead	0	1	0	0	1	4	1	7	14	0	0	0	0
Spear-head	2	0	0	0	0	0	0	0	2	0	0	0	0
Knife	0	0	1	0	13	0	106	0	120	0	0	0	0
Grinding roller	0	0	0	0	4	0	0	0	4	0	0	0	0
Spindle whorl	0	0	0	0	1	4	0	0	5	6	4	0	0
Coarse tools	2	0	2	13	131	0	0	0	148	0	0	0	0
Grinding tools	1	0	0	0	28	5	3	0	37	0	0	0	0
Production tools	0	0	0	0	6	8	0	0	14	0	0	0	0
Fragments	2	0	0	3	16	0	0	4	25	0	0	0	0
Net-weight	0	0	0	0	1	3	0	1	5	0	0	0	0
Agric. tools	1	0	0	0	5	0	0	0	6	0	0	0	0
SUM	*59*	*1*	*12*	*16*	*407*	*31*	*112*	*31*	*669*	*6*	*4*	*0*	*0*

Table B.13 Correlation between location and raw material used for nonmetal tools/weapons found in graves by number of objects

Graves	Serpentinite	Nephrite	Metamorphic	Quartzite	Igneous rock	Sedimentary rock	Shale/slate	Stone, unclear	Stone, SUM	Coarse clay	Fine clay	Bone	Wood
Dechang	0	0	0	0	0	1	0	0	1	0	0	0	0
Huili Fenjiwan	0	0	0	0	0	48	1	1	50	9	0	0	0
Huili other	0	0	0	0	1	0	0	21	22	26	20	0	0
Miyi	0	0	0	0	0	0	0	1	1	0	0	0	0
Mianning	0	0	0	0	0	0	0	2	2	0	0	0	0
Ninglang	0	0	0	0	0	0	0	0	0	1	0	0	0
Puge	0	0	0	0	2	7	0	1	10	0	1	3	0
Xichang	0	0	4	0	12	8	0	11	35	22	5	0	0
Xide	0	0	1	0	0	0	0	6	7	0	0	0	0
Yanyuan	0	3	0	0	8	0	0	3	14	0	0	0	0
Yongsheng	0	0	0	0	4	1	28	3	36	0	0	0	0
Zhaojue	0	0	0	1	2	2	0	2	7	2	0	0	0
SUM	*0*	*3*	*5*	*1*	*29*	*67*	*29*	*51*	*185*	*60*	*26*	*3*	*0*

Table B.14 Correlation between location and raw material used for nonmetal tools/weapons found at settlement sites by number of objects

Settlements	Serpentinite	Nephrite	Metamorphic	Quartzite	Igneous rock	Sedimentary rock	Shale/slate	Stone, unclear	Stone, SUM	Coarse clay	Fine clay	Bone	Wood
Dechang	43	0	3	12	86	8	23	2	177	3	0	0	0
Huili	6	0	4	2	109	4	13	10	148	0	0	0	0
Miyi	0	0	0	0	0	0	0	0	0	0	0	0	0
Mianning	0	0	0	0	14	4	7	0	25	6	0	0	0
Puge	0	0	0	0	31	0	7	0	38	0	1	0	0
Xichang	9	0	0	1	116	8	33	8	175	0	3	0	0
Xide	0	0	0	0	0	0	0	0	0	0	0	0	0
Yanyuan	0	0	0	0	4	4	9	0	17	0	0	0	0
Yongsheng	0	1	4	0	21	3	14	4	47	0	0	1	0
Zhaojue	1	0	0	0	0	0	0	0	1	0	0	0	0
SUM	*59*	*1*	*11*	*15*	*381*	*31*	*106*	*24*	*628*	*9*	*4*	*1*	*0*

Table B.15 Frequency of main functional vessel types in graves with multiple interments

Grave	Jar	Single-handled jar	Double-handled jar	Four-handled jar	Urn	*Fu*	Cup/beaker	Goblet	Ewer	Vase	Basin	*Bo*	*Dou*
DARM1	70	26	30	0	0	0	4	0	0	0	0	0	0
DARM3	1	3	1	0	0	0	3	0	1	3	0	0	0
DARM4	5	0	3	1	0	0	0	0	1	3	1	0	0
MBBM1	1	0	0	0	0	0	0	0	0	0	0	0	0
MSLM1	1	0	0	0	0	0	0	0	0	0	0	0	0
MWQM1	0	10	25	0	0	0	33	0	2	6	0	0	0
MWQM2	0	6	57	0	0	0	11	1	17	1	0	0	1
PXAM1	0	0	0	0	0	0	0	0	1	0	0	0	0
PXBM1	0	3	0	0	0	0	0	0	0	0	0	0	0
PXBM2	0	1	1	0	0	0	0	0	0	0	0	0	0
XBBM4	0	0	0	0	0	0	0	4	1	0	0	1	0
XBBM6	0	0	0	0	0	0	0	1	1	0	0	0	0
XDYDM2	0	0	0	0	5	0	0	0	0	0	0	0	0
XGQM1	2	3	0	0	0	0	0	0	0	0	0	0	0
XGQM2	0	1	0	0	0	0	0	0	0	0	0	0	0
XGSM1	2	0	0	0	0	0	0	0	0	1	0	0	0
XHGM1	1	0	0	0	0	0	0	0	0	0	0	0	0
XHGM2	2	0	0	0	0	0	0	0	0	0	0	0	0
XHGM3	0	0	0	1	0	0	0	1	0	0	0	0	0
XHGM4	1	0	0	0	0	0	0	0	0	0	0	0	0
XHTM1	1	2	0	0	0	0	0	0	0	0	0	0	0
XLKM1	1	0	0	0	0	3	0	1	0	0	0	0	0
XLKM6	0	0	2	0	0	0	5	0	2	0	0	0	0
XLKM8	0	14	1	0	0	0	0	0	0	0	0	0	0
XTHM10	9	0	0	0	0	0	0	3	0	1	0	0	0

XTUM5	1	0	0	0	0	0	0	0	0	0	0	0	0
XWNM1	82	1	0	0	0	0	16	0	0	0	0	9	0
XWNM2	16	0	0	0	0	0	1	0	0	0	0	1	0
XXCM1	2	0	0	0	0	0	0	0	0	0	0	0	0
XXHM1	0	0	0	0	0	0	1	0	0	0	0	0	0
XXJM1	0	6	1	0	0	0	0	0	5	0	0	0	0
XXJM6	0	0	0	0	0	0	2	2	0	0	0	0	0
XYJM1	4	0	0	0	0	0	0	0	0	1	0	0	0
XYJM2	4	0	0	0	0	0	0	0	0	0	0	0	0
XYJM3	0	0	0	0	0	0	0	1	0	0	0	0	0
XYUM1	3	0	0	0	0	0	0	0	0	0	0	0	0
XYUM5	2	0	0	0	0	0	0	0	0	0	0	0	0
ZQJM6	1	0	0	0	0	0	0	0	0	0	0	0	0
SUM	*212*	*76*	*121*	2	*5*	*3*	*86*	*14*	*31*	*16*	*1*	*11*	*1*

Table B.16 Ceramic assemblages of undisturbed and well-reported burials with no signs of reopening

Grave	Jar	Single-handled jar	Double-handled jar	Urn	Vat	Double jar	*Fu*	Cup	Beaker	Goblet	Ewer	Vase	Basin	*Bo*	*Wan*	*Dou*	Lid
HFJM10	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM100	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM101	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM102	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0
HFJM103	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM105	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
HFJM106	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM108	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM109	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM112	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM113	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM116	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM118	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM120	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM121	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM122	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM123	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM124	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM125	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM126	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM127	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
HFJM128	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM130	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM133	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM134	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

HFJM135	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM137	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM138	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
HFJM139	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM140	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
HFJM141	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
HFJM142	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
HFJM143	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM144	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM145	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM146	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM148	2	2	0	1	0	0	0	0	0	2	2	1	0	0	2	0	0
HFJM2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM26	2	1	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0
HFJM28	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM29	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
HFJM3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM32	2	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
HFJM33	1	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0
HFJM34	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM35	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM36	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM37	3	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0
HFJM38	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM39	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM4	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0

Grave	Jar	Single-handled jar	Double-handled jar	Urn	Vat	Double jar	*Fu*	Cup	Beaker	Goblet	Ewer	Vase	Basin	*Bo*	*Wan*	*Dou*	Lid
HFJM44	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM45	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
HFJM47	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM48	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM49	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM50	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM51	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM52	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM53	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
HFJM54	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM55	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM56	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM57	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM59	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM6	2	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
HFJM60	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM62	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM64	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM66	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM68	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM69	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM70	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM71	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM72	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM73	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

HFJM74	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM75	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM76	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM77	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM78	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM79	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM80	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM82	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM83	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM84	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM85	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM88	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
HFJM93	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
HFJM94	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0
HFJM95	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HGJM1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HLJM1	0	34	0	0	0	1	0	0	0	60	0	7	0	0	0	0	0
HWTM1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
HWTM2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
HWTM3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HWTM4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HXPM14	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
HXPM20	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
HXPM21	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
HXPM5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
HXPM6	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

Grave	Jar	Single-handled jar	Double-handled jar	Urn	Vat	Double jar	*Fu*	Cup	Beaker	Goblet	Ewer	Vase	Basin	*Bo*	*Wan*	*Dou*	Lid
LYBMAM1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
LYBMAM2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LYBMAM3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LYBMAM8	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
MSKM1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
NDXM1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
NDXM10	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NDXM11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NDXM2	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NDXM3	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NDXM4	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NDXM5	1	9	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0
NDXM6	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NDXM7	1	2	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
NDXM9	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XDYM1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
XDYM2	2	0	1	3	0	0	0	0	1	0	0	0	0	2	0	0	0
XDYM3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
XDYM4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
XDYM8	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
XDYM9	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XLAM1	0	0	0	0	3	0	0	0	0	0	0	3	0	0	2	1	0
XLAM10	8	0	0	0	1	0	0	0	0	0	3	4	0	2	2	0	0
XLAM11	25	0	0	0	11	0	0	0	0	0	0	2	2	2	8	0	0
XLAM12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0

XLAM13	2	0	0	0	3	0	0	0	0	0	0	0	0	0	1	1	0
XLAM2	8	0	0	0	0	0	0	0	0	0	1	2	0	1	1	1	0
XLAM3	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
XLAM4	0	0	0	0	4	0	0	2	0	0	0	4	0	0	6	0	0
XLAM5	5	0	0	0	0	0	0	1	0	0	0	2	0	0	4	1	0
XLAM6	2	0	0	0	1	0	0	8	0	0	0	1	0	2	1	0	0
XLAM7	1	0	0	0	4	0	0	0	0	0	0	1	0	0	4	0	0
XLAM8	3	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0
XLAM9	2	0	0	0	2	0	0	1	0	0	0	4	0	1	0	2	0
XLBM1	3	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0
XLBM2	1	0	0	0	1	0	0	0	0	0	0	2	3	0	0	0	0
XLBM3	3	0	5	0	0	2	0	5	0	0	0	8	0	7	19	0	0
XLBM4	5	0	0	0	0	0	0	0	0	0	11	14	0	0	0	0	1
XLBM5	2	0	0	0	0	0	0	1	0	0	0	8	4	4	9	0	0
XLBM6	3	0	0	0	0	0	0	0	0	0	0	1	0	0	5	0	0
XLBM7	5	0	0	0	0	0	0	7	0	0	0	7	0	4	10	0	0
XLBM8	11	0	0	0	0	0	0	0	0	0	0	1	0	2	2	1	0
XMSM1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0
XQGM1	14	1	0	1	0	0	0	0	0	18	1	0	0	0	0	0	0
XQGM2	3	0	0	0	0	0	0	0	0	19	0	2	0	0	0	0	0
XYGM1	2	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0
XYGM3	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
XYPM1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
YLLM11	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YLLM7	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YMBM2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Grave	Jar	Single-handled jar	Double-handled jar	Urn	Vat	Double jar	*Fu*	Cup	Beaker	Goblet	Ewer	Vase	Basin	*Bo*	*Wan*	*Dou*	Lid
YYWM1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
YYWM3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YYWM4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
ZCBM1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
ZCBM6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
ZEKM1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZEKM12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZEKM3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZFQM1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
ZFQM3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZPBM11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZPBM2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
ZPBM4	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
ZPBM8	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZPBM9	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
SUM	*248*	*69*	*35*	*34*	*32*	3	*3*	*29*	2	*115*	*19*	*95*	*9*	*29*	*98*	*13*	*1*

Table B.17 Weapon/tool assemblages in graves

Grave	Sword/dagger	*Yue*	*Ge*	Metal knife	Spear	Arrowhead	Stone knife	Metal axe	Spindle whorl	Wood working	Grinding rod	Other tools	SUM
DARM1	0	0	0	0	2	0	0	0	0	0	0	0	2
DARM3	0	0	0	1	0	0	0	0	0	0	0	0	1
DARM4	0	0	0	0	0	0	0	0	0	0	1	0	1
DGYM2	0	0	0	1	0	1	0	0	0	0	0	0	2
HFJM103	0	0	0	0	0	0	0	0	1	0	0	0	1
HFJM12	0	1	0	0	0	0	0	0	0	0	0	0	1
HFJM129	0	0	0	0	0	0	0	0	0	1	0	0	1
HFJM139	0	0	0	0	0	0	0	0	1	0	0	0	1
HFJM144	0	0	0	0	0	0	0	0	1	0	0	0	1
HFJM148	0	0	0	0	0	0	0	0	0	0	0	0	0
HFJM26	0	1	0	0	0	1	0	0	0	0	0	3	5
HFJM3	0	0	0	0	1	0	0	0	0	0	0	0	1
HFJM32	0	0	0	0	0	0	0	0	1	0	0	0	1
HFJM37	0	0	0	0	0	0	0	0	2	0	0	0	2
HFJM38	1	0	0	0	0	0	0	0	0	0	0	0	1
HFJM4	0	1	0	0	0	0	0	0	0	0	0	0	1
HFJM42	0	0	0	0	0	0	0	0	1	0	0	0	1
HFJM59	0	0	0	0	0	0	0	0	0	1	0	0	1
HFJM6	0	0	0	0	0	0	0	0	1	0	0	0	1
HFJM91	0	0	0	0	0	0	0	0	1	0	0	0	1
HFJM98	0	0	0	0	0	0	0	0	1	0	0	0	1
HGJM2	0	0	0	0	0	0	0	0	1	0	0	0	1
HGJM29	0	1	0	0	0	0	0	0	0	0	0	0	1
HLJM1	0	0	0	0	0	13	0	0	22	1	5	18	59

Grave	Sword/dagger	*Yue*	*Ge*	Metal knife	Spear	Arrowhead	Stone knife	Metal axe	Spindle whorl	Wood working	Grinding rod	Other tools	SUM
HMLM1	0	0	0	0	0	0	0	0	1	0	2	0	3
HWTM1	0	0	0	0	0	0	0	0	0	0	0	1	1
HWTM2	0	0	0	0	0	0	0	0	1	0	0	0	1
HWTM3	0	0	0	0	0	0	0	0	3	0	0	0	3
HWTM4	0	0	0	0	0	0	0	0	4	0	0	0	4
HWTM5	0	0	0	0	0	0	0	0	4	0	0	0	4
HXPM6	0	0	0	0	0	0	0	0	0	1	0	0	1
MABM1	0	0	0	0	0	0	0	0	0	1	0	0	1
MBBM1	0	0	0	0	0	9	0	0	0	0	0	0	9
MSKM1	0	0	0	2	0	2	0	0	0	0	0	0	4
MTBM1	0	0	0	0	0	0	0	0	0	1	0	0	1
MWQM1	1	0	0	0	0	2	0	0	0	1	0	0	4
MWQM2	0	0	0	0	0	1	0	0	0	0	0	0	1
NDXM2	0	1	0	1	2	0	0	0	0	0	0	0	4
NDXM4	0	1	0	0	0	0	0	0	0	0	0	0	1
NDXM5	0	0	0	1	0	2	0	0	0	0	0	0	3
NDXM8	1	0	0	0	1	0	0	0	0	0	0	0	2
NDXM9	0	0	0	0	0	0	0	0	1	0	0	0	1
NDZM4	1	0	0	0	0	0	0	0	0	0	0	0	1
PAMM1	0	0	0	0	0	1	0	0	0	0	0	0	1
PWLM3	0	0	0	0	0	6	0	0	0	0	0	0	6
PXAM1	0	0	0	3	0	4	0	0	0	0	0	0	7
PXAM2	0	0	0	1	0	1	0	0	0	0	0	0	2
PXBM1	1	0	0	0	0	1	0	0	0	0	6	0	8
XBBM1	0	0	0	1	0	2	0	0	1	0	0	0	4

XBBM4	0	0	0	0	0	0	0	0	1	0	0	0	1
XDYM2	0	0	0	0	0	0	0	0	0	1	0	1	2
XDYM3	1	0	0	0	0	1	0	0	0	1	0	0	3
XGQM1	0	0	0	5	0	0	0	0	0	0	1	0	6
XHGM1	1	0	0	1	0	0	0	0	0	0	1	0	3
XHGM2	0	0	0	4	0	0	0	0	0	0	3	0	7
XHGM4	0	0	0	0	0	0	0	0	4	0	3	0	7
XHGM5	0	0	0	1	0	0	0	0	0	0	0	0	1
XHGM6	0	0	0	0	0	0	0	0	2	0	0	0	2
XHTM1	0	0	0	2	0	0	0	0	0	0	1	0	3
XLKM1	0	0	0	0	0	1	0	0	0	0	0	0	1
XLKM5	0	0	0	0	0	1	0	0	0	0	0	0	1
XLKM6	0	0	0	1	0	0	0	0	2	0	0	0	3
XLKM7	0	0	0	1	0	0	0	0	0	0	0	0	1
XLKM8	0	0	0	2	0	0	0	0	1	1	0	0	4
XQGM1	0	0	0	2	0	0	1	0	0	0	0	0	3
XQGM2	0	0	0	0	0	0	1	0	0	0	0	4	5
XQGM3	0	0	0	0	0	0	0	0	0	0	0	5	5
XWNM1	0	0	0	2	0	0	0	0	0	0	1	0	3
XWNM2	0	0	0	0	0	0	0	0	0	0	1	0	1
XXCM1	0	0	0	2	2	2	0	0	2	0	0	0	8
XXHM1	0	0	0	2	0	2	2	1	0	0	0	1	8
XXJM1	1	0	0	1	1	2	2	0	2	0	0	1	10
XYGM1	0	0	0	1	0	0	0	0	0	0	0	0	1
XYJM1	0	0	0	0	0	1	0	0	0	0	0	1	2
XYJM2	0	0	0	0	0	2	0	0	0	1	0	0	3
XYJM3	0	0	0	0	0	1	0	0	0	0	0	0	1

Grave	Sword/dagger	*Yue*	*Ge*	Metal knife	Spear	Arrowhead	Stone knife	Metal axe	Spindle whorl	Wood working	Grinding rod	Other tools	SUM
XYPM1	0	0	0	0	0	0	0	0	0	2	0	0	2
XYUM1	0	0	0	0	0	1	0	0	5	0	0	0	6
XYUM2	0	0	0	0	0	0	0	0	7	0	0	0	7
XYUM3	0	0	0	0	0	0	0	0	2	0	0	0	2
YBIM1	0	0	0	1	1	1	0	0	0	0	0	0	3
YBSM1	1	1	0	1	1	0	0	0	0	0	0	0	4
YCJM4	0	0	0	1	0	0	0	0	0	0	0	0	1
YDZM1	0	0	0	0	0	0	0	0	2	0	0	0	2
YDZM106	0	0	0	1	1	2	0	0	1	0	0	0	5
YDZM11	0	0	0	0	0	0	0	0	0	0	0	1	1
YDZM13	0	0	0	0	0	1	0	0	0	0	0	0	1
YDZM139	0	0	0	0	1	1	0	0	0	0	0	0	2
YDZM19	0	0	0	0	0	1	0	0	0	0	0	0	1
YDZM2	0	0	0	0	0	2	0	0	0	2	0	0	4
YDZM34	0	0	0	0	0	0	2	0	0	2	0	0	4
YDZM48	0	0	0	0	0	0	0	0	0	0	0	0	0
YDZM66	0	0	0	0	0	0	0	0	0	2	0	0	2
YDZM77	1	0	0	3	2	3	0	0	0	0	0	0	9
YDZM80	0	0	0	0	0	0	0	0	1	0	0	0	1
YDZM88	0	0	0	0	0	0	0	0	0	1	0	0	1
YDZM9	0	0	0	0	0	1	0	0	0	0	0	0	1
YDZM91	0	0	0	1	0	2	0	0	0	0	0	0	3
YDZM93	0	0	0	0	0	0	1	0	0	0	0	0	1
YDZM94	0	0	0	0	0	2	0	0	0	0	0	0	2
YGSM1	2	0	0	0	1	0	0	1	0	0	0	0	4
YHTM1	1	0	0	0	0	0	0	0	0	0	0	0	1

YLLM10	0	2	0	0	0	0	0	0	0	0	0	0	2
YLLM11	1	1	2	1	2	17	2	1	0	0	1	2	30
YLLM4	1	0	1	1	1	0	0	0	0	0	0	0	4
YLLM6	1	0	1	0	0	23	0	0	0	0	1	2	28
YLLM7	1	0	0	0	0	0	0	0	0	0	0	0	1
YLLM9	1	0	3	0	0	10	0	0	0	0	0	0	14
YLSM1	3	0	0	6	0	0	0	0	0	0	0	0	9
YMBM1	1	0	0	0	0	1	0	0	0	0	0	0	2
YMBM2	1	1	1	0	2	0	0	0	0	0	0	0	5
YQDM1	0	0	0	0	0	3	0	0	0	0	0	0	3
YQSM1	0	0	0	0	0	0	0	0	0	1	0	0	1
YXHM1	6	5	0	0	0	0	0	0	0	0	0	0	11
YZSM1	0	0	0	0	0	0	0	1	0	0	0	0	1
ZCBM1	0	0	0	1	0	0	0	0	0	0	0	0	1
ZCBM5	0	0	0	0	0	0	0	0	1	0	0	0	1
ZCBM6	0	0	0	0	0	0	0	0	1	0	0	0	1
ZEKM12	0	0	0	0	0	1	0	0	0	0	0	0	1
ZEKM3	0	0	0	0	0	1	0	0	0	0	0	0	1
ZEKM4	0	0	0	0	0	8	0	0	0	1	0	0	9
ZEKM5	0	0	0	0	0	1	0	0	0	0	0	0	1
ZFQM2	0	0	0	0	0	0	0	0	0	1	0	0	1
ZJEM1	0	0	0	0	0	1	0	0	0	0	0	0	1
ZJEM3	0	1	0	0	0	0	0	0	0	0	0	0	1
ZLYM2	0	0	0	0	0	0	0	0	0	2	0	0	2
ZWSM1	0	0	0	0	0	1	0	0	0	0	0	0	1
SUM	*29*	*17*	*8*	*55*	*21*	*143*	*11*	*4*	*82*	*25*	*27*	*40*	*462*

Table B.18 Combination of personal ornaments and clothing applications found in graves

	Rings					Clothing			Neck ornaments					Hair deco	All
	Bracelet	*Finger ring*	*Ear ring*	*Ring segment*	*Flat ring*	*Belt*	*Button*	*Clothing application*	*Bead*	*Pendant*	*Chain*	*Shell snail*	*Tusk*	*Hair ornament*	*SUM*
DARM1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
DARM3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
DARM4	2	0	0	0	0	0	0	0	1	0	0	0	0	0	3
DGYM2	3	0	0	0	0	0	0	0	3	0	0	0	0	0	6
HFJM13	4	1	0	0	0	0	0	1	0	0	0	0	0	0	6
HFJM149	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HFJM3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
HFJM53	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
HFJM60	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HGJ	15	0	0	0	0	1	10	51	1	0	0	0	0	0	79
HGJM2	2	0	0	0	0	0	0	0	44	0	0	0	0	0	46
HWT	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
HXSM21	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3
MBBM1	11	0	0	0	0	0	2	0	2	0	0	0	0	0	15
MSKM1	4	0	0	0	0	0	2	0	4	0	0	0	0	0	10
MTBM2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
MWQM1	6	0	0	0	0	0	0	0	2	0	0	0	0	0	8
NDXM5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
NDXM9	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
PAM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PAMM1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
PAMM2	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10
PWLM1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1

PWLM2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
PXBM1	33	2	0	0	1	0	0	0	1	0	0	0	11	0	48
PXBM2	0	0	5	0	1	0	0	0	3	0	0	0	19	3	31
PXBM4	8	0	0	0	2	0	0	0	4	0	0	0	17	4	35
XBBM1	10	3	3	4	0	0	0	0	6	0	0	0	0	6	32
XBBM2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2
XBBM3	1	0	0	0	0	0	0	0	2	0	0	0	0	0	3
XBBM4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
XBSM1	3	1	3	0	0	0	0	0	0	0	0	0	0	3	10
XDYM1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
XGQM1	8	3	11	6	0	0	11	0	9	0	0	0	0	1	49
XHGM1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
XHGM2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2
XHGM4	3	0	2	0	1	0	0	0	0	0	0	0	0	0	6
XLK	35	2	6	7	0	0	6	0	3	0	0	0	0	17	130
XLKM1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
XLKM6	2	0	0	1	0	0	1	0	2	0	0	0	0	1	7
XLKM7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
XLKM8	2	2	1	1	0	0	3	0	1	0	0	0	0	1	11
XQGM1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
XWNM1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
XWNM2	0	0	1	0	0	0	0	0	35	0	0	0	0	0	36
XXCM1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	9
XXHM1	0	0	0	4	0	0	8	0	1	0	0	0	0	6	27
XXJM1	10	0	12	9	0	1	17	13	38	0	0	0	1	44	176
XYGM1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2
XYGM2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	3

	Rings					Clothing			Neck ornaments					Hair deco	All
	Bracelet	*Finger ring*	*Ear ring*	*Ring segment*	*Flat ring*	*Belt*	*Button*	*Clothing application*	*Bead*	*Pendant*	*Chain*	*Shell snail*	*Tusk*	*Hair ornament*	*SUM*
YDZM10	1	0	0	0	0	0	0	0	0	0	0	0	0	3	4
YDZM100	0	0	0	0	0	0	0	0	18	0	0	0	0	0	18
YDZM101	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
YDZM11	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5
YDZM13	0	0	0	0	0	0	0	0	8	0	0	0	0	0	8
YDZM14	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
YDZM15	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
YDZM15	2	0	0	0	0	0	0	0	0	0	0	8	0	0	11
YDZM16	0	0	0	0	0	0	0	0	12	0	0	0	0	0	12
YDZM18	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13
YDZM19	0	0	0	0	0	0	0	0	1	0	0	10	0	0	11
YDZM2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2
YDZM34	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
YDZM57	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
YDZM61	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
YDZM62	3	2	0	0	0	0	0	0	0	0	0	0	0	3	8
YDZM70	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
YDZM71	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
YDZM77	0	0	0	0	0	0	0	0	6	0	0	0	0	0	6
YDZM77	1	0	0	0	0	0	0	1	2	0	0	4	0	1	9
YDZM85	0	0	0	0	0	0	0	0	0	0	0	11	0	0	11
YDZM91	2	1	0	0	0	0	0	0	0	0	0	6	0	0	9
YDZM94	0	0	0	0	0	0	0	0	10	0	0	6	0	0	16
YDZM98	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
YGSM1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1

YLLM11	1	0	1	0	0	0	0	17	41	0	0	0	0	1	61
YLLM4	0	0	1	0	0	0	3	38	33	0	0	0	0	0	84
YLLM5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
YLLM6	0	0	0	0	0	1	25	0	9	0	0	0	0	1	39
YLLM9	0	0	0	0	0	16	16	0	10	0	0	0	0	0	44
YLS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
YLXM1	1	0	0	0	0	0	3	0	0	0	0	0	0	0	4
YLY	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
YMBM2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
YQDM1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
YYJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
ZCBM1	0	0	0	0	0	0	0	0	2	0	1	0	0	0	3
ZCBM3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
ZCBM5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
ZCBM6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
ZEKM11	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
ZEKM3	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4
ZEKM9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
ZJEM1	0	0	0	2	0	0	0	0	1	0	0	0	0	0	4
ZJEM2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
ZJEM3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
ZPBM3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
ZPBM4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
SUM	*211*	*20*	*48*	*34*	*7*	*19*	*110*	*122*	333	5	5	65	48	106	1261

Table B.19 Correlation tests

A. Test of correlation for aspect and grave orientation for all graves

			OrientationNum	Aspect
OrientationNum	Pearson correlation		1	.129**
	Sig. (2-tailed)			.000
	N		801	801
Aspect	Pearson correlation		.129**	1
	Sig. (2-tailed)		.000	
	N		801	801
Kendall's tau_b	OrientationNum	Correlation coefficient	1.000	.139**
		Sig. (2-tailed)	.	.000
		N	801	801
	Aspect	Correlation coefficient	.139**	1.000
		Sig. (2-tailed)	.000	.
		N	801	801
Spearman's rho	OrientationNum	Correlation coefficient	1.000	.174**
		Sig. (2-tailed)	.	.000
		N	801	801
	Aspect	Correlation coefficient	.174**	1.000
		Sig. (2-tailed)	.000	.
		N	801	801

**Correlation is significant at the 0.01 level (2-tailed)

B. Cross-tabulation and tests of significance for aspect and orientation for all graves

		AspectWord									Total
			E	N	NE	NW	S	SE	SW	W	
Orientation grave		7	0	0	0	0	0	0	0	0	7
	E	0	45	6	21	21	10	35	7	23	168
	N	0	15	31	37	12	20	18	4	27	164
	NE	0	25	10	4	16	8	0	5	19	87
	NW	0	0	1	1	13	1	32	9	1	58
	S	0	6	9	2	1	9	76	1	31	135
	SE	0	4	6	1	3	0	23	3	0	40
	SW	0	0	0	1	1	1	2	6	37	48
	W	0	19	6	1	14	14	32	8	7	101
Total		7	114	69	68	81	63	218	43	145	808

		Value	Asymp. std. error[a]	Approx. *T*[b]	Approx. sig.
Nominal by nominal	Phi	1.266			.000
	Cramer's *V*	.448			.000
	Contingency coefficient	.785			.000
Ordinal by ordinal	Kendall's tau-b	.201	.028	7.255	.000
	Kendall's tau-c	.191	.026	7.255	.000
	Gamma	.234	.032	7.255	.000

		Value	Asymp. std. error[a]	Approx. T^{b}	Approx. sig.
Measure of agreement	Kappa	.073	.015	5.936	.000
N of valid cases		808			

C. Test of correlation for aspect and grave orientation for megalithic graves

			OrientationNum	Aspect
OrientationNum	Pearson correlation		1	.151*
	Sig. (2-tailed)			.010
	N		288	288
Aspect	Pearson correlation		.151*	1
	Sig. (2-tailed)		.010	
	N		288	288
Kendall's tau_b	OrientationNum	Correlation coefficient	1.000	.087*
		Sig. (2-tailed)	.	.045
		N	288	288
	Aspect	Correlation coefficient	.087*	1.000
		Sig. (2-tailed)	.045	.
		N	288	288
Spearman's rho	OrientationNum	Correlation coefficient	1.000	.122*
		Sig. (2-tailed)	.	.038
		N	288	288
	Aspect	Correlation coefficient	.122*	1.000
		Sig. (2-tailed)	.038	.
		N	288	288

*Correlation is significant at the 0.05 level (2-tailed)

D. Cross-tabulation and tests of significance for aspect and orientation for megalithic graves

		AspectWord								
		E	N	NE	NW	S	SE	SW	W	Total
OrientationWord	E	31	6	15	9	3	10	4	8	86
	N	2	10	16	3	10	2	1	24	68
	NE	1	0	4	1	1	0	4	11	22
	NW	0	0	1	8	1	0	9	1	20
	S	2	7	2	1	5	1	1	2	21
	SE	2	6	1	1	0	2	3	0	15
	SW	0	0	1	1	1	0	6	0	9
	W	16	1	1	11	8	2	5	3	47
Total		54	30	41	35	29	17	33	49	288

		Value	Asymp. std. error[a]	Approx. T^{b}	Approx. sig.
Nominal by nominal	Phi	.888			.000
	Cramer's *V*	.336			.000
	Contingency coefficient	.664			.000

		Value	Asymp. std. error[a]	Approx. T^b	Approx. sig.
Ordinal by ordinal	Kendall's tau-b	.066	.048	1.396	.163
	Kendall's tau-c	.063	.045	1.396	.163
	Gamma	.078	.056	1.396	.163
N of valid cases		288			

[a]Not assuming the null hypothesis

[b]Using the asymptotic standard error assuming the null hypothesis

[c]Correlation statistics are available for numeric data only

E. Test of correlation for aspect and grave orientation for earth-pit graves

			OrientationNum	Aspect
OrientationNum	Pearson correlation		1	.110
	Sig. (2-tailed)			.087
	N		241	241
Aspect	Pearson correlation		.110	1
	Sig. (2-tailed)		.087	
	N		241	241
Kendall's tau_b	OrientationNum	Correlation coefficient	1.000	.281**
		Sig. (2-tailed)	.	.000
		N	241	241
	Aspect	Correlation coefficient	.281**	1.000
		Sig. (2-tailed)	.000	.
		N	241	241
Spearman's rho	OrientationNum	Correlation coefficient	1.000	.341**
		Sig. (2-tailed)	.	.000
		N	241	241
	Aspect	Correlation coefficient	.341**	1.000
		Sig. (2-tailed)	.000	.
		N	241	241

**Correlation is significant at the 0.01 level (2-tailed)

F. Cross-tabulation and tests of significance for aspect and orientation for earth-pit graves

		AspectWord						
		E	NW	S	SE	SW	W	Total
OrientationWord	E	4	0	7	24	2	9	46
	N	7	0	0	16	0	0	23
	NW	0	5	0	32	0	0	37
	S	0	0	0	75	0	5	80
	SE	2	2	0	21	0	0	25
	SW	0	0	0	2	0	7	9
	W	0	0	0	19	0	2	21
Total		13	7	7	189	2	23	241

		Value	Asymp. std. error[a]	Approx. T^b	Approx. sig.
Nominal by nominal	Phi	.827			.000
	Cramer's V	.370			.000
	Contingency coefficient	.637			.000
Ordinal by ordinal	Kendall's tau-b	.154	.066	2.268	.023
	Kendall's tau-c	.101	.044	2.268	.023
	Gamma	.262	.111	2.268	.023
N of valid cases		241			

[a]Not assuming the null hypothesis

[b]Using the asymptotic standard error assuming the null hypothesis

[c]Correlation statistics are available for numeric data only

G. Test of correlation for aspect and grave orientation for stone-construction graves

			OrientationNum	Aspect
OrientationNum	Pearson correlation		1	.258**
	Sig. (2-tailed)			.000
	N		272	272
Aspect	Pearson correlation		.258**	1
	Sig. (2-tailed)		.000	
	N		272	272
Kendall's tau_b	OrientationNum	Correlation coefficient	1.000	.182**
		Sig. (2-tailed)	.	.000
		N	272	272
	Aspect	Correlation coefficient	.182**	1.000
		Sig. (2-tailed)	.000	.
		N	272	272
Spearman's rho	OrientationNum	Correlation coefficient	1.000	.282**
		Sig. (2-tailed)	.	.000
		N	272	272
	Aspect	Correlation coefficient	.282**	1.000
		Sig. (2-tailed)	.000	.
		N	272	272

**Correlation is significant at the 0.01 level (2-tailed)

H. Cross-table and tests of significance for aspect and orientation for stone-construction graves

		AspectWord								Total
		E	N	NE	NW	S	SE	SW	W	
OrientationWord	E	10	0	6	12	0	1	1	6	36
	N	6	21	21	9	10	0	3	3	73
	NE	24	10	0	15	7	0	1	8	65
	NW	0	1	0	0	0	0	0	0	1
	S	4	2	0	0	4	0	0	24	34
	SW	0	0	0	0	0	0	0	30	30
	W	3	5	0	3	6	11	3	2	33
Total		47	39	27	39	27	12	8	73	272

		Value	Asymp. std. er.[a]	Approx. T^b	Approx. sig.
Nominal by nominal	Phi	1.085			.000
	Cramer's *V*	.443			.000
	Contingency coefficient	.735			.000
Ordinal by ordinal	Kendall's tau-b	.272	.042	6.485	.000
	Kendall's tau-c	.261	.040	6.485	.000
	Gamma	.318	.049	6.485	.000
N of valid cases		272			

[a]Not assuming the null hypothesis

[b]Using the asymptotic standard error assuming the null hypothesis

[c]Correlation statistics are available for numeric data only

Table B.20 Graves and grave groups (for a key to the ID consult Table B.2)

ID	Number of graves	Orientation	Relative orientation	Spacing	Grave type	Subtype(s)
DAR	5	SW, SE, S	Roughly the same	13–60 m	Megalithic grave(s)	1.1, 2.1, 2.2
DAX	2	S, S	Same	8 m	Megalithic grave(s)	1.1
DAU	2	S, E	Different		Megalithic grave(s)	1.1
DCZ	1	S			Megalithic grave(s)	1.1
DDB	4	E, E, N, S	Different		Megalithic grave(s)	1.1
DCB	1	NW			Megalithic grave(s)	1.1
DDG	1	N			Megalithic grave(s)	1.1
DDM	4				Megalithic grave(s)	1.1
DFJ	2	E	Same	300 m	Megalithic grave(s)	1.1
DGH	1	SW			Megalithic grave(s)	1.1
DGD	2	NW	Same		Megalithic grave(s)	1.2
DGY	9	N, NE, S	Different		Megalithic grave(s)	1.1, 1.2
DHF	1	N			Megalithic grave(s)	1.2
DHS	1	E			Megalithic grave(s)	1.3
DHM	3	E	Same		Megalithic grave(s)	1.2
DHC	1	W			Megalithic grave(s)	1.2
DHJ	1	E			Megalithic grave(s)	1.2
DLS	1	SE			Megalithic grave(s)	1.2
DLJ	3	W	Same		Megalithic grave(s)	1.2
DMA	1	SE			Megalithic grave(s)	1.2
DML	1	W			Megalithic grave(s)	1.2
DMN	1	N			Megalithic grave(s)	1.2
DMZ	3	S, W, W	Different		Megalithic grave(s)	1.2
DNB	1	N			Megalithic grave(s)	1.2
DNH	1	E			Megalithic grave(s)	1.2
DSB	1	E			Megalithic grave(s)	1.1

ID	Number of graves	Orientation	Relative orientation	Spacing	Grave type	Subtype(s)
DSR	1	E			Megalithic grave(s)	1.2
DSL	1	N			Megalithic grave(s)	1.2
DSJ	2	W	Same		Megalithic grave(s)	1.1
DSC	12	W	Same	50 m	Megalithic grave(s)	1.1
DWS	40	E	Same		Megalithic grave(s)	1.1
DWJ	1	W			Megalithic grave(s)	1.3
DXG	2				Megalithic grave(s)	1.2
DXL	8	NW, W	Roughly the same	<50 m	Megalithic grave(s)	1.2
DXM	7	NW, W	Roughly the same		Megalithic grave(s)	1.2
DXW	1	E			Megalithic grave(s)	1.2
DYZ	2	E	Same	4 m	Megalithic grave(s)	1.2
DYX	2	NW, W	Roughly the same		Megalithic grave(s)	1.2
DYJ	1	W			Megalithic grave(s)	1.2
DZJ	1	N			Megalithic grave(s)	1.2
HFJ	156	N, NW, SE	Roughly the same	Dense	Earth-pit grave(s), stone-construction grave(s)	1.3
HGS	1				Stone-construction grave(s)	
HGJ	10	NW	Same		Earth-pit grave(s), stone-construction grave(s)	
HHT	2	E			Stone-construction grave(s)	1.1
HZD	4	N	Same		Earth-pit grave(s), stone-construction grave(s)	1.3
HLS	1				Stone-construction grave(s)	
HML	1	N			Earth-pit grave(s), stone-construction grave(s)	1.1
HPL	3	N	Same		Stone-construction grave(s)	1.1
HTJ	1	E			Stone-construction grave(s)	2.2
HTP	1	E			Earth-pit grave(s)	
HWT	30	NW, W	Roughly the same	Regular	Earth-pit grave(s), stone-construction grave(s)	
HWH	10			Dense	Earth-pit grave(s), stone-construction grave(s)	

ID	Number of graves	Orientation	Relative orientation	Spacing	Grave type	Subtype(s)
HXT	100	E	Same		Earth-pit grave(s), stone-construction grave(s)	
HXP	200	N, NE	Roughly the same	Dense	Earth-pit grave(s), stone-construction grave(s)	
HXC	2	E	Same		Stone-construction grave(s)	2.2
HYP	10	E	Same		Stone-construction grave(s)	2.2
HYS	19	N	Same		Stone-construction grave(s)	1.2, 1.3
LYB	8	N, NE, SE	Different	0.5 m	Stone-construction grave(s)	1.2, 1.3, 2.3
MAB	5	N,W	Different		Stone-construction grave(s)	1.2, 2.2
MJJ	10	N, W	Different		Stone-construction grave(s)	1.2
MSW	2				Stone-construction grave(s)	1.1
MWC	1	W	Same		Stone-construction grave(s)	
MWB	2	W	Same	5 m	Stone-construction grave(s)	2.2
MWD	1	W			Stone-construction grave(s)	2.2
MWT	1	W			Stone-construction grave(s)	2.2
MBB	1	N			Megalithic grave(s)	1.1
MCG	1				Megalithic grave(s)	1.2
MMW	1	E			Megalithic grave(s)	1.1
MRS	4	E	Same		Megalithic grave(s)	1.1
MSK	1	S			Megalithic grave(s)	1.2
MSL	1	E			Megalithic grave(s)	1.3
MXS	1	N			Megalithic grave(s)	1.2
MXG	21	E	Same	0.5–1 m	Megalithic grave(s)	4.1
MSJ	5	E	Same		Megalithic grave(s)	1.2
MTB	3	N, NE	Roughly the same		Megalithic grave(s)	1.3, 1.2
MWQ	2	N, NW	Roughly the same	1000 m	Megalithic grave(s)	1.2
NDX	11	S, SW	Roughly the same		Earth-pit grave(s)	
PAM	2		Exactly the same	40 m	Megalithic grave(s)	

ID	Number of graves	Orientation	Relative orientation	Spacing	Grave type	Subtype(s)
PHP	1				Megalithic grave(s)	
PWL	7				Megalithic grave(s), earth-pit grave(s)	
PXC	40		Different		Megalithic grave(s)	
RBH	12		Roughly the same	2–4 m	Stone-construction grave(s)	
RBG	10		Roughly the same	2–3 m	Stone-construction grave(s)	
XBB	10		Roughly the same	40–150 m	Megalithic grave(s)	
XBJ	5		Exactly the same		Megalithic grave(s)	
XBS	150		Different		Megalithic grave(s), urns	
XCC	2		Exactly the same	14 m	Megalithic grave(s)	
XCY	2		Different		Megalithic grave(s)	
XDA	1				Megalithic grave(s)	
XDB	4		Exactly the same		Megalithic grave(s)	
XDC	9				Megalithic grave(s)	
XDS	1				Megalithic grave(s)	
XDY	11	E, NE	Roughly the same		Megalithic grave(s), earth-pit grave(s)	
XGS	1				Megalithic grave(s)	
XGH	5		Same	30 m	Megalithic grave(s)	
XHG	7		Slightly different		Megalithic grave(s)	
XHQ	1				Megalithic grave(s)	
XHT	3		Different		Megalithic grave(s)	
XJX	1				Megalithic grave(s)	
XLG	1				Megalithic grave(s)	
XLJ	6		Exactly the same		Megalithic grave(s)	
XLZ	28	N, NW, E			Megalithic grave(s), earth-pit grave(s)	
XLS	1	N			Megalithic grave(s)	1.2
XMS	1	E			Earth-pit grave(s)	
XML	4	E	Same		Megalithic grave(s)	1.2, 2.2
XMM	3	S	Same	5 m	Megalithic grave(s)	1.2
XMI	2	E, NE	Same		Megalithic grave(s)	1.1

ID	Number of graves	Orientation	Relative orientation	Spacing	Grave type	Subtype(s)
XQG	4	N, N, E			Earth-pit grave(s)	
XRS	1				Megalithic grave(s)	1.2
XSJ	1				Megalithic grave(s)	1.2
XSX	1	N			Megalithic grave(s)	1.2
XSB	1	E			Megalithic grave(s)	1.2
XSZ	1	SW			Megalithic grave(s)	1.2
XSG	2	N	Same		Megalithic grave(s)	1.2
XTC	1	W			Megalithic grave(s)	1.2
XTH	15	N			Megalithic grave(s), earth-pit grave(s)	4.2
XTU	6	E, SE	Roughly the same	0.3–0.5 m	Megalithic grave(s)	1.2
XWN	5	E, N, SW	Different	25–160 m	Megalithic grave(s)	1.1, 1.2, 2.1
XNG	4	N, S	Same		Megalithic grave(s)	1.2
XXH	2	W			Megalithic grave(s)	1.1
XXJ	3	SW			Megalithic grave(s)	1.2, 2.1
XXS	2				Megalithic grave(s)	3.2
XXC	6				Megalithic grave(s)	1.2
XXY	2	N	Same	100 m	Megalithic grave(s)	1.2
XXX	1	N			Megalithic grave(s)	1.2
XYG	3				Earth-pit grave(s)	
XYJ	3	S, SE, SW	Slightly different	3 m	Megalithic grave(s)	1.1
XYZ	4	E	Same		Megalithic grave(s)	1.2
XYP	2	E			Earth-pit grave(s)	
XYU	3	W		30	Megalithic grave(s)	1.1
XYD	1				Megalithic grave(s)	1.2
XZF	1				Megalithic grave(s)	1.2
XGQ	6	E, N	Slightly different		Megalithic grave(s)	1.2
XGY	2				Megalithic grave(s)	1.2
XLK	10	N	Same	7–20 m	Megalithic grave(s)	1.2, 2.1, 2.2
XLF	3	E	Same	15 m	Megalithic grave(s)	1.2
XLN	1	N			Megalithic grave(s)	1.2
XQL	1				Megalithic grave(s)	1.2
XWJ	1	E			Megalithic grave(s)	1.2
XWH	14	E, SE	Roughly the same	Dense	Megalithic grave(s)	1.2
YHM	1				Stone-construction grave(s)	

ID	Number of graves	Orientation	Relative orientation	Spacing	Grave type	Subtype(s)
YPC	1				Stone-construction grave(s)	
YXD	1				Stone-construction grave(s)	
PYX	1				Stone-construction grave(s)	
YYW	4	N, NW, W	Slightly different		Stone-construction grave(s)	1.3
YBG	1				Earth-pit grave(s)	
YBS	1				Earth-pit grave(s)	
YCJ	4				Earth-pit grave(s), stone-construction grave(s)	1.2
YGS	3				Earth-pit grave(s)	
YHT	1				Earth-pit grave(s)	
YJD	1				Earth-pit grave(s)	
YBI	1	N	Same		Earth-pit grave(s)	
YLL	13	E, S, W		0.2–0.3 m	Earth-pit grave(s)	1.2, 3.1
YLW	1				Earth-pit grave(s)	
YMB	4				Earth-pit grave(s)	1.1, 1.2
YMY	1		Roughly the same		Earth-pit grave(s)	
YNH	1				Earth-pit grave(s)	
YTL	1				Earth-pit grave(s)	
YTS	20			2 m	Earth-pit grave(s)	
YWM	20				Earth-pit grave(s)	
YWS	3	N	Same	1–3 m	Earth-pit grave(s)	
YBIII	3	N	Roughly the same	1–3 m	Earth-pit grave(s)	
YXG	1				Stone-construction grave(s)	
YXH	2				Earth-pit grave(s)	
YYN	10				Earth-pit grave(s)	2.2
YYS	1				Earth-pit grave(s)	2.2
YZS	1				Earth-pit grave(s)	
YDZ	140	N, E, W	Roughly the same		Earth-pit grave(s)	1, 3.1, 5.1
YQD	1	N			Earth-pit grave(s)	1.1
YYH	2	E	Roughly the same	2 m	Earth-pit grave(s)	
YLS	4	E	Roughly the same		Earth-pit grave(s)	

ID	Number of graves	Orientation	Relative orientation	Spacing	Grave type	Subtype(s)
YQS	8	S, one N	Same		Megalithic grave(s)	1.1, 1.2, 1.3
YWJ	1	W			Stone-construction grave(s)	1.2
ZAB	6	N	Same		Stone-construction grave(s)	2.2
ZBE	1				Stone-construction grave(s)	
ZBK	1				Stone-construction grave(s)	
ZCB	10	E, NE	Roughly the same		Stone-construction grave(s)	1.2, 5.1
ZDG	100		Slightly different		Stone-construction grave(s)	
ZDZ	1				Stone-construction grave(s)	
ZDD	1				Stone-construction grave(s)	
ZDQ	2		Roughly the same		Stone-construction grave(s)	
ZDC	12	W	Same		Stone-construction grave(s)	1.2
ZJE	4	NE	Same slope		Stone-construction grave(s)	2.2, 5.2
ZEK	12	N, NE	Roughly the same	3–6 m	Stone-construction grave(s)	2.2, 2.4, 1.2
ZEZ	1				Stone-construction grave(s)	
ZEW	2	W	Same		Stone-construction grave(s)	1.2, 2.2
ZFC	3	N, NE	Roughly the same	3–6 m	Stone-construction grave(s)	2.2, 2.4
ZGY	1				Stone-construction grave(s)	
ZHQ	1				Stone-construction grave(s)	
ZHY	1				Stone-construction grave(s)	
ZHL	1				Stone-construction grave(s)	
ZLY	32	SW, S	Same		Stone-construction grave(s)	2.4
ZJN	1				Stone-construction grave(s)	4.2
ZKW	3	S	Same		Stone-construction grave(s)	2.2

ID	Number of graves	Orientation	Relative orientation	Spacing	Grave type	Subtype(s)
ZKE	1				Stone-construction grave(s)	
ZME	3	E	Same		Stone-construction grave(s)	1.2
ZMC	56	E, N	Different		Stone-construction grave(s)	1.2
ZMK	1	S			Stone-construction grave(s)	2.2
ZMJ	3	S	Same		Stone-construction grave(s)	1.2
ZNT	4	S	Same		Stone-construction grave(s)	1.2, 2.2
ZNP	1				Stone-construction grave(s)	
ZPB	27	N, NE	Roughly the same	3–4 m	Stone-construction grave(s)	2.3, 2.4
ZQJ	12	NE, E	Roughly the same		Stone-construction grave(s)	1.1, 1.3, 3, 4
ZSE	8	N	Same		Stone-construction grave(s)	2.2
ZTL	1				Stone-construction grave(s)	
ZTW	3	E	Same		Stone-construction grave(s)	2.2
ZWG	3	E, E, W	Roughly the same		Stone-construction grave(s)	2.2, 1.2
ZWT	20	S	Same		Stone-construction grave(s)	
ZWS	5	N, NE	Roughly the same	3–6 m	Stone-construction grave(s)	2.2, 2.4, 1.2
ZYB	1				Stone-construction grave(s)	
ZYG	2	S	Same		Stone-construction grave(s)	2.2

Table B.21 Megalithic graves, their date, and major ceramic form types

	Remarks	Ceramic quality	Urn	Double handled	Vase	Ewer	Beaker	Goblet
Phase I								
XDYDM2	Not reopened	Sand, red-brown-gray	AaII				A	
XTHM10	Not reopened	Fine, red			Ac			EcIa, EcIb
XGSM1	Probably not reopened	Fine/sand			Ga			
Phase IIa								
XQGM1		Fine, black, high	x			BbI		CaIa, CaII, DaII
XQGM2		Fine, black, high			Bb			CaIa, CaII, CaIII, Cb, CcI, CcII, Db
XMLH1		Sand/fine, black-brown				BbII	CaII	CaI, DaII, EbII
XYJM5		Sand/fine, black-brown						
XYJM3		Sand/fine, black-brown						
XYUM1		Sand/fine, black-brown						
XYUM2		Sand/fine, black-brown						
XBBM4		Sand, black						
XBBM6		Sand/fine, black-gray						CaIb, DaI
XBBM3		No ceramics						
Phase IIb								
XBBM1		Sand, black						
XBBM2		No ceramics						
DGYM2		No ceramics						
PXAM1	Might have started earlier	Fine, black-brown-gray				BbI		
PXAM2	82 skeletons, possibly long use-life	Fine, black-brown-gray						
XLKM6	Some later forms as well, longer use-life	Fine/sand, gray-black		G		BbII	Ca	

XLKM7		No ceramics						
XLKM5		No ceramics						
XLKM1		Fine/sand, gray-black				BbII		EbII
XLSM1	Continuing until phase IV	Sand, gray		DcIa				EbI
XYJM1		Sand/fine, black-brown			x			
XYJM2		Sand/fine, black-brown						DaI
Phase IIIa								
XQG3		Sand, red-brown-gray	AaII, Bb	Cb, Da, Dc		x		B/C
DWT3		Sand, red-brown-gray		Da, Db, Dc, E?			Ca	
DWTH1		Sand, red-brown-gray		CcII				
DWTH2		Sand, red-brown-gray	Aa	Db				
DWTH3		No ceramics						
MST5		Sand, gray-brown						
MST6		Sand, gray-brown						
MST7		Sand, gray-brown						
MWQM1	Some variability in material, many ceramics, probably used over long time	Sand		CaI, CaII, CaIII, CbII, CcI, CdI, DaIII, DaIV, DcIa, DcII, De	FaI, FaII	A	Ba, BaI, BaII, Bb, Ca, CbI, CbII, DcI, DcII	
MWQM2	Some variability in material, many ceramics, probably used over long time	Sand, red-brown-gray		CaI, CaII, CaIII, CbI, CbII, CcI, CdII, DaII, DaIII, DaIV, DcIa, DcII, DdI, De, Df	FaII		BaI, BaII, Bb, Ca, DcII, DcIII	EdII
PXBM1	48 skeletons, possibly long use-life	Fine, black-brown-gray						
PXBM2	Many skeletons, probably continues until phase IV	Fine, black-brown-gray		DaII				

	Remarks	Ceramic quality	Urn	Double handled	Vase	Ewer	Beaker	Goblet
Phase IIIb								
PXBM3		Fine, black-brown-gray						
PXBM4	125 skeletons, earlier and later comb types, continues until phase IV	No ceramics						
XXHM1	Much variety in objects, long use life	Sand, black						
MSKM1		Sand						
XHGM1		Sand, red-brown-gray						
XHGM2	Continues until phase IV	Sand, red-brown-gray						
XHGM5		No ceramics						
XHGM6		Fine, black						
XHGM8		Fine sand, black						
DARM1	Much ritual activity, possibly long use time	Sand, red-brown-gray					Ca	
DARM3	Some variety in material, possibly longer use life	Sand, gray-brown		DcIa	FaII, Ha	BaII		
DARM4	Very large	Sand, gray-brown		Db, DcIa	Ab, FaII	BaII		
Phase IV								
XXJM1	Earlier and later needles present, ceramics later	Sand, gray-red		F		BaI		
XHGM3		Sand, red-brown-gray						

XHGM4		Sand, red-brown-gray						
XHGM8		Fine, black-gray, high		DcIa				
XHSM4		Sand, red-brown-gray						
XGQM1	Large, many ornaments, long use life	Fine, red, high-fired						
XGQM2	20 skeletons	Fine, red, high-fired						
XWNM1	Much ritual activity inside, possibly over longer time	Sand, red-brown-gray					Bb, Ca	
XWNM2	Much ritual activity inside, possibly over longer time	Sand, red-brown-gray						
XBSM1		No ceramics						
XQYM1		No ceramics						
Unclear date								
MTBM1		No ceramics						
MTBM2		No ceramics						
MBSM1	Probably not reopened	Sand						
MSLM1	Probably not reopened	Sand						
XCYM1		Sand, red-brown-gray						
XXCM1	Large grave	No ceramics						

Table B.22 Megalithic graves, their date, and secondary ceramic form types

	Cup	Jar	Single handled	Four handled	Handle	Jar with handles	Wan	Bo	Dou	Fu	Spindle whorl
Phase I											
XTHM10		BaII									
XGSM1		x									
Phase IIa											
XQGM1		GaIII			C						
XYJM5											Ab, Ba
XYUM1		EbIIa									Aa, Ab, Bb, Bb
XYUM2											Aa, Ab, Ba
XBBM4											Aa
XBBM6	CaII										
Phase IIb											
XBBM1											Aa
PXAM1		x									Bc
PXAM2		x									
XLKM6	CaI, CbI										
XLHM1		Ec									
XLSM1		GbII								A, B	
XYJM1		C, Gc			BaI						
XYJM2					BaI						
Phase IIIa											
XQG3	A	Ha			Aa, Bb, BcI	x		AaI			
DWT3		Ha			Aa, BaII, BcI, Bd, D						Ab, Ad

DWTH2		Ha									
MST5					Aa						
MST6					Bb, BcI						
MWQM1	BaIa, BaIII, BbI, CaII, CbI, CbII, CcI, CcIIa		CaI, CbI, DaI, DbIa, Ea, Fb								
MWQM2	A, BaI, Ba, Cb, Cc		CaI, Ea, Fb, Ja						AbII		
PXBM1		x									
Phase IIIb											
XXHM1	CdIII										
MSKM1	CdII	x									
XHGM1		x									
XHGM2		x									
XHGM6											Ab, Ba
XHGM8											Ab
DARM1		Hb, Hc			Bd	AaI, AaII, Ab, Ac					
DARM3		Hb	Ea, Ha		Ac			Fc			
DARM4		AaII, EbII		B							
Phase IV											
XXJM1			CaI, DaI, Ka								x
XHGM3				A							
XHGM4		x									Ab, Da
XHGM8			Ka, Kb, Kc								
XHSM4		x	CaI, Ka								
XGQM1		x	CaI, Ka								
XGQM2			Kb								

	Cup	Jar	Single handled	Four handled	Handle	Jar with handles	Wan	Bo	Dou	Fu	Spindle whorl
XWNM1		Ea, Ha				AaII		E, EaIc			
XWNM2	CdI	Ea, Hb, Hc						D			
Unclear											
MBSM1		x									
MSLM1		AbII									
XCYM1	x										
XXCM1		x									x

Table B.23 Stone tools connected with megalithic graves

	Arrowhead	Axe	Chisel	Adze	Grinding rod	Chopper	Grinding slab	Pestle	Scraper	Microlith
Phase IIa										
XQGM2						AI, AII				
XYJM3	IIBbI									
XYUM1	IIBaI									
XBBM6	IIB					AI				
Phase IIb										
XLKM5	IICbII									
XLSM1	IID									
XYJM1	IIBaII							C		
XYJM2	IIBaI, IIBbI			Aa						
Phase IIIa										
XQG3		B, Ba		Ca, Cb		AI, AII, BI	D	Aa, Ab, B		
DWT3					BaII				D	scraper
DWTH2										scraper
MST5		Ca				AII, BIII				
MST6						AII, B		B		
PXBM1					BaI					
PXBM2										
Phase IIIb										
PXBM4					AaI, Bai					
XHGM1					BaI					
XHGM2					BaI, BaII					
DARM4					BaI					
Phase IV										

	Arrowhead	Axe	Chisel	Adze	Grinding rod	Chopper	Grinding slab	Pestle	Scraper	Microlith
XHGM4					BaII					
XHGM8			Ab							
XHSM4					BaII					
XGQM1					AcI					
XWNM1					Bb					

Table B.24 Metal weapons, tools, and other metal objects connected with megalithic graves

	Arrow bronze	Spear bronze	Spear iron	Sword/dagger bronze	Sword/dagger iron	Knife iron	Knife bronze	Knife, stone	Axe, bronze	Sickle	Spade	Coins	Seal
Phase IIa													
XQGM1								AI					
XQGM2								AI					
Phase IIb													
XBBM1							Fb						
DGYM2	x						Fc						
PXAM1	IC						Fa, Fd						
PXAM2	IC						Fc						
XLKM6							Fd						
XLKM7							Fa						
XLSM1												Aa	
Phase IIIa													
XQG3								DIII					
DWT3								FII					
DWTH3								FII					
MST6								FII					
MWQM1	IE			x									
MWQM2	IE												
PXBM1	IGb						x						
Phase III													
XXHM1	IGa					AhII		AII, Cib	D	x			
MSKM1	x						x						
XHGM1				dagger G			Fa						

	Arrow bronze	Spear bronze	Spear iron	Sword/dagger bronze	Sword/dagger iron	Knife iron	Knife bronze	Knife, stone	Axe, bronze	Sickle	Spade	Coins	Seal
XHGM2						AhII	CaI, Fa						
XHGM5						x							
DARM1		C											
DARM3						AhI							
Phase IV													
XXJM1	IGb, IE	C	C		x			AII			x		
XHGM3												Aa	
XHGM4						x							
XHGM8							Fb, Fb					Ac	x
XHSM4						AhI							
XGQM1						AhI, H						Aa, Ab	
XWNM1						Ha, Hb							
XQYM1						Ha	x						
MTBM1												x	
MTBM2												x	
Unclear													
MBSM1	x												
XXCM1	x						x						

Table B.25 Personal ornaments of metal in megalithic graves

	Bracelet	Finger ring	Earring	*Huan*	*Ling*	Button	Belt hook	Geometric ornament	Needle	Hair comb	Head ornament	Hair needle	Conical object	Bead
Phase IIa														
XQGM1	C													
XBBM4	BbII													
XBBM3	BbIb													
Phase IIb														
XBBM1	AcII, Ba, Bb	Aa, Ab		C	Da					A		A		
XBBM2	AcII													
DGYM2	C													
PXAM1	AaI													
PXAM2	AaIIc													
XLKM6	AcIIIa, BcI					Ba						C		E
XLKM7	AbIII, AcV													
XLSM1										A, C				
Phase IIIa														
MWQM1	AaIIa													
PXBM1	Aa, Ac, Ba, BbI	Aa												
PXBM2										Bb				
Phase IIIb														
PXBM4	BaIIa									A, Bb				

	Bracelet	Finger ring	Earring	*Huan*	*Ling*	Button	Belt hook	Geometric ornament	Needle	Hair comb	Head ornament	Hair needle	Conical object	Bead
XXHM1				Ba, Bb		Db, E				A, C			Db, Dc	
MSKM1	C					x								
XHGM2	BaIV				Aa									
DARM4	AaIIa													
Phase IV														
XXJM1	AcII, BbIb		F	Bb	Ac	Ba, Bb, Ca	B	A	x	Ba, C, D, E	x		Db, Dc,	E
XHGM4	AcI, C													
XHGM8	AcV, BcII	Aa, Ab		Ba	Ab	Ca, Cb, E				A				
XGQM1	AaII, Ab, Ac, BaIV	A, Ba, Bb	A, B		Da	Bb, Ca, Da								
XWNM1						Ad								
XBSM1	BcI, C		B		Ac									
XQYM1	C													
MTBM2	C													
Unclear														
MBSM1	BcI, C					x								
XXCM1	C													

Table B.26 Personal ornaments of bone and stone in megalithic graves

	Bracelet	Earring	*Huan*	*Huang*	Tusk	Pendant	Turquoise beads	Agate beads	Other beads
Phase IIa									
XBBM3							Ba, F		
Phase IIb									
XBBM1		Aa, Ab		B			Dc	Ba	Ba, F
XBBM2							Db		
DGYM2							Bb, Da, Db		
XLKM6				C					
Phase IIIa									
PXBM1	Bb		Aa		Ca, Cd, Ce			C	
PXBM2	Ba	Aa, Ab	Ab		Ca, Cb, Cc, Cd, Ce			Bc	
Phase IIIb									
PXBM4					Ca, Cb		Aa, Ba, Da		
XXHM1								Ba	
XHGM1		Ab							
XHGM2									Bb
DARM3							Db, Dc		
DARM4								Bb	
Phase IV									
XXJM1		Aa, Ab	A		Cd	x		Ab, Ac	Ab, Ac, Bb, Bc
XHGM4	Ab	Aa, Ab	Ab						
XHGM8		Aa							Bb
XGQM1							Da	Ba, Bc, Da	
XWNM2		Ab				Ac			Bb, Bc
XBSM1		Aa, Ab							
Unclear									
XCYM1									Bb

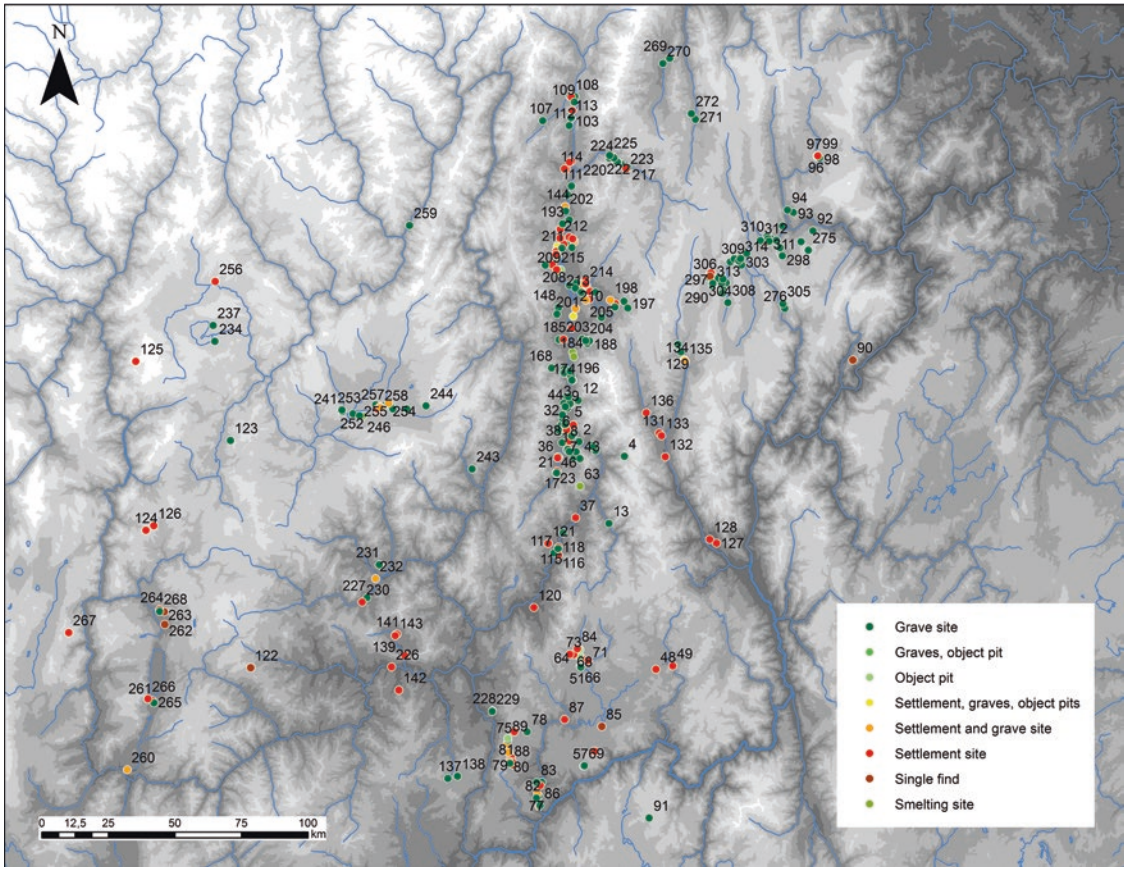

Fig. B.1 Sites by site type (the numbers refer to the assigned site numbers; see Appendix Table B.1 and B for reference)

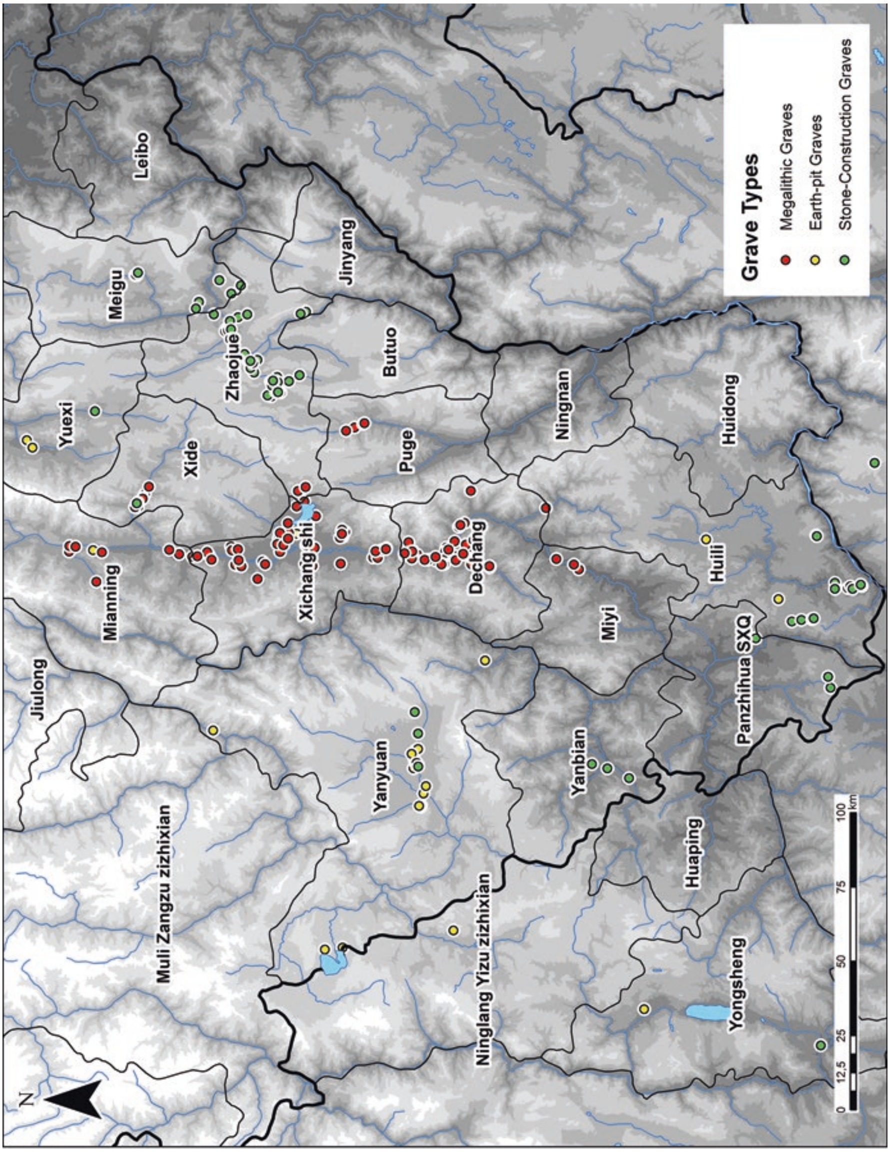

Fig. B.2 Grave sites by grave type

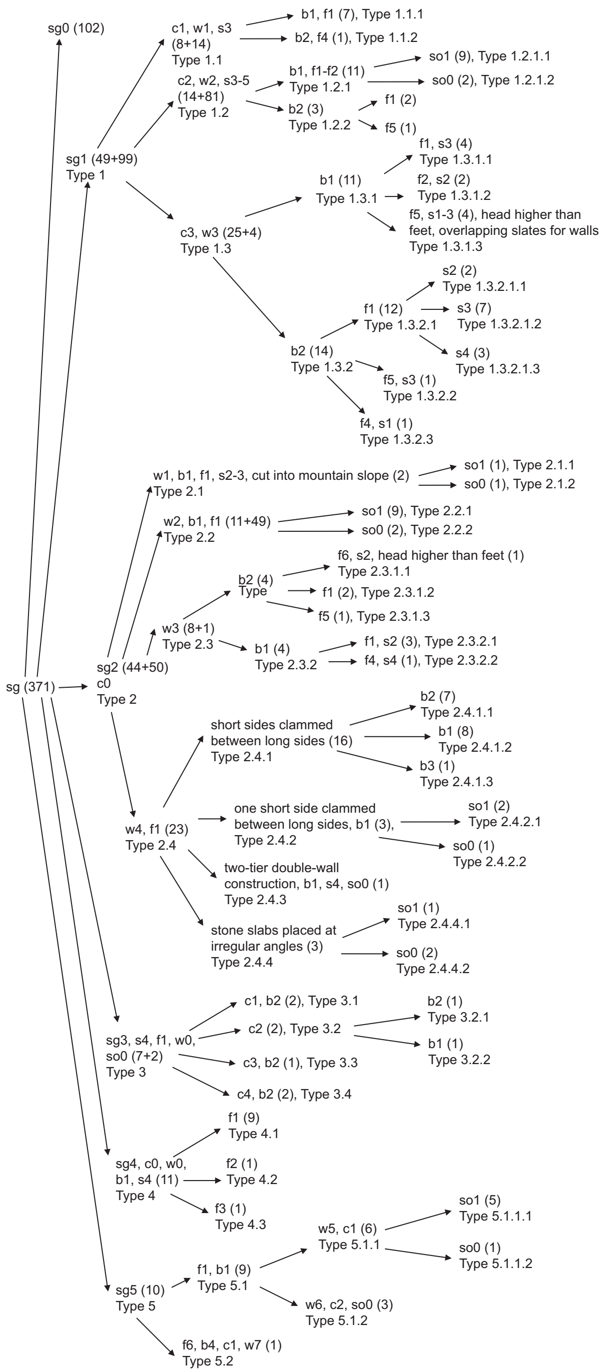

Fig. B.3 Key diagram for stone-construction graves. For an explanation of the abbreviations consult Table 4.28. The numbers in brackets provide the number of graves for each type, the first number referring to the excavated graves, the second number after the plus-sign indicating unexcavated graves

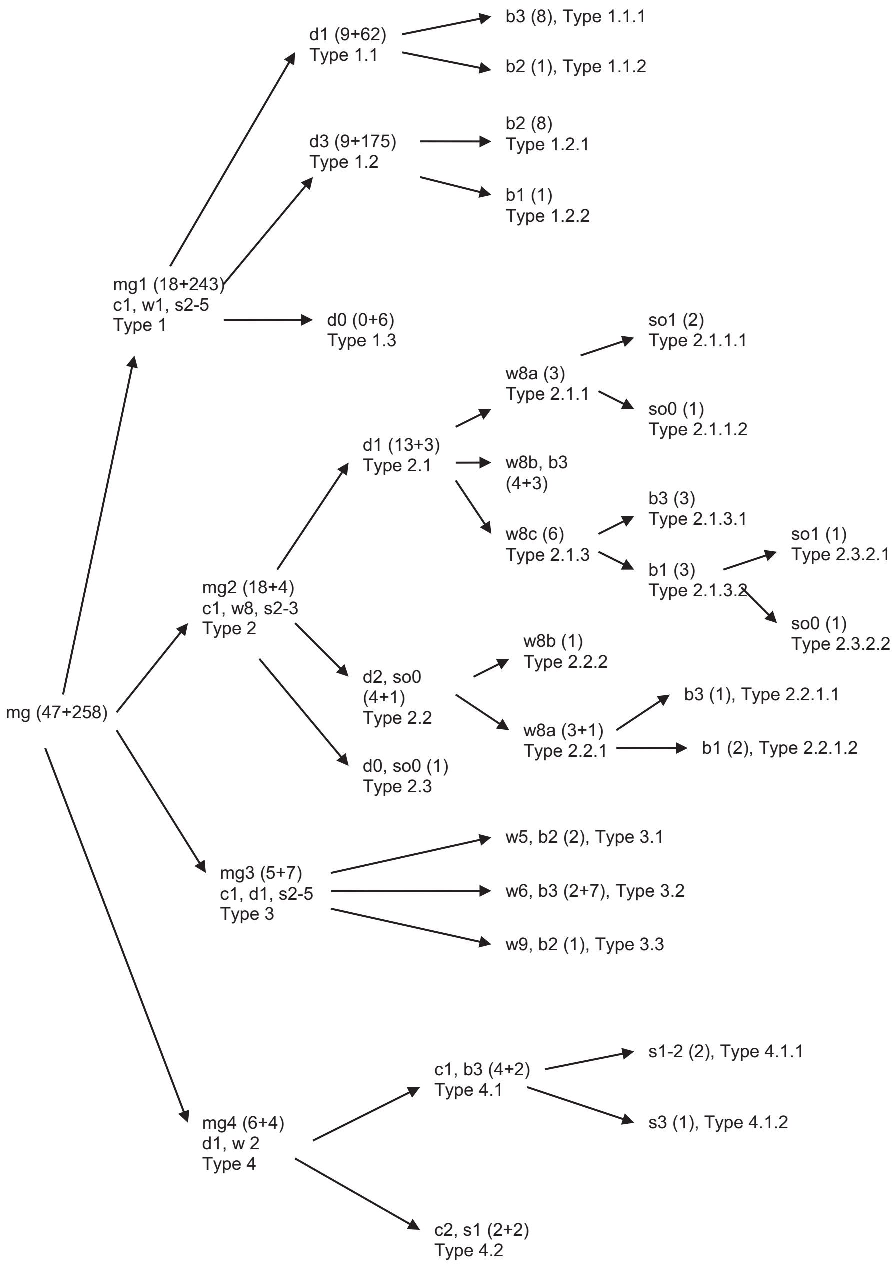

Fig. B.4 Key diagram for megalithic graves. For an explanation of the abbreviations consult Table 4.31. The numbers in brackets provide the number of graves for each type, the first number referring to the excavated graves, the second number after the plus-sign indicating unexcavated graves

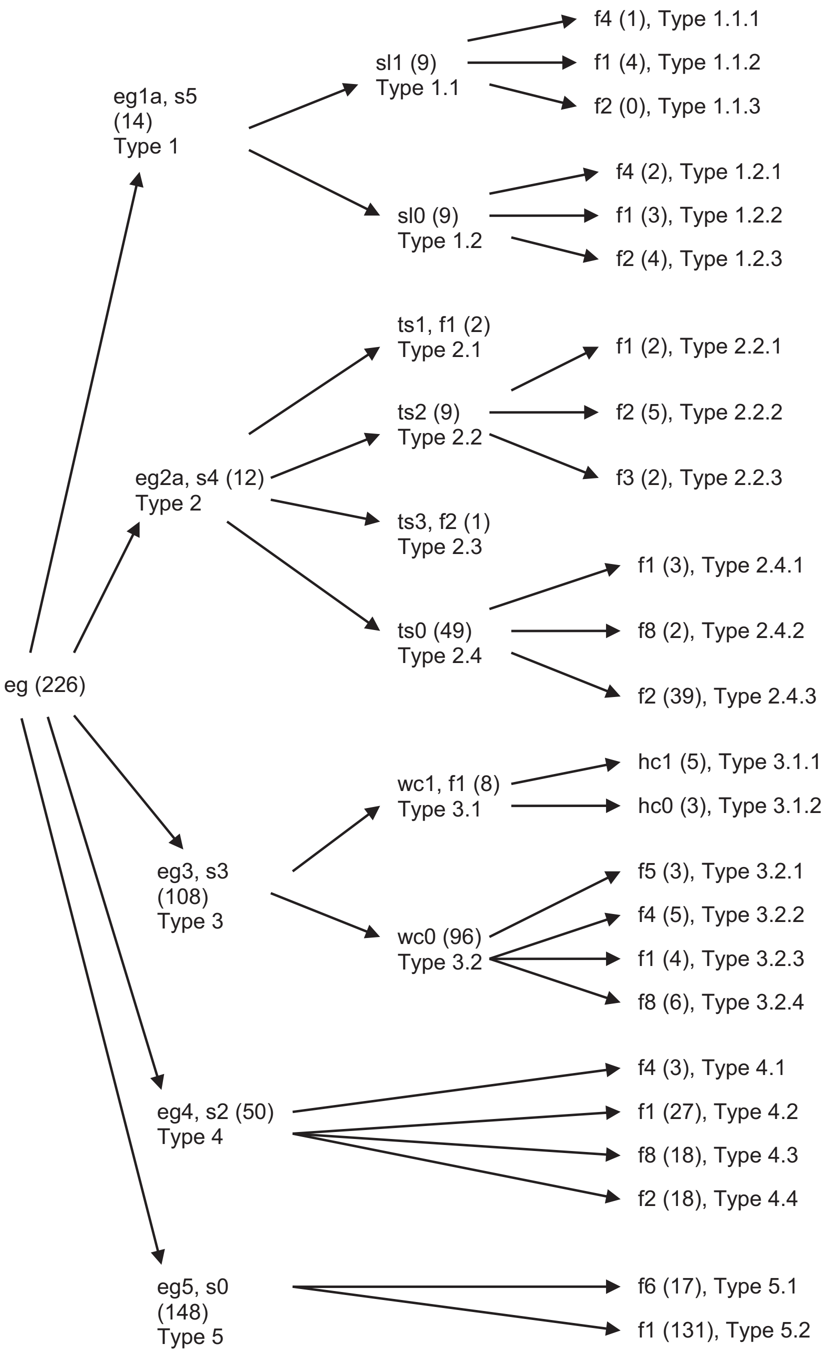

Fig. B.5 Key diagram for earth-pit graves, version 1. For an explanation of the abbreviations consult Table 4.40. The numbers in brackets provide the number of graves for each type

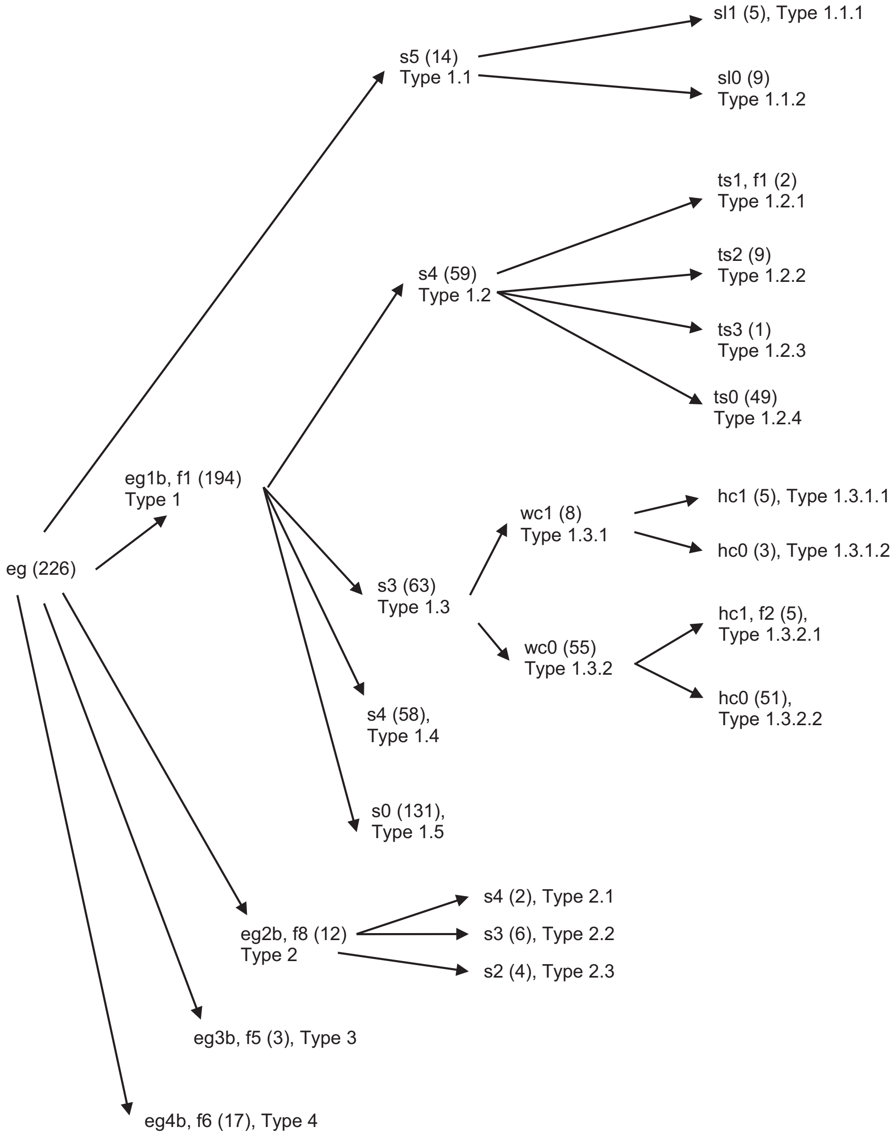

Fig. B.6 Key diagram for earth-pit graves, version 2. For an explanation of the abbreviations consult Table 4.40. The numbers in brackets provide the number of graves for each type

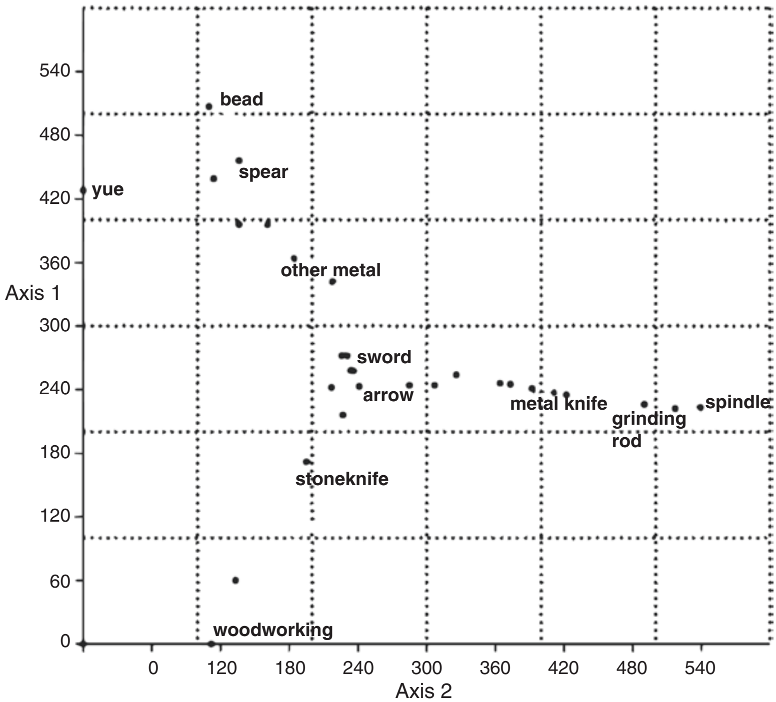

Fig. B.7 Plot for first and second dimension of correspondence analysis conducted for weapons and tools in undisturbed and well-reported burials with no signs of reopening

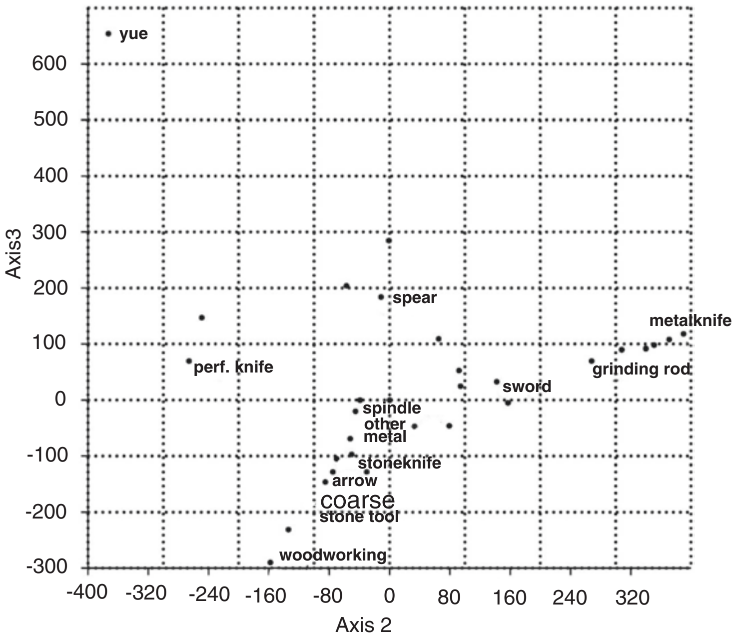

Fig. B.8 Plot for second and third dimension of correspondence analysis conducted for weapons and tools in undisturbed and well-reported burials with no signs of reopening

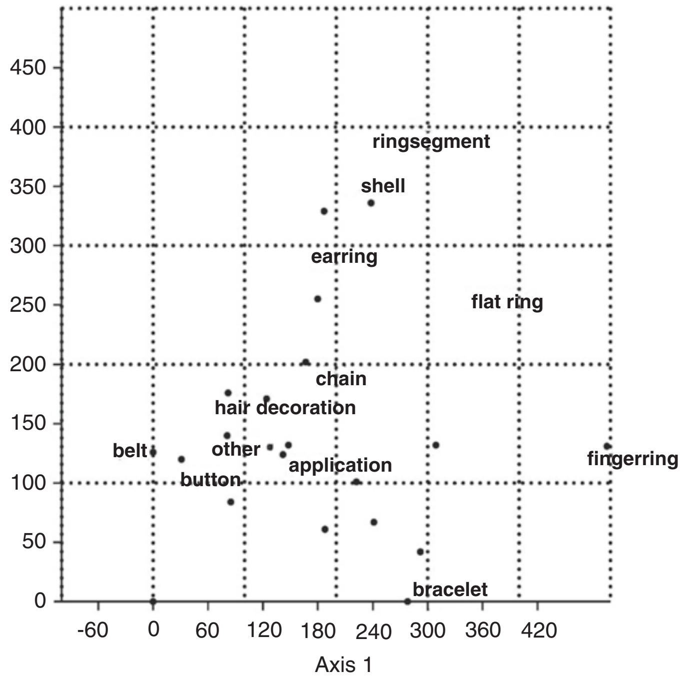

Fig. B.9 Plot for the second and third dimensions of correspondence analysis for ornaments in undisturbed and well-reported burials with no signs of reopening

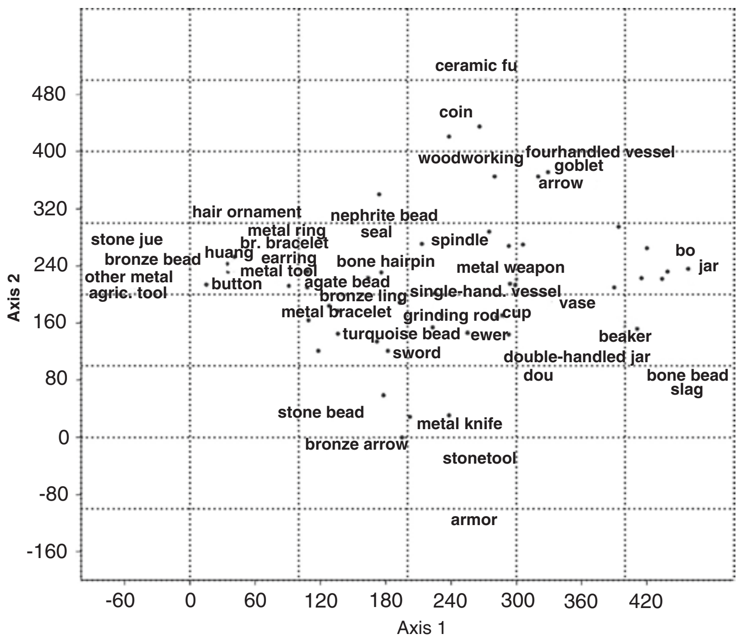

Fig. B.10 Plot for the first and second dimensions of correspondence analysis for all megalithic graves

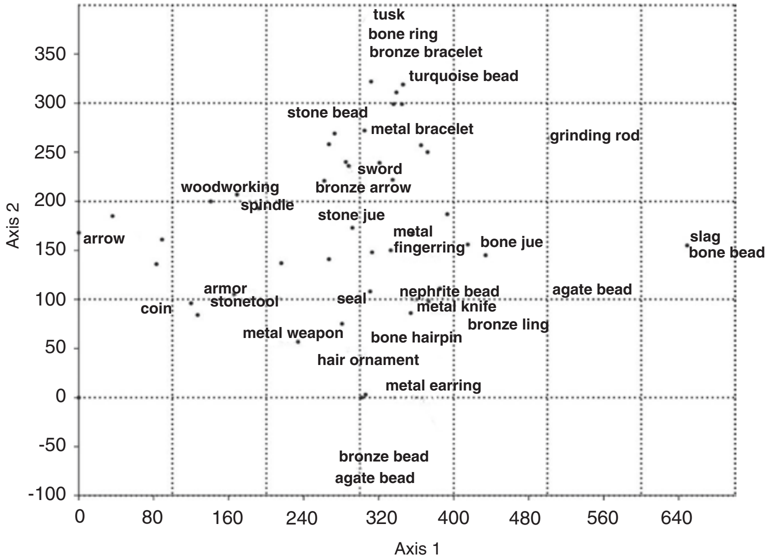

Fig. B.11 Plot for the first and second dimension of correspondence analysis for nonceramic objects in megalithic graves

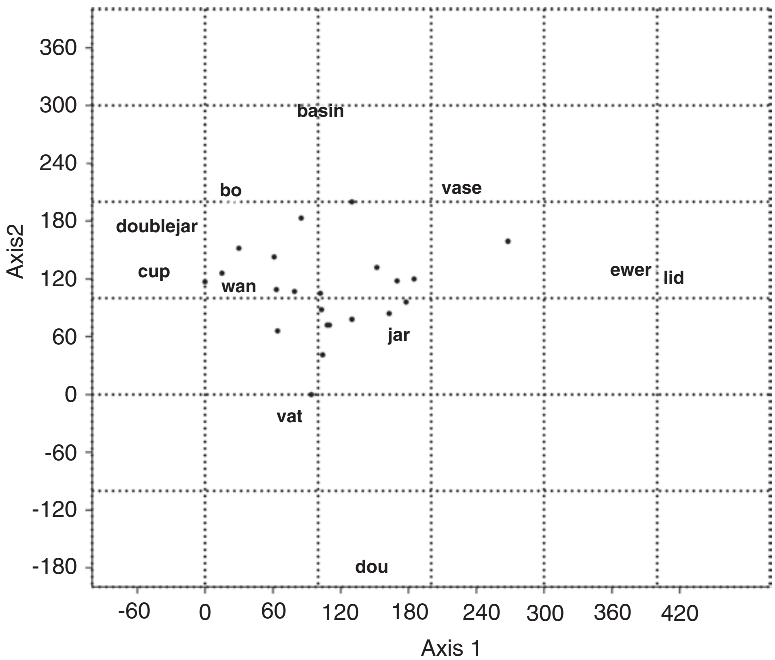

Fig. B.12 Plot for the first and second dimensions of correspondence analysis for artifacts recovered from graves at Xichang Lizhou

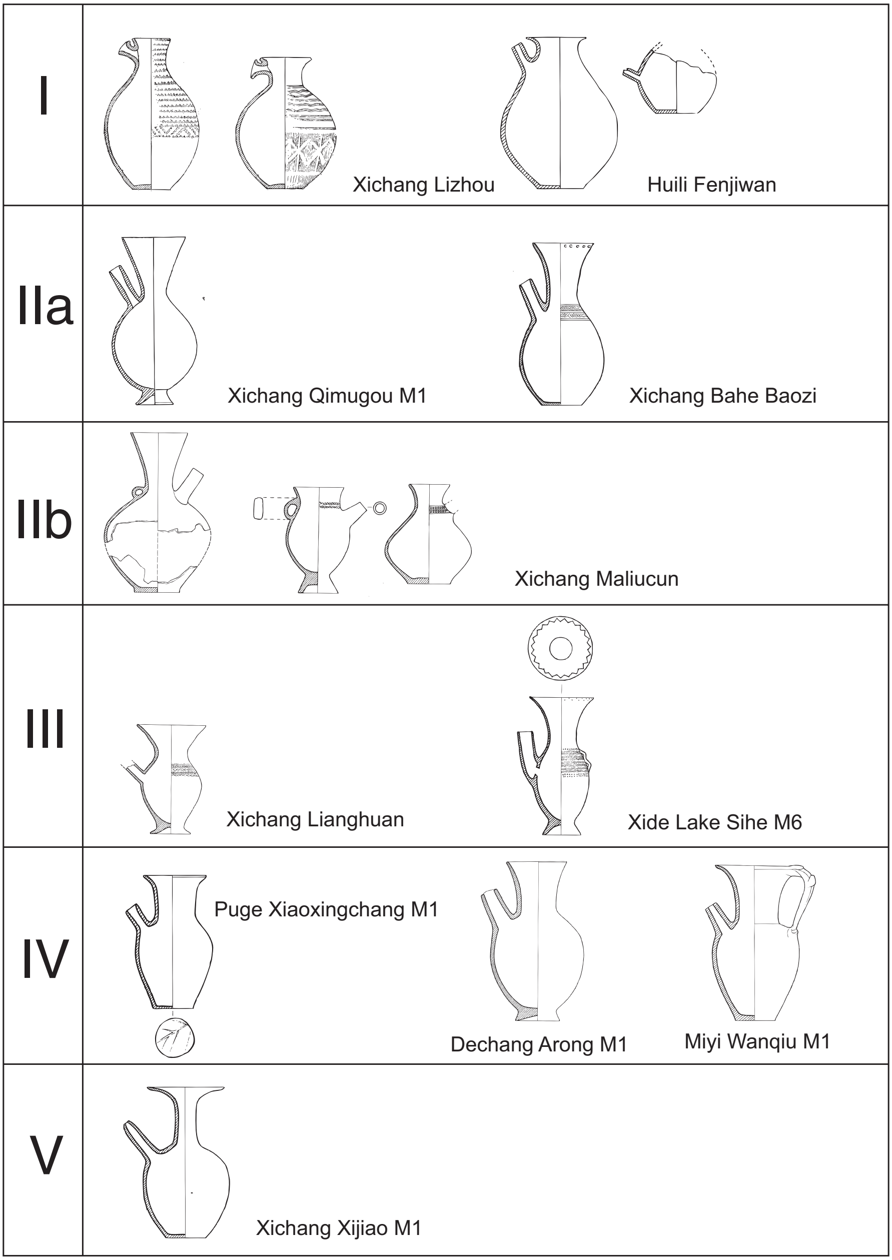

Fig. B.13 Evolution of spouted jar forms

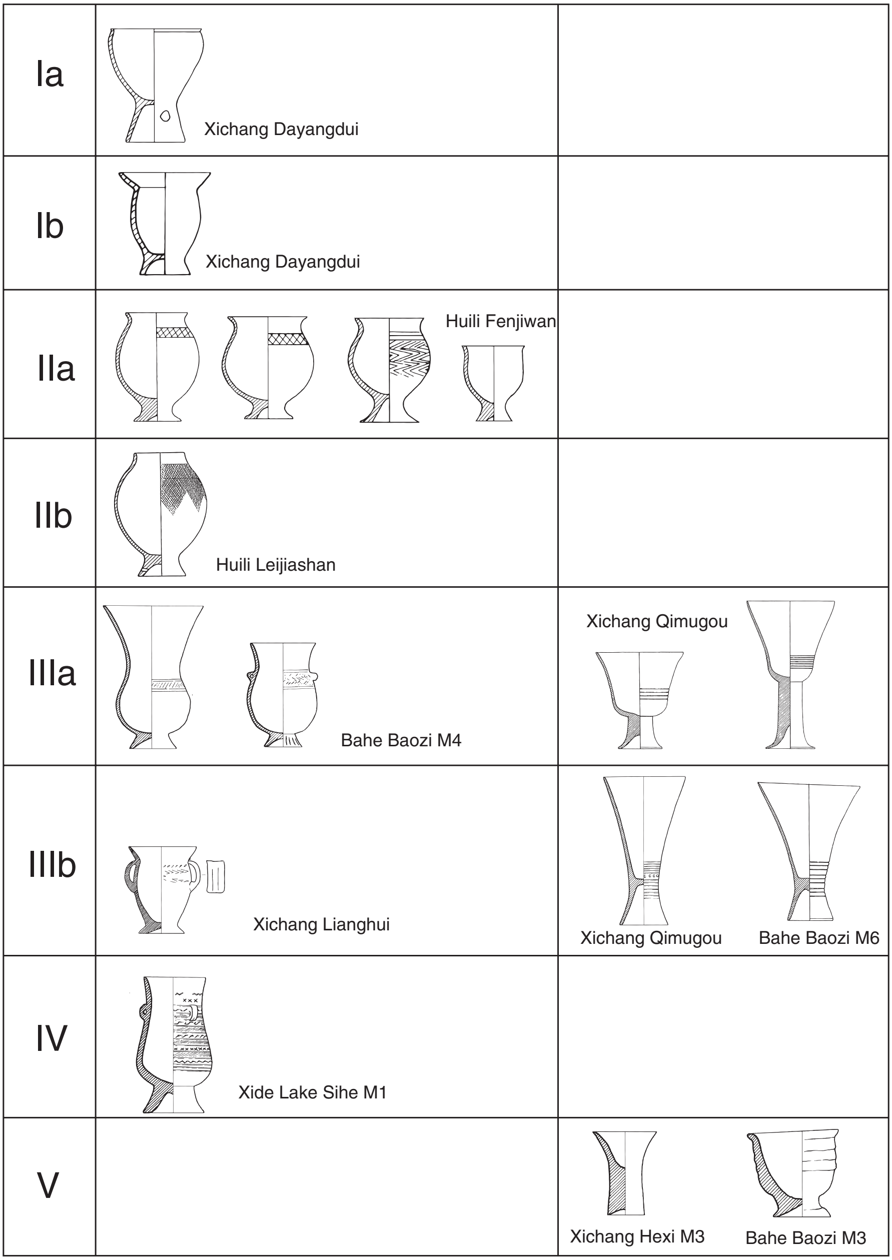

Fig. B.14 Evolution of goblets and small footed cup forms

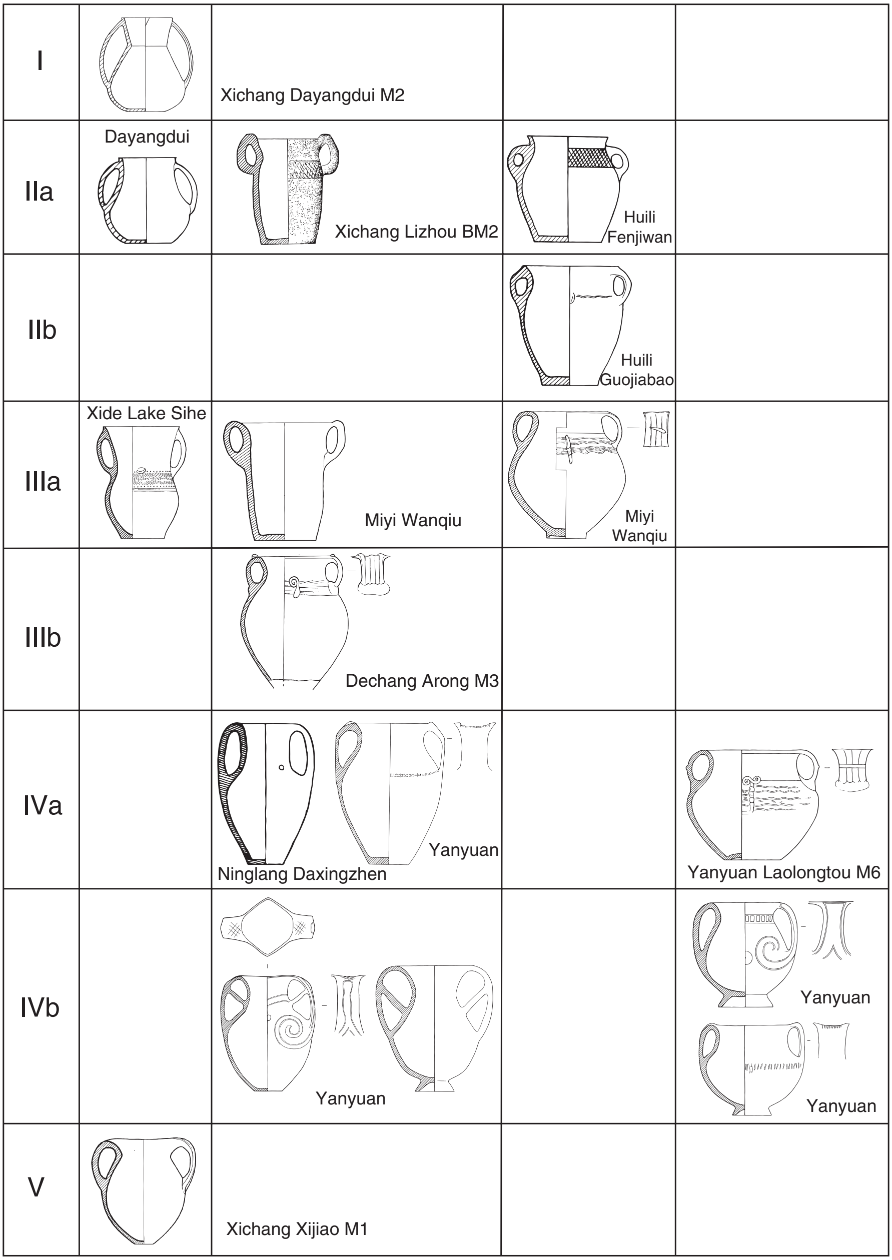

Fig. B.15 Evolution of double-handled vessels

Chinese Glossary

Geographical Names

Pinyin	Characters	English equivalent (where applicable)
Ada Bobu	阿打波補	
Amucun	阿木村	
Anninghe	安寧河	Anning River
Arong	阿榮	
Ayong	阿雍	
Ayue	阿月	
Azu Bugu	阿足	
Bagu Erjue	巴古爾覺	
Bahe Baozi	垻河堡子	
Baihushan	白虎山	
Baijiazhai	白家寨	
Baila Gucun	白拉古村	
Bakeku Cun	巴克苦村	
Baodun	寶墩	
Baoxing Hantanshan	寶興漢塔山	
Bei Ganhaixiang	北干海乡	
Beishan	北山	
Beishanba	北山垻	
Boshucun	博樹村	
Butuo Xian	布拖縣	Butuo County
Caojiawan	曹傢灣	
Changcun	長村	
Changjiang	長江	Changjiang/Jangtsekiang
Changning Fenlinggang	昌寧墳嶺崗	
Chengdu Shi’erqiao	成都十二橋	
Chengguan	城関	
Chenghai	稱海	Lake Chenghai

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Pinyin	Characters	English equivalent (where applicable)
Chenyuancun	陳遠村	
Chike Boxixiang	齒可波西鄉	
Cizhuiping	茨竹坪	
Da Liangshan	大涼山	Greater Liangshan
Daba Gongshe	大壩公社	
Daba	大壩	
Dabaobao	大包包	
Dabaozi Geze	大堡子格則	
Dabaozi	大堡子	
Dacaoba	大草壩	
Dachangba	大廠壩	
Daduhe	大渡河	Dadu River
Dadunzi	大墩子	
Da'edou Gezi	大俄都格則	
Dalishi Haidong Yinsuodao	大理市海東銀梭島	
Daliangshan	大涼山	
Dashiban	大石板	
Dashipai	大石排	
Dawenquan	大溫泉	
Daxingzhen	大興鎮	
Dayangdui	大洋堆	
Dechang Xian	德昌縣	Dechang County
Deqin Yongzhi	德欽永芝	
Dianma	點馬	
Dipo Cier	氐坡此爾	
Dongqu	東區	Dongqu/Eastern District (Panzhihua)
Duizi	堆子	
Eba Buji	俄巴佈吉	
Erba Keku	尔巴克苦	
Ergu Zege	尔姑	
Erwu	二五	
Fangjiacun	方家村	
Fenjiwan Stone Graves	糞箕灣石棺葬	
Fenjiwan	粪箕湾	
Fuchengqu	附城區	
Ganhai	干海	
Ganluo Xian	甘落縣	Ganluo County
Gansu Sheng	甘肅省	Gansu Province
Gesa	格撒	
Geze Yangpeng	格則羊棚	
Guadi	瓜地	
Guanshan	関山	
Guantianshan	觀田山	
Gucheng Qu	古城區	Gucheng District (Panzhihua)

Pinyin	Characters	English equivalent (where applicable)
Guihuacun	桂花村	
Guizhou Mancheng	滿城	
Guizhou Sheng	貴州省	Province
Guluqiao	軲轤橋	
Guojiabao	郭傢堡	
Guoyuan	果園	
Guoyuancun	果園村	
Haba Qiehe	哈巴切合	
Haimatang	海馬塘	
Haimenkou	海門口	
Hangan Yide	汗干依德	
Hedongtian	河東田	
Heiluo	黑洛	
Hejia Fenshan	何家墳山	
Hejiashan	何傢山	
Hengduan Shanmai	橫斷山脈	Hengduan Mountain Range
Heping	和平	
Hexi Gongshe	河西公社	
Hongmiao	紅廟	
Hongmiaocun	紅廟村	
Hongqi	紅旗	
Houzidong	猴子洞	
Huangjiaba	黃家壩	
Huangshuitang	黃水塘	
Huaping Xian	華坪縣	Huaping County
Huayang	華陽	
Huidong Xian	會東縣	Huidong County
Huili Xian	會理縣	Huili County
Huimin	惠民	
Jianchuan Haimenkou	劍川縣還門口	
Jianxin	建新	
Jiaodingshan	轎頂山	
Jiejiafen	解傢墳	
Jike Jiejue	吉克傑覺	
Jinshajiang	金沙江	Jinsha River
Jinyang Xian		Jinyang County
Jinzi Niaobu	金子烏佈	
Jiukou Jiaogu	九口腳谷	
Keri Watuo	克日瓦托	
Kujia Ebu	庫家俄佈	
Kunming Yangfutou	昆明羊甫頭	
Lake Sihe	拉克公社四合	
Lancangjiang	瀾滄江	Lancang/Mekong River
Lanfenba	爛墳壩	

Pinyin	Characters	English equivalent (where applicable)
Laolongtou	老龍頭	
Laoniuchang	老牛場	
Leibo Xian	雷伯縣	Leibo County
Leijiashan	雷傢山	
Liangsanpo	涼傘坡	
Liangshan Yizu Zizhizhou	涼山彝族自治州	Liangshan Yi Autonomous Prefecture
Liaojiashan	聊家山	
Liguoshan	李果山	
Lijiagou Cun	李傢溝村	
Litanghe	理塘河	Litang River
Lixian Jiashan	理縣佳山	
Lizhou	禮州	
Ludian Yeshishan	魯甸縣野石山	
Luguhu	瀘沽湖	Lake Lugu
Luojiaba	儸家堡	
Luowa	洛瓦	
Luquan Xian	祿勸縣	Luquan County
Luzhuishan	盧嘴山	
Ma'anshan	馬鞍山	
Ma'anzi	馬鞍子	
Machu Nawo	馬処鈉窩	
Mahu	馬湖	Lake Mahu
Malilang Zhanbei	麻栗糧站北	
Maliliang Zhannan	麻栗糧站南	
Maliucun	麻柳村	
Manshuiwan	漫水灣	
Maojiaba	毛傢壩	
Maomaoshan	帽帽山	
Maoxian Baishuizhai	茂縣白水寨	
Meigu Xian	美姑縣	Meigu Count
Meiyu Bacun Sanzu	梅雨八村三組	
Mianning County	冕寧縣	
Miaozi Laobao	廟子老堡	
Mimilang	咪咪啷	
Minjiang Shangyou	岷江上游	Upper Minjiang River
Minzhucun	民主村	
Miyi Xian	米易縣	Miyi County
Mucuo Naijie	木措乃姐	
Muergguo	木爾果	
Mujueke	莫覺柯	
Muli Zangzu Zizhizhou	木裏藏族自治縣	Muli Tibetan Autonomous County
Naituo	乃托	
Nanbianhe	南边河	
Nanhua Baobao	南華包包	

Pinyin	Characters	English equivalent (where applicable)
Nanhuagong	南華官	
Niaopo	鸟坡	
Ninglang Yizu Zizhixian	寧蒗彝族自治縣	Ninglang Yi Autonomous County
Ningnan Xian	寧南縣	Ningnan County
Nujiang	怒江	Nujiang / Salween River
Panzhihua Shi	攀枝花市	Panzhihua City
Puge Xian	普格縣	Puge County
Puling	普隆	
Pulingcun	普隆村	
Pusu Bohuang	濮蘇波湟	
Qianjinshe	前進社	
Qiaodiping	蕎地坪	
Qimugou	棲木沟	
Qinghai Sheng	青海省	Qinghai Province
Qingli	清理	
Qingzang Gaoyuan	青藏高原	Qinghai–Tibet Plateau
Qionghai	邛海	Lake Qionghai
Qu'ershan	雀兒山	
Renhe Qu	任和區	Renhe District (Panzhihua)
Reshuitang West	熱水塘西	
Ruoshuicun	若水村	
Sanjingxiang	三井巷	
Sankuaishi	三塊石	
Shaba	沙垻	
Shajiapo	沙家坡	
Shangxiang	上香	
Shaorenba	燒人垻	
Shengdu Wage	聖都瓦各	
Shengli	勝利	
Shijia Baozi	施傢堡子	
Shizhaishan	石寨山	
Shizuizi	石嘴子	
Shuanggudui	雙谷堆	
Shuijingwan	水井灣	
Shuitangcun	水塘村	
Sichuan Sheng	四川省	Sichuan Province
Siyi Ergu	司益爾古	
Songlin Laojie	松林老街	
Tangguan Liandi	唐光連地	
Tangjiaba	唐傢垻	
Tangjiapo	唐傢坡	
Tangshidi	唐氏地	
Teluocun	特洛村	
Tianba	田垻	

Pinyin	Characters	English equivalent (where applicable)
Tianbacun	田垻村	
Tianwangshan	天王山	
Tiaowoba	跳窩垻	
Tuanbao	團堡	
Wadaluo	瓦打洛	
Wadegu	瓦得姑	
Wagujue Cunnan	瓦姑覺村南	
Wagujue Dongbei	瓦姑覺東北	
Wagujue Dongnan	瓦姑覺東南	
Wajimu	瓦吉木	
Waluo Geci	瓦洛格側	
Wanao	窪堖	
Wangsuo	王所	
Wanjiaba	万傢垻	
Wanqiu	彎丘	
Washitian	瓦石田	
Watuo	瓦托	
Wazhaishan	瓦寨山	
Weining Yizu Huizu Miaozu Zizhixian	威寧彝族回族苗族自治縣	Weining Yi Hui and Miao Autonomous County
Weining Jigongshan	威寧縣雞公山	
Wenchuan Zhaodiancun	汶川縣昭店村	
Wenjiaba	溫傢垻	
Wuguishan	鳥龜山	
Wuhe	伍合	
Wuhuangqing	吳黃箐	
Wujia	吳傢	
Wuming Baobao	無名包包	
Wushidi	伍氏地	Wushidi I
Wushidi	吳氏地	Wushidi II
Xiangshi	响石	
Xiaogao	小高	
Xiaogoudi	小溝地	
Xiaoguan Liangzi	小官梁子	
Xiaohebian	小河邊	
Xiaohuashan	小華山	
Xiaoliusuo	小六所	
Xiaomiaoshan	小廟山	
Xiaotuanshan Graves	小團山石棺葬	
Xiaoxingchang	小興場	
Xiaoyingpan	小營盤	
Xicaodi	蓆草地	
Xichang City	西昌市	Xichang City
Xide Xian	喜德縣	Xide County

Pinyin	Characters	English equivalent (where applicable)
Xijiao Gongshe	西郊公社	
Xingsuo	星宿	
Xinmin Wujia	新民吳家	
Xinxingcun	新興村	
Xinying	新營	
Xiqu	西區	Xiqu/Western District (Panzhihua)
Xixicun	西溪村	
Xizang Zizhiqu	西藏自治區	Tibet Autonomous Region
Ya'an Shimian	雅安石棉	
Yanbian Xian	鹽邊縣	Yanbian County
Yangjiashan	楊傢山	
Yanjiashan	燕家山	
Yalongjiang	雅礱江	Yalong River
Yangfutou	昆明羊甫頭	
Yanyuan Xian	鹽源縣	Yanyuan County
Yezhugou	野豬溝	
Yibijia	依比甲	
Yihe Geci	依合格側	
Yingpanbao	營盤寶	
Yingpanshan Beiyu	營盤山北區	Yingpanshan North
Yingpanshan Nanqu	營盤山南區	Yingpanshan South
Yingpanshan	營盤山	
Yingzipo	銀子坡	
Yongping Xinguang	永平新光	
Yongren Caiyuanzi	永仁菜園子	
Yongren Mopandi	永仁磨盤地	
Yongren Yongdingzhen	永仁永定鎮	
Yongsheng Longze	永勝龍澤	
Yongsheng Xian	永勝縣	Yongsheng County
Yongxing	永興	
Yuanjiashan	袁家山	
Yuanmou Xian	元謀縣	Yuanmou County
Yuejin	躍進	
Yuexi Xian	越西縣	Yuexi County
Yumen Wanxiao	漁門完小	
Yunduanshan	云斷山	
Yunnan Sheng	雲南省	Yunnan Province
Yunshancun	云山村	
Zhangjiaba	張家壩	
Zhangjiazui	張傢咀	
Zhaojue Xian	昭覺縣	Zhaoujue County
Zhengjiafen	鄭傢墳	
Zhengzhou	郑州	
Zhushiba	豬屎壩	

Other Terms

Pinyin	Characters	English Equivalent
bazixing	八字形	*Ba*-shaped
banliang	半兩	*Banliang* coin
bei	杯	Cup or goblet
bianzhong	編鐘	*Bianzhong* bell
bo	缽	Closed bowl
		Bo bowl
daquan wushi	大泉五十	*Daquan wushi* coin
dou	豆	Stemmed bowl
		Dou bowl
		Goblet
dashimu	大石墓	Megalithic grave
ercengtai	二層台	Second-level ledge
erci luanzang	二次乱葬	Secondary disorderly interment
faji	髮笄	Hair pin
fashi	髮式	Hair ornament
faqi	髮笄	Hair pin
fu	釜	*Fu* pot
fu	斧	Axe
ge	戈	Dagger-axe
gu	觚	Goblet
guan	罐	Jar or beaker
hangtu	夯土	Rammed earth
Hanshu	漢書	Book of Han (History of the Former Han)
Hanshu Xinanzi Liangyue Chaoxian chuan	漢書 ▪ 西南夷兩粵朝鮮傳	Book of Han (History of the Former Han): Biographies of the Southwestern Barbarians, Liangyue (Guangdong and Guangxi), and Korea
Hou Hanshu Nanman Xinanyi liechuan	後漢書 ▪ 南蠻西南夷列傳	Book of the Later Han (History of the Later Han): Biographies of the Southern and Southwestern Barbarians
hu	壺	Ewer
huan	環	Bracelet
huang	璜	Ring segment
Huayang guozhi	華陽國志	
jian	劍	Sword
jue	玦	Slit ring
kang	炕	*Kang* platform
kedao	刻刀	Pointed burin
koushi	扣式	Button-shaped ornament
ling	鈴	*Ling* bell
liuli erdang	琉璃耳璫	Ear pendant
mao	矛	Spearhead
mingqi	明器	Objects produced solely for the grave
minzu zoulang	民族走廊	Ethnic corridor
mou	鍪	*Mou* cauldron
paoding	泡釘	Button-shaped ornament
paoshi	泡飾	Button-shaped ornament
pen	盆	Basin
ping	瓶	Vase

Pinyin	Characters	English Equivalent
pingfengzhuang	屏風狀	Screen-shaped
qi	戚	Battle-axe
Qijia wenhua	齊傢文化	Qijia culture
Qiongdu Yi	邛都夷	Qiongdu Yi "barbarians"
shibanmu	石板墓	Stone-slab grave
shibanzang	石板葬	Stone-slab burial
shiguanmu	石棺墓	Stone-cist grave/stone-coffin burial
shiguanzang	石棺葬	Stone-cist burial/grave
shiguanzang wenhua	石棺葬文化	Stone-cist-grave culture
Shiji Xinanyi liechuan	史記 ▪ 西南夷列傳	Records of the Grand Historian: Biographies of the Southwestern Barbarians
tukengmu	土坑墓	Earth-pit grave
wan	碗	Open bowl
		Wan bowl
weng	甕	Urn
wuzhu	五銖	*Wuzhu* coin
xi shiqi	細石器	Microlith
Xindian wenhua	辛店文化	
yangshou xingshi	羊首形飾	Ram's head-shaped ornament
yanzhitu	胭脂土	Carmine-red soil
yue	鉞	Axe
zhuo	鐲	Bracelet
Zhongguo de juda wenhua	中國的巨石文化	Chinese megalithic culture
zu	鏃	Arrowhead
zun	尊	Vat

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Place Index

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