

by places like Pompeii, and as demonstrated here, several sites in Gunma Prefecture. Several chapters also provide models for what can be done when studying spatial variation in human behavior. These build on the advantage provided by the quick deposition of widespread tephra deposits, the rapidity of which can eliminate or substantially reduce the confounding issue of temporal differences when comparing among sites. These chapters in the present volume nicely complement some of the work being done in other regions, such as the exciting work in Europe by Riede (2017) and others.

Lastly, should you seek out a copy? For me, the bottom line is yes. My own work with tephra and archaeology has focused in Middle and Late Pleistocene deposits in East Africa and Turkey, times and places where the relationship between artifacts and ashes is much less resolved, where the identification of truly widespread deposits is the exception rather than the rule (Blegen et al. 2016), and the formation of anything approaching what might be called a real “tephroarchaeology” is very much underway but still a work in progress. For me, then, this book was a very

much unexpected pleasure to read and a real inspiration for future research.

REFERENCES CITED

- BLEGEN, NICK, FRANK H. BROWN, BRIAN R. JICHA, KATIE M. BINETTI, J. TYLER FAITH, JOSEPH V. FERRARO, PATRICK N. GATHOGO, JONATHAN L. RICHARDSON, AND CHRISTIAN A. TRYON
2016 The Menengai Tuff: A 36 ka widespread tephra and its chronological relevance to Late Pleistocene human evolution in East Africa. *Quaternary Science Reviews* 152:152–168.
- LOWE, DAVID J., HIROSHI MORIWAKI, SIWAN M. DAVIES, TAKEHIKO SUZUKI, AND NICHOLAS S. J. PEARCE, EDS.
2011 Special Issue: Enhancing Tephrochronology and its Application (INTREPID Project): Hiroshi Machida Commemorative Volume. *Quaternary International* 246:1–381.
- MACHIDA, HIROSHI, AND FUSAO ARAI
1992 *Atlas of Tephra in and Around Japan*. Tokyo: University of Tokyo Press.
- RIEDE, FELIX
2017 *Splendid Isolation: The Eruption of the Laacher See Volcano and Southern Scandinavian Late Glacial Hunter-Gatherers*. Aarhus: Aarhus University Press.

The Burial Record of Prehistoric Liangshan in Southwest China: Graves as Composite Objects. Anke Hein. Cham, Switzerland: Springer International, 2017. 534 pp., 160 illustrations (color and b&w), 127 tables (24 illustrations and 6 tables provided in “Online Materials”). Paperback US \$140, ISBN 9783319423838; eBook US \$109, ISBN 9783319423845. DOI 10.1007/978-3-319-42384-5.

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In *The Burial Record of Prehistoric Liangshan in Southwest China*, Anke Hein takes a methodical, inductive approach to examining a body of data scrupulously gathered from Chinese archaeological reports, atlases, local chronicles (see table B.3, p. 414), and her field research in various locations, including Chengdu 成都, Liangshan 凉山, Huili 会理, and Yunnan 云南, where she collected primary data on 41

sites. The study is a laborious and commendable undertaking of archaeological scholarship. Hein confronted issues that trouble many in western academia who work in China, including disjointed, unverifiable data, and the demanding logistics of data collection. She adopts a twofold model aimed to contextualize the interconnections of environment and human behavior while mitigating the biases

of a fragmentary and uneven corpus of source material. It is a thorough piece of basic research that uplifts current and future archaeological studies of southwest China, but as it stands, the analysis is so overwrought that the results cannot be easily referenced or replicated, especially under the adopted theoretical constructs.

The data in question pertain to 213 sites, amounting to 1059 graves (p. 38), from the hilly Liangshan 凉山 region of the southern bounds of Sichuan 四川 Province. This region consists of the prefecture-level city of Panzhihua 攀枝花, the counties of Luquan 禄劝, Ninglang 宁蒗, and Yongsheng 永胜 in northwest Yunnan, and Liangshan Yizu Zizhizhou 凉山彝族自治州 (Liangshan Yi Autonomous Prefecture) (p. 44). It is situated between the Daliangshan 大凉山 (Daliang Mountains) in eastern Liangshan Prefecture and the eastern terminus of the Tibetan Plateau that broadly extends from the Qionglai 邛崃 range in northern Sichuan to Anninghe liuyu 安宁河流域 (Anning River Valley) in the south, the geographical center of the study. Described by the author as “an intersection point of several cultural-geographic regions” (p. 1), Liangshan’s diverse topography lends itself to tracing spatial patterns of confluence and diffusion in the prehistory of human-environment interaction. However, such research prospects have been masked by a checkered history of fieldwork since the 1980s (pp. 35–37). Excavations were unsystematic and in most places deterred by rugged and restrictive terrain. Chronology is stereotypically typology-reliant with few supporting radiocarbon dates. Hein’s study determinedly sets out to address these shortcomings for the period from the early Bronze Age (mid-second millennium B.C.E.) through Eastern Han (early third century C.E.) (table 7.14, p. 267).

This monograph was developed from Hein’s (2013) doctoral research and inherits the structure of her dissertation (reviewed by Brunson 2014). The nine adopted chapters are grouped into three phases of analysis (outlined below). The book is not the sole output of Hein’s research on Liangshan, however. Hein specializes in the prehistoric material records of today’s Sichuan 四川 and

Yunnan provinces. Research for the book evolved in tandem with her other studies in these regions that have appeared, to date, in over a dozen English and Chinese journal articles and book chapters. These include international collaborative projects in the contiguous Chengdu Plain and Ngawa Tibetan and Qiang Autonomous Prefecture 阿坝藏族羌族自治州 that engage broader questions about prehistoric anthropogenic activities arising from interactions between Tibetan Plateau and its surrounding regions (d’Alpoim Guedes and Hein 2018; d’Alpoim Guedes et al. 2015). Hein’s book draws on these broader scale patterns that have since brought to light the importance of Liangshan and southwest China to the field of Chinese prehistoric archaeology.

The body of the book has three parts: Part I, “The Model and the Material;” Part II, “Applying the Model;” and Part III, “Evaluating the Model and the Data.” Part II contains the main data analysis. In Part I, Hein expounds the models and details the climate and physical geography of Liangshan apropos of habitats for settlement, subsistence practices, and burial activities. She draws on this environmental context in Part III to outline the distribution and chronology of the “full-fledged” artifact types generated in the preceding analysis and the regional variations in population groups and burial traditions they represent (p. 42).

Hein works toward constructing a cohesive and geographically all-encompassing burial chronology that accounts for behavioral patterns underlying spatial and formal changes in the material record in a bid to overcome the pitfalls of extrapolating from partial chronological schemes built on a handful of reliable stratified sequences. She argues that material manifestations of varied layers of shared identity (i.e., “communities,” “cultural groups,” and “social strata”) ought to be examined on a local scale before aggregated notions of “ethnicity” may be characterized in the context of supra-regional contacts. In response to the persistent debate on “pots” representing “people” in prehistory, which in the case of Liangshan is exacerbated by the lingering influence of Chinese culture history on the classification of archaeological objects

(pp. 37, 40), Hein proposes a compound model to bridge the analytical gap between “cultural identities” and the “archaeological record.”

The model comprises two approaches to the material record: “chaîne opératoire” and “life histories.” The latter approach is derived from the principles of site formation processes and behavioral archaeology, about which key figures in archaeology such as Lewis Binford (1981) and Michael Schiffer (1985) have extensively debated, but no reference is made to this essential literature in corresponding discussions in Hein’s book. Following this, the rationale for invoking the approach of “chaîne opératoire,” and a “mortuary chaîne opératoire” for that matter (pp. 13, 17), warrants closer examination because it informs the book’s central thesis on “graves as composite objects.” It is also the basis on which burial data are analyzed in the subsequent four chapters of Part II, “Applying the Model.” Hein puts forward “chaîne opératoire” as an effective way of rationalizing the “composite” nature of burials, which is “the outcome of an array of processes and activities involving a considerable number of people and a variety of materials,” the opposite of “static units” (p. 17). The issue is that this interpretation of “composite objects” is largely at odds with the very premise of “chaîne-opératoire,” which essentially asserts a set of cognitive-behavioral principles guiding the technical trajectory of a discrete and culturally “static” unit of production. Rather, Hein’s approach seemingly describes exactly what the study of formation processes constitutes (Schiffer 1976; Shott 1998), but not the traditional “chaîne-opératoire” framework.

As a construct and a practice, “chaîne-opératoire” has been mired in ongoing debate, particularly with regard to the limits of its ontology in lithic studies (Bar-Yosef and Van Peer 2009; Schlanger 1994). Yet, the term is often extrapolated semantically to research examining an “operational sequence” in a generic sense. If such a term is to be adapted for the very purpose of analyzing material records, it behooves the researcher to alert the readers to the known shortcomings—and not just the strengths—of the construct and cite a wider pool of literature to confirm how it has

been applied in the past and establish how it may be conceptualized differently in Hein’s study. Since “chaîne opératoire” is cited only in one instance, which is the analysis of “stone construction graves” (pp. 93, 97), after the model has been introduced in Part I, it is unclear how this construct and “life histories” are combined and applied in relation to her dataset.

Chapters 4 through 6 are dedicated to the analysis of the constituents of the burial, namely the physical structure, the deceased and associated acts of interment and ritual, and the grave goods. Hein herein presents a comprehensive review and a classification of all material types using “provisional” criteria developed from the artifacts’ various characteristics and pre- and postdepositional life histories (p. 41). Specifically, Hein applies multivariate statistics to identify patterns in the burial record and assess the correlation between different object attributes, including frequency, placement, and various physical features. However, given the large number of variables and combinations thereof (seen in 100 figures and 95 tables in the main text, plus another 21 plates, 39 figures, and 32 tables in the appendices and online materials combined), the data use and the meaning of every statistical output in the grand scheme of things are not intuitive. Hein is indeed cognizant of the complexity of these results as well as the difficulty of filtering out irrelevant variables from a large “coarse-grained” dataset potentially incorporating subjective criteria of classification (pp. 41–42), but barely explores these issues at the analysis level (p. 205). Because the analyses are too scattered, navigating through the data necessitates multiple cross-referencing among text, tables, and figures to fill in gaps in terminology, symbolism, coding, and categories of measurement.

The problem of data presentation could be ameliorated by providing indices for the total 287 tables and figures and streamlining the analysis. Hein is meticulous in designing very fine-grained systems of coding and classification to rank and categorize her materials, including graves, ceramics, tools, and weapons. However, the output is too elaborate to reason through. The differences between these

numerous artifact types—for example, 38 subtypes of double-handled *guan* jars (presented without scale in pl. A.3, p. 382)—and the analytical value of these differences are not easy to apprehend. The sheer amount of analysis is another impediment. In the case of stone-construction graves (one of three kinds of grave) (fig. B.3, p. 414), to understand how its 42 subtypes came about, one needs to go over another 29 figures and 43 tables in the main text of chapter 4 alone. More importantly, it is difficult to reconcile these grave “types” with the premise of a linear “mortuary chaîne opératoire” that supposedly also encompasses processes outlined in the interment “decision trees” (figs. 5.2–5.7) and the making of funerary and ritual paraphernalia—“Beigaben,” “Mitgaben,” “Traditionsgaben,” and “Nachgaben” (chapter 6)—in different stages of a burial.

There is also confusion in the application of some statistical tools. For instance, multiple “correlation tables” (e.g., tables 5.6–5.8, 7.8, B.11–B.14) do not in fact show any measure of “correlation” but simply relative frequencies. Given that correlation is one of the main indices of variability discussed in the study, it is important to employ a precise statistical use of the term. Another important oversight is the metrics used for visibility (pp. 252–253), which are the graves’ location and exposed structural form ranked on nominal scales. Location and form are certainly two important factors influencing visibility, but without first establishing one or multiple points of reference in the landscape, it is not possible to statistically compare the visibility of objects in different locations.

Mentioning these drawbacks is not, however, intended to detract from the value of this sizable sample of archaeological material, which is clearly the result of a rigorous process of data collation and close scrutiny of multifarious sources. Hein’s table B.3 of source material organized by site is a handy reference for any archaeologist researching into China’s southwest. Hein even developed a reliability index (“Online Materials”) and a location accuracy index (table B.2, p. 406) to lay bare biases, misinformation, and absence of information, and their potential effects on the analysis.

Rather than concluding her study in chapters 7 through 9 simply with a revised typology, Hein presents an enlightening contextualized chronology of the burial remains (table 8.2, p. 340) and maps out longitudinal changes in economic, demographic, and cultural landscapes. Taking into account the environmental factors introduced in chapter 2, Hein delineates four cultural-geographical zones: Anning Valley, Daliang Mountains in the northeast, the valleys of Huili and Panzhuhua in the southeast, and the western high mountains and plateaux in and around Yanyuan 鹽源. She reflects on the differential effects of subsistence practices, mortuary rites, craft traditions, and demographic mobility on land use patterns and burial site selection, showcasing how distinct group identities formed and intersected throughout Liangshan’s prehistory. Readers would find these last chapters most informative and may profit from reading the last part of the book first so as not to miss the forest for the trees. For specialists of southern Chinese prehistoric archaeology, it is an indispensable compendium that complements other works in Hein’s impressive portfolio of research.

REFERENCES CITED

- BAR-YOSEF, OFER, AND PHILIP VAN PEER
2009 The chaîne opératoire approach in Middle Paleolithic archaeology. *Current Anthropology* 50(1):103–131.
- BINFORD, LEWIS R.
1981 Behavioral archaeology and the “Pompeii premise”. *Journal of Anthropological Research* 37:195–208.
- BRUNSON, KATHERINE
2014 A review of *Cultural Geography and Interregional Contacts in Prehistoric Liangshan (Southwest China)* by Anke Marion Hein. Available from *Dissertation Reviews* (website). URL: dissertationreviews.org/archives/9845.
- D’ALPOIM GUEDES, JADE, AND ANKE M. HEIN
2018 Landscapes of prehistoric Northwest Sichuan: From early agriculture to pastoralist lifestyles. *Journal of Field Archaeology* 43(2):121–135.
- D’ALPOIM GUEDES, JADE, HONGLIANG LU, ANKE M. HEIN, AND AMANDA H. SCHMIDT
2015 Early evidence for the use of wheat, barley, and flax as staple crops on the margins of the Tibetan Plateau.

- Proceedings of the National Academy of Sciences of the United States of America* 112(18):5625–5630.
- HEIN, ANKE
2013 *Cultural Geography and Interregional Contacts in Prehistoric Liangshan (Southwest China)*. PhD diss. University of California, Los Angeles.
- SCHIFFER, MICHAEL B.
1976 *Behavioral Archaeology*. New York: Academic Press.
1985 Is there a “Pompeii Premise” in archaeology? *Journal of Anthropological Research* 41(1):18–41.
- SCHLANGER, NATHAN
1994 Mindful technology: Unleashing the chaîne opératoire for an archaeology of mind, in *The Ancient Mind: Elements of Cognitive Archaeology*: 143–151, ed. Ezra B. W. Zubrow and Colin Renfrew. Cambridge, UK: Cambridge University Press.
- SHOTT, MICHAEL J.
1998 Status and role of formation theory in contemporary archaeological practice. *Journal of Archaeological Research* 6(4): 299–329.

The Cultures of Ancient Xinjiang, Western China: Crossroads of the Silk Roads. Alison V. G. Betts, Marika Vicziany, Peter Jia, and Angelo Andrea Di Castro, eds. Summertown, Oxford: Archaeopress, 2019. 205 pp., 215 figures, bibliography, index. Paperback, £38.00, ISBN 9781789694062.

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When Sven Hedin set out to explore the region at the end of the nineteenth century, Xinjiang was one of the least known areas in Asia for Westerners. Unfortunately, this is still largely the case, at least in archaeology, over 100 years later, despite a significant increase in the amount of archaeological data coming out of this region during the past several decades (see, for example, the special section on the archaeology of Xinjiang and surrounding areas edited by Annie Chan and published in *Asian Perspectives* vol. 59, no. 2 in 2020). One of the main reasons is that today’s Western archaeologists generally lack the opportunity to conduct fieldwork in Xinjiang due to political restrictions.

An exception is the Australian team spearheaded by Alison Betts of the University of Sydney, which has managed to participate in several projects in Xinjiang and has contributed considerably to this field. The edited volume reviewed here represents this team’s most recent effort to introduce the rich ancient cultures of Xinjiang to the English-speaking world. The origin of this volume dates back to a workshop entitled “East and

West: past and future” held at the University of Sydney in 2012. The papers included in this volume are a selection of the lectures presented in the workshop. To enhance the representativeness of the volume, the editors enlisted researchers from three Australian institutions (the two others are Monash University and the Australian Nuclear Science and Technology Organization), a few German, French, and Uzbek researchers working in nearby central Eurasian countries, and several prominent Chinese archaeologists who have done extensive fieldwork in Xinjiang. Given the small pool of experts on the archaeology of Xinjiang, the editors’ efforts to offer contributions by researchers working on a wide range of topics in a single volume deserve much of our respect.

This volume has 11 chapters. Except for Chapter 1, an overview of the book, and Chapters 7 and 8, which discuss the cultural history of the Kashgar Oasis during the historical period, the chapters are devoted to the study of the Bronze Age to early Iron Age archaeology of Xinjiang and its neighboring regions. This includes two chapters that the