Chipped Stone Technological Organization

Central Place Foraging and Exchange on the Northern Great Plains

CRAIG M. JOHNSON

Contents

Archaeology/Anthropology

"There is no similar study that pulls together flaked stone data from so many sites across such a broad area of the Middle Missouri and spans such a great chunk of time. This work will doubtless serve as a standard reference for archaeologists working on central and northern portions of the Plains."

—Phil Geib, author of *Foragers and Farmers of the Northern Kayenta Region*

"This book is groundbreaking. Its great scope and theoretically informed data collection and analysis deserve broad recognition, not only for what they contribute to Plains archaeology but also as a general approach that could be successfully applied elsewhere."

—Mark Mitchell, research director, PaleoCultural Research Group, Colorado

Over a forty-year period, Craig Johnson collected data on chipped stone tools from nearly 200 occupations along the Missouri River in the Dakotas. This book integrates those data with central place foraging theory and exchange models to arrive at broad conclusions supporting archaeological theory. The emphasis is on the past 1,000 years, when the Mandan, Hidatsa, and Arikara farmer-hunters dominated the area, but the book also looks back some 10,000 years to more nomadic peoples. The long timespan, and large distances of villages and campsites discussed help define changed usages of local and nonlocal tool stone and its manufacture into arrow points, knives, and other tools.

Central place foraging theory, through the field processing model, posits that the farther a source material is from the central living area, the more it will be processed before it is transported back, to avoid hauling heavy, nonusable parts on long trips. Johnson's data support this theory and demonstrate that this model applies not only to nomadic hunter-gatherers but also to semisedentary farmer-hunters. His results also indicate that toolstone usage creates distinctive spatial patterns along the Missouri River, largely related to village distance from the sources. This is best illustrated with Knife River flint, which gradually declines in popularity downriver from its source in west-central North Dakota but increases in central South Dakota because of exchange.

Craig Johnson worked as a professional archaeologist in Minnesota for nearly three decades, has conducted research on the North American Northern Plains since 1975, and is a participating member in the PaleoCultural Research Group.

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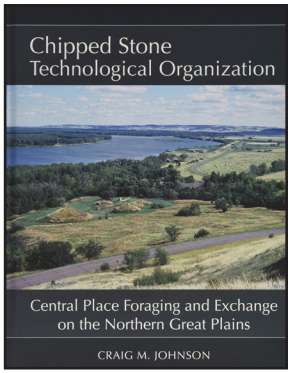

Chipped Stone Technological Organization: Central Place Foraging and Exchange on the Northern Great Plains

Craig M. Johnson. 2019. The University of Utah Press, Salt Lake City. 307 pp. $75.00 (Hardback), $60.00 (eBook). ISBN: 978-1-60816-737.

Review by Metin I. Eren, Department of Anthropology, Kent State University

Craig M. Johnson has put together a big, beautiful, data-dripping monograph—the kind most of us always dream of writing, but never bother. *Chipped Stone Technological Organization* is a labor of love (for evidence, see Johnson's acknowledgements), and one that clearly took patience, dedication, organization, planning, and years of data-collection and research. So, while one may disagree with "this premise here," or "that interpretation there," by the tome's end one cannot walk away from Johnson's work with anything but respect and admiration.

Chapter 1 explicitly notes that "technological organization, central place foraging, and exchange" in particular, and human behavioral ecology in general, were his founding principles in his research on Middle Missouri River chipped stone technology. The author succinctly provides the obligatory review of geography, past research, and cultural taxonomy. Given the vast number of sites assessed in *Chipped Stone*, the three maps in this chapter are remarkably clear and useful. Chapter 2, "Data Acquisition," describes a hard-won, wonderful bounty. In addition to detailing the gobs of data, there is a seven-page table that organizes over 40 years of data collection from 184 components. Here, too, beyond describing toolstone types and defining lithic technological classes, Johnson (p. 13) indicates his study is partly an inductive one: "This analysis sought to discover quantitative patterns in material culture while also exploring their variability…. The results lay firmly rooted in an enduring American archaeological research tradition by focusing on empirical data that can be used to discover regularities in prehistoric behavior." A terse Chapter 3, "Analytical Approach to Chipped Stone Flaking Debris," briefly describes the three methods used in the study: mass analysis, flake typology, and flake variables. Together, these three methods allow Johnson to examine both large sample sizes and fine details. Despite Johnson's inductive approach, his data are not blindly analyzed. Instead, as spelled out clearly in Chapter 4, "Theoretical Orientation," he examines his data through the lens of Human Behavioral Ecology and Technological Organization, two approaches this reviewer admires (minus the caveat that "technological behavior is not directly subject to the natural selection" [p. 37]—current evidence overwhelmingly supports the hypothesis that cultures and technologies evolve via Darwin's system of descent with modification; see Mesoudi 2011).

Chapters 5 ("Toolstone Temporal and Spatial Variation") and 6 ("Chipped Stone Tool Production Technology") comprise the main analytical contributions of the study. Overall, these chapters are systematic, exploring both temporal and geographic patterns. The

amount of presented data and descriptive statistics can be a little daunting, but any interested researcher, or instructor in quantitative methods, will be able to make good use of it. Without his Human Behavioral Ecology framework, these chapters might have come across as a data "dump," but Johnson makes sure the reader is regularly grounded with constant reference to the field processing model, issues of toolstone exploitation and distance to source, exchange, and stone raw material quality. Regarding the latter, I would have liked to see a little more specificity and quantification beyond descriptive labels of "high" and "low" quality, and more explicit acknowledgement that "quality" itself can be defined in several ways (fracture predictability, durability, etc.; Eren et al. 2014; Williams et al. 2019).

The volume is concisely brought together in Chapter 7, "Summary, Discussion, and Future Research," with an organized and thorough discussion of major patterns found by time period, technology, and future studies. The discussion of future studies is particularly well thought out and demonstrates how productive an analytical archaeology can be: Johnson directly links his patterns to future collections research, experimental studies, and fieldwork.

Chipped Stone boasts 96 pages of additional appendices, an index, references, and an eight-page color insert of artifacts. The tables and figures throughout the volume are clear and clean, which, given the amount of presented data, is both a necessity and a relief.

Johnson's *Chipped Stone* is likely going to have a long, slow burn. There is simply so much to digest and think about, this reviewer will certainly be returning to it time and again. It should be a welcome addition to any archaeologist's library. And while the rest of us dream about putting together an achievement like Johnson's, at least we have his to admire until we do.

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