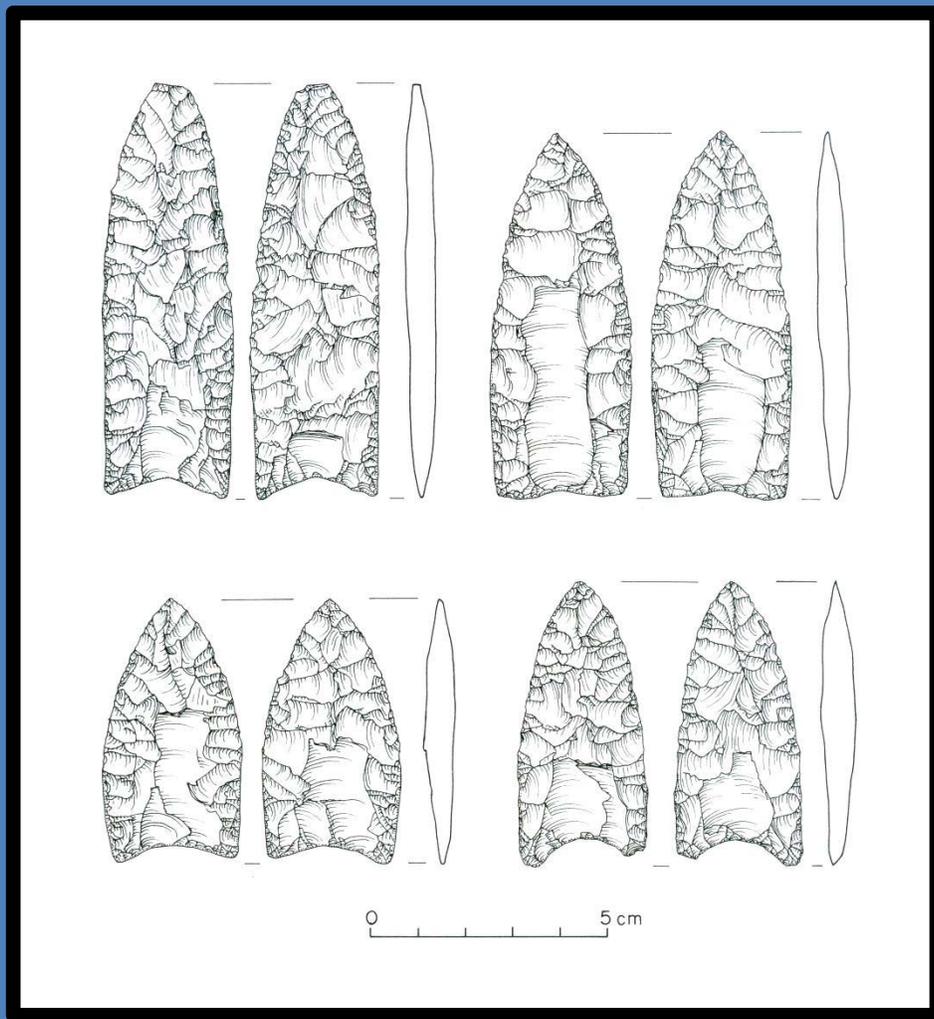


LITHICS IN THE WEST

Using Lithic Analysis to Solve Archaeological Problems in
Western North America



Edited by
Douglas H. MacDonald, William Andrefsky, Jr., and Pei-Lin
Yu

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TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
LIST OF CONTRIBUTORS.....	iii
ACKNOWLEDGMENTS & DEDICATION.....	iv
PREFACE.....	1
<i>Douglas H. MacDonald, William Andrefsky, Jr., and Pei-Lin Yu (editors)</i>	
<u>Part 1: Methodological Approaches</u>	
CHAPTER 1.....	4
DEBRIS, DEBITAGE OR TOOLS: UNMODIFIED FLAKES AND CUTTING EFFICIENCY	
<i>William Andrefsky, Jr.</i>	
CHAPTER 2.....	17
IMPLICATIONS OF UPPER COLUMBIA RIVER LITHIC TECHNOLOGY FOR	
PREHISTORIC FISHING IN THE ROCKIES	
<i>Pei-Lin Yu and Jackie M. Cook</i>	
CHAPTER 3.....	38
A SIMPLE METHOD FOR IDENTIFYING HOUSEHOLDS USING LITHIC ASSEMBLAGES:	
A CASE STUDY FROM A FOLSOM CAMPSITE IN MIDDLE PARK, COLORADO	
<i>Nicole M. Waguespack and Todd A. Surovell</i>	
CHAPTER 4.....	52
MINIMUM ANALYTICAL FLAKED STONE NODULES AND CLOVIS TECHNOLOGICAL	
ORGANIZATION AT THE SHEAMAN SITE, WYOMING	
<i>Mary M. Prasciunas</i>	
CHAPTER 5.....	75
GIS MODELING OF INTERMEDIATE SCALE LITHIC LANDSCAPES IN THE	
COLORADO ROCKIES: THE CASE OF BALLINGER DRAW	
<i>Robert H. Brunswig and David Diggs</i>	

Part 2: Lithic Raw Material and Settlement Pattern Studies

CHAPTER 6.....	97
THROUGH A GLASS, DARKLY: PATTERNS OF OBSIDIAN AND FINE GRAINED VOLCANIC TOOLSTONE ACQUISITION ON THE SOUTHERN PLATEAU	
<i>Kenneth C. Reid</i>	
CHAPTER 7.....	120
ALM ROCKSHELTER LITHIC DEBITAGE ANALYSIS: IMPLICATIONS FOR HUNTER-GATHERER MOBILITY STRATEGIES IN THE BIG HORN MOUNTAINS, WYOMING	
<i>Brian E. Ostahowski and Robert L. Kelly</i>	
CHAPTER 8.....	142
DECIPHERING POINT-OF-ORIGIN FOR PREHISTORIC HUNTER-GATHERERS AT YELLOWSTONE LAKE, WYOMING: A CASE STUDY IN LITHIC TECHNOLOGY AND SETTLEMENT PATTERN STUDIES	
<i>Douglas H. MacDonald</i>	
CHAPTER 9.....	161
HUMAN LANDSCAPE USE ON THE SNAKE RIVER PLAIN, IDAHO	
<i>Kathryn Harris</i>	
CHAPTER 10.....	173
FROM CLIFF TO CACHE: ANALYSIS OF A MIDDLE ARCHAIC OBSIDIAN CACHE FROM SOUTHWESTERN MONTANA	
<i>Scott L. Carpenter and Philip R. Fisher</i>	

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DEDICATION

We dedicate this volume to the memory of Sarah Moore, a wonderful person and lithic artifact illustrator whose time on this planet was cut unacceptably short. Her illustrations—such as those that grace the front and back covers of this book—are included in numerous volumes, articles, and reports. Sarah's elegant and scientifically accurate illustrations added greatly to lithic studies across western North America and beyond.



PREFACE

Douglas H. MacDonald, William Andrefsky, Jr, and Pei-Lin Yu, editors

Stone tools and the by-products of their manufacture are the dominant type of artifact found at prehistoric archaeological sites in North America and much of the world. For that reason, the study of lithic artifacts facilitates our understanding of human use of landscapes, resources, and technology in the past. On an international scale, stone tool and debitage analysis has matured intellectually from its culture-historical origins, incorporating elements of human behavioral ecology, technological organization, land-use strategies, functional interpretations, and a variety of methodological advancements. A multitude of middle-range approaches — including experimental archaeology and ethnoarchaeology — are now utilized to understand human behavior in the past via the study of stone tools.

Lithics in the West seeks to link the rich archaeological lithic data base from the western United States with some of the contemporary theoretical and analytical approaches used in global settings in stone tool and debitage analysis today. The book highlights the role that lithic analysis (in all its forms) plays in solving research problems in the prehistory of western North America.

Although the papers in this volume represent a broad geographical spread over the western United States, most of the contributors have affiliations with one or more research institutions in the Intermountain West. This result speaks to the reach and network of scholarship in the western United States. We include 10 chapters in the volume, organized into two sections: Part 1, Methodological Approaches, Chapters 1-5; and Part 2, Lithic Raw Material and Settlement Pattern Studies, Chapters 6- 10.

All five of the chapters in Part One present unique methodological approaches to facilitate the solution of interesting problems in archaeological research. While the focus is on western North America, the methodological approaches will prove useful for any

archaeologist who works at sites with lithic artifacts. The first two chapters by William Andrefsky, Jr., Pei-Lin Yu and Jackie M. Cook, respectively, add behavioral and experimental contexts to the interpretation of stone tools and debitage found on archaeological sites. The papers are designed to broaden our view of how archaeologists can begin exploring behavioral meanings of lithics: viewing stone tools outside of traditional analytical approaches provides much-needed behavioral frames of reference for interpreting and generating hypotheses about the manufacture, use, repair, re-purposing, and discard of stone tools.

Andrefsky's Chapter 1 utilizes a set of controlled experiments to understand the functional effectiveness of unmodified flakes as cutting tools. This study makes us ask questions such as, "why do some sites have only unmodified flakes tools and other sites have heavily modified flake tools?" Experiments show that tool form found on sites relates not only to tool function, but also to human choices and to raw material availability.

Yu and Cook's Chapter 2 uses ethnoarchaeological data to generate expectations for morphological characteristics of fish butchering stone tools used by northwestern North American fishing peoples, with ramifications for expedient raw material acquisition, bulk processing, and gendered tool use, manufacture and re-use. The study of fishing has been problematic in the Intermountain West, in part due to our limited ability to identify fishing tools in archaeological sites.

Analysis of a lithic collection from an intensive fishing locality in the Columbia Basin allows for identification of baseline lithic tool characteristics that can be used to identify tools in archaeological assemblages of the Intermountain West where fishing was mostly supplemental to terrestrial hunting and gathering. The chapter concludes with implications for increased fishing as subsistence intensification in response to Euro-American immigration.

Chapters 3 and 5 by Waguespack and Surovell and Brunswig et al., respectively, focus on methodological approaches to the analysis of artifact and site distributions on local and regional scales. Waguespack and Surovell's study of lithic artifact distributions is truly

LITHICS IN THE WEST

unique, providing an ingenious method by which to identify otherwise invisible house structures within prehistoric archaeological sites. Their mapping of artifact distributions allows us to understand what types of living structures were used by Folsom peoples in Colorado 10,000 years ago. Brunswig et al.'s Chapter 6 also uses sophisticated mapping methods—in this case, geographic information systems (GIS)—to understand land use on a regional scale. The use of GIS is an important and up-and-coming method of study of prehistoric hunter-gatherer land-use.

In Chapter 4, Prasciunas uses minimum nodule analysis to evaluate Paleoindian stone tool manufacture and the organization of technology in the northwestern Great Plains 11,000 years ago. Her method of nodule analysis facilitates an understanding of Clovis organization of lithic technology and land-use which will facilitate our understanding of the peopling of the Americas.

Each of these initial five chapters introduces prescient methodological approaches to lithic analysis which will help solve interesting research questions about technological behaviors and their material correlates. While the focus is intermountain western North America, some of the papers use information about lithics from outside this region to offer applicable methods of analysis and behavioral frames of reference.

Through the use of lithic analysis, each of the five chapters in Part Two (Chapters 6-10) strives to understand lithic technological organization, land-use, mobility, and/or trade patterns of prehistoric Native Americans in the west over the last 11,000 years. Whereas the first five chapters sketched methods of lithic analysis that could vastly improve contemporary archaeological studies, the next five chapters are case studies in how western North American archaeologists have used lithic studies to advance our knowledge of prehistoric hunter-gatherers.

The location of tool-stone sources is becoming increasingly more important for understanding how aboriginal tool makers and users occupied territory and moved around landscapes. Certainly, Chapter 6 by Reid recognizes this and provides a comprehensive and

exhaustive review of lithic resources available within western Idaho and eastern Oregon. Chapter 7 by Ostahowski and Kelly evaluates raw material in debitage form at a considerably smaller scale of analysis. They focus upon lithic debitage from Alm Rockshelter in Wyoming to evaluate population variability associated with climate change.

Continuing with the theme of lithic raw material source location and artifact distribution from those sources, the next three chapters provide other case studies from the west. Chapter 8 by MacDonald uses lithic sourcing to help decipher prehistoric land-use patterns of hunter-gatherers at North America's highest, largest lake, Yellowstone Lake in the Rocky Mountains of what is now Yellowstone National Park. In so doing, he illustrates that multiple distinct groups likely utilized Yellowstone Lake, deriving from the south, north, east and west. In addition, lithic analysis indicates that boats were not the main form of travel at Yellowstone Lake, nor was fishing crucial to subsistence patterns of Native Americans there.

Chapter 9 by Harris focuses on shifting human settlement patterns over the last 3,000 years in the Snake River region of north-central Idaho. The combination of obsidian source characterization and technological organization data from a variety of stone tools support the model that people in the Snake River Plain moved over a wide area of southeastern Idaho. Chapter 10 by Carpenter and Fisher provides an in-depth study of a Middle Archaic biface cache in the Paradise Valley of Montana. Through various creative methods, the authors provide a fascinating account of Native American land-use in the Greater Yellowstone Ecosystem ca. 3,700 years ago. Among other things, these final five chapters study human interaction at the landscape level through the analysis of lithic artifacts found at regional archaeological sites.

Few volumes on stone artifacts cover as wide a breadth of methodological and regional perspectives as the current one. We hope that the reader will garner useful information from the various papers that can lead to a better understanding of stone tool use in western North America and the world. At the very least, the

LITHICS IN THE WEST

volume introduces several methodological approaches which will be useful for future archaeological studies, both in North America and the world beyond. Students of archaeology will find numerous and diverse methods of lithic analysis by which to further their own research, while professionals in the field will find data by which to supplement their understanding of the prehistory of western North America.