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# Anthropology Book Forum

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## **New Outlooks in Paleoethnobotany**

**Review by Angelina Perrotti**

*Method and Theory in Paleoethnobotany*

by John M. Marston, Jade d'Alpoim Guedes and Christina Warinner (eds)

University Press of Colorado, 2014

*Method and Theory in Paleoethnobotany* is an excellent volume that is the first of its kind to be published in over 25 years. The editors sought to complement the existing body of literature (i.e. Hastorf and Popper 1988; Pearsall 1989, 2000), rather than compile a replacement reference by discussing topics that have been adequately discussed in previous publications. Instead, John Marston, Jade d'Alpoim Guedes and Christina Warinner discuss technological advancements, such as DNA and isotopes and apply postprocessual theory to paleoethnobotanical data. The various contributors also emphasize formation processes in paleoethnobotany (used synonymously with archaeobotany).

The first section, "Formation Processes," includes three chapters that provide excellent overviews of formation processes of macrobotanicals, starch granules, pollen and phytoliths. Both Daphne E. Gallagher's chapter on formation processes of the macrobotanical record and Deborah Pearsall's chapter on taphonomy of pollen and phytoliths provide clear, concise reviews on the topics. Pearsall compares and contrasts the formation processes, sampling techniques and identification of pollen versus phytoliths, which is sure to be helpful to many readers. Amanda Henry's chapter on the formation and taphonomic processes affecting starch granules presents information on a newer line of microbotanical evidence. Henry discusses formation of the starch record, and elaborates on the applications of starch analysis. Not only can starch granules represent the ancient plants from which they were produced, activities such as cooking, sprouting and grinding can be evidenced by the morphology of the granules. Henry also discusses the susceptibility of starch analysis to contamination, which may minimize just how problematic contamination can be, given the pervasiveness of modern

starches (Laurence et al. 2011).

The second section, “Recovery, Identification and Data Management,” is primarily focused on macrobotanical analysis, and contains concise overviews of the paleoethnobotanical process from sampling, onto processing and recovery, followed by laboratory analysis and identification. d’Alpoim Guedes and Robert Spengler head up this section with a discussion of sampling strategies. They emphasize blanket sampling and encourage collecting large samples to allow for additional analyses such as soil micromorphology. Chantel White and China Shelton proceed with a chapter about recovering macrobotanical remains in field. This is an abbreviated set of instructions for someone interested in how flotation works, though anyone looking to construct a flotation system would find more details in Pearsall’s (1989, 2000) manual. A chapter by Gayle Fritz and Mark Nesbitt on laboratory analysis and identification of plant remains follows and covers analysis after recovery in the field. Last, a chapter about digitizing the archaeobotanical record by Warinner and d’Alpoim Guedes discusses advances in digital forums to store and share data.

Section three, “Quantification and Analysis,” provides an easily comprehensible guide to what kinds of statistics can be used in archaeobotany, and which are most commonly used today. The material covered in the section begins with an explanation of commonly used simple statistics such as ratios and concentration values. It is followed by a discussion from Alexia Smith about the uses of multivariate statistics, including identifying plant remains and understanding spatial distributions within a site. Next, a chapter by Amber VanDerwarker et al. discusses the analysis of intrasite variability. This section is concluded by a discussion by Chris Stevens about intersite variation within charred plant remains. These chapters are a great place to start for someone who is trying to review statistics or is new to statistical analysis, as each chapter presents case studies to help clarify concepts.

The fourth section “The Integration of Paleoethnobotanical Data,” focuses on interdisciplinary approaches in paleoethnobotanical research. The first chapter in the section by Timothy Messner and Gary Stinchcomb urges collaboration between geomorphology, paleoclimatology and sociology to aid in interpreting paleoethnobotanical remains. The authors also emphasize the applications of paleoethnobotany to environmental science today. A chapter about isotopes by Christina Warinner follows and provides an explanation of the proxy and its uses. The subsequent chapter by Nathan Wales et al. discusses the use of ancient biomolecules (aDNA, RNA etc.) in paleoethnobotany. This chapter reviews formation and taphonomy of an aDNA record and would be very helpful to many archaeologists, as it explains the differences between plant, animal and human DNA. The last chapter in the section, by Jesse Casana, gives a history of aerial imaging in the discovery and mapping of archaeological sites and outlines of the benefits and drawbacks of different techniques, ranging from

aerial photography to LIDAR.

The final section, "Interpretation," includes three chapters on theory behind interpreting paleoethnobotanical data. The first chapter by Kristen Gremillion seeks to clear up some misconceptions that many paleoethnobotanists have about Human Behavioral Ecology. Though she does not "mount a full-fledged defense of HBE" (p.341), she gives a fair assessment of the strengths and weaknesses of this theoretical perspective. Gremillion stresses the value of models, claiming that they are intentionally simplified, and when they fail to make accurate predictions, one can examine the points at which they are vulnerable, "revealing unexpected relationships or raise new questions to be pursued" (p.342). She also discusses various models rooted in human behavioral ecology and how they relate to paleoethnobotanical inquiries such as plant husbandry and decisions surrounding crop choice and processing methods. Next is a chapter that discusses documenting human niche construction in the archaeological record by Bruce Smith. He outlines difficulties identifying this behavior in the archaeological record, including teasing apart anthropogenic and climatic disturbances in an ancient landscape, such as the appearance of more fruit and nut bearing trees or fires. Last, a chapter by Shanti Morell-Hart, adopts a unique approach, applying linguistic models to the interpretation of paleoethnobotanical material. Morell-Hart does an excellent job of explaining how she takes material remains and places them in the sociological setting of the every day lives of the ancient people who used them.

Overall, this book is an excellent volume that accomplishes its goal of complementing previously published paleoethnobotany manuals (Hastorf and Popper 1988; Pearsall 1989, 2000). However, given the current curation crisis (see Manquardt et al. 1982), it is disappointing to see that a discussion of curation was not included. A dialogue about conservation practices of these fragile, perishable materials would have been appreciated. Additionally, a discussion about designing a collections based paleoethnobotanical project would have been valuable, given the existence of ample paleoethnobotanical material that remains under analyzed or unanalyzed, gathering dust in storage.

Despite this flaw, *Method and Theory in Paleoethnobotany* will surely become a staple on any paleoethnobotanist's bookshelf as it addresses new topics that are more relevant today than ever, such as technological advances and current theoretical approaches. In addition to providing an excellent starting point for any novice or seasoned paleoethnobotanist, this volume would be an excellent selection for a graduate seminar on paleoethnobotany. While Pearsall's *Paleoethnobotany* (1989, 2000) is an irreplaceable reference for anyone looking to perform a paleoethnobotanical analysis, students may find it too detailed for a seminar or classroom. *Method and Theory in Paleoethnobotany* provides discussions of history, methodologies, current theoretical perspectives and case studies that are tied

together by an extensive bibliography to allow for further in depth exploration of a particular topic by an interested student. The chapters within this volume are in a logical order and consider the paleoethnobotanical process from the first steps of developing a research design through interpretation of data. Though this volume will certainly become a fixture for paleoethnobotanists, any archaeologist will find it a valuable reference for understanding plant use by ancient humans.

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