



PASTIMES

Newsletter of the Panhandle Archeological Society

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Palo Duro Canyon

from the air.



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The painter Georgia O'Keeffe, who lived in near-by Amarillo and Canyon early in the 20th century, wrote of the Palo Duro: "It is a burning, seething cauldron, filled with dramatic light and color."

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UPCOMING EVENTS

October is Texas Archaeology Month.

Please send a report of all your events this month for inclusion in the November issue of PASTimes.

- October 19, 7:00 p.m. PAS, 2nd floor board room, Amarillo Public Library Downtown Branch. See Program Information, p. 4. Please join us for a pre-meeting dinner at Napoli's, 700 So. Taylor, at 5:30.
- Dec. 9, 2016, 6:30 p.m. Studer Banquet, Dyer's Barbecue, 1619 S. Kentucky E #526. I-40 and Georgia in Wellington Square Shopping Center, Amarillo, TX 79102, Phone: 358-7104

NOTICE!! The Studer Banquet will be on Friday this year due to conflict in scheduling.

Plan ahead for the Silent Auction.

NOTES FROM THE EDITOR'S DESK



As I've flown over the Panhandle, looking down at the landscape, I've often imagined that I might turn into an abstract artist. I'd dip my brushes into my paint pots and Presto! A huge painting would appear. It would be a montage of seemingly haphazard amorphous shapes, separated by determined straight lines of gunmetal gray pavement and writhing brick-red tracks through the sands. The uplifts and ravines meld into purples and pinks and oranges, while dots of dark blue-gray show us the playa lakes.

Here and there would be something resembling an outsized copper penny where the plows had followed the track of the circle pivots, set in the middle of squares of browns and tans and odd shades of grayish green. Over here there would be a Kelly green rectangle of winter wheat, and over there a row of strange little shapes of buildings and automobiles surrounding a parking lot.

Superimposed over the lighter colors, I'd paint the dark multi-branched shape of the great canyon. From the air it resembles the talon of an eagle— or possibly a pterodactyl!! Most of my readers are familiar with its depth, its rugged hillsides and watercourses. We might grow complacent if we were never to be reminded of its majesty.

Gen. Phillip Sheridan famously declared that if he owned hell and Texas, he'd live in hell and rent out Texas. We can all be glad that never happened.



MINUTES OF THE SEPTEMBER 21, 2016 PAS MEETING

The meeting was called to order by President Scott Brosowske at 7:05 p.m. in the Board Room of the Downtown Amarillo Library. There were 17 members in attendance, including the speaker.

PROGRAM: “Of Burnt Dogs and Melting Cats.” Doug Wilkens (PAS member from Perryton) gave a PowerPoint presentation focusing on the architecture of three Antelope Creek-style picket-post residential structures excavated in the West Pasture of John Ericson’s M-Cross Ranch in Roberts County.

MINUTES: The May minutes, as published in Pastimes, were approved unanimously. Motion by Joe Rogers, second by Rolla Shaller.

TREASURER'S REPORT: Treasurer Pam Allison reported a balance of \$4,062.89 as of September 21, 2016.

PUBLICATION COMMITTEE REPORT: Rolla Shaller reported a balance in the checking account of \$1,405.29. Interest on this account was 25¢. The balance in the CD account is \$5,060.73.

OLD BUSINESS: 1. Veronica Arias and Rolla Shaller reported on the upcoming Studer Banquet. The venue will be Dyer’s Barbecue in the Wellington Square Shopping Center at I-40 and Georgia. Due to the unavailability of the meeting room on the preferred Saturday night, this year’s banquet will be on Friday, December 9. The menu will include a three-meat combination and two sides. It will be served family-style. The cost will be \$15 per person, plus tip. There is no speaker as yet.

2. Bob Wishoff, the PAS webmaster, is unable to continue with this service for the time being due to his wife’s illness. Pastimes will be continue to be distributed as an email attachment, with all back issues posted to the website at a later date.

NEW BUSINESS: 1. The 2016 Fannin Middle School History Festival is scheduled for Saturday, October 15. Atlatl throwing will not be provided this year due to all of the participants attending the West Texas Trails Association Conference that day. Corn grinding will be provided, as will Joe Rogers and his carpentry shop. Rolla and Alvin will make arrangements with Julie Green to deliver all of the corn grinding supplies (i.e., corn, plywood ‘floor’, mano and metates, whisk brooms and dust pans, kneeling rugs, and plastic bags) on Friday instead of Saturday, so that everything will be there for any PAS members that are able to participate on Saturday.

2. Veronica Arias and Scott Brosowske discussed the possibility of field trips this fall. Doug Wilkens offered to host a trip to the sites he spoke about in his presentation, but due to the high grass some advance notice will be necessary so that the sites can be mowed.

ANNOUNCEMENTS: 1. Veronica Arias reported on the Material Culture of the Prairie, Plains, and Plateau (MCPPP) Conference to be held at the P-PHM from Thursday, September 29 through Sunday, October 2. Registration and socializing will be on Thursday, presented papers on Friday and Saturday (including a tour of the museum), and a visit to Palo Duro Canyon on Sunday. The focus of this year’s conference is the Southern Plains. Past conferences have been characterized by good papers and knowledgeable presenters.

2. Reminder of upcoming meetings and activities:

a. October 12–15: 74th Annual Plains Anthropological Society Conference, Lincoln, Nebraska.

b. Oct. 14–15: Third Annual West Texas Trails Association Conference, Wheeler.

c. October 15: Fannin Middle School History Festival, 4627 South Rusk Street, Amarillo.

d. December 9: Studer Banquet at Dyer’s Barbecue at I-40 and Georgia.

NEXT PAS MEETING: The next meeting will be on Wednesday, October 19, at 7:00 p.m. in the Board Room of the Downtown Amarillo Library. The speaker will be Shelley Armitage, author of *Walking the Llano: A Texas Memoir of Place*.

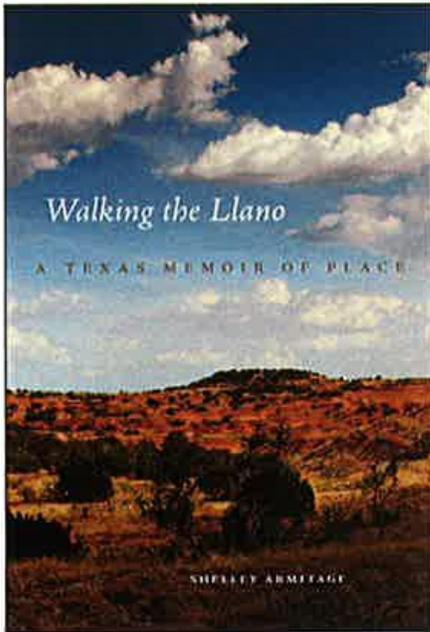
“In *Walking the Llano*, Shelley Armitage does for the Staked Plains what John McPhee did for the Northern Plains in *Rising from the Plains*. She carefully mines the history, character, and geology of the Llano Estacado and combines it with a compelling personal narrative to create an account that flows with lyricism, authenticity, and wisdom. A splendid and clear-eyed book.”—Nancy Curtis, co-editor of *Leaning into the Wind: Women Write from the Heart of the West*.

PROGRAM INFORMATION

WALKING THE LLANO: A Texas Memoir of Place

A lyrical ecomemoir set in the Texas Panhandle

By Shelley Armitage



When European explorers crossed the Texas Panhandle, they dubbed it part of the "Great American Desert." A "sea of grass," the llano appeared empty, flat, and barely habitable. Contemporary developments--cell phone towers, oil rigs, and wind turbines--have only added to this stereotype. Yet in this lyrical ecomemoir, Shelley Armitage charts a unique rediscovery of the largely unknown land, a journey at once deeply personal and far-reaching in its exploration of the connections between memory, spirit, and place.

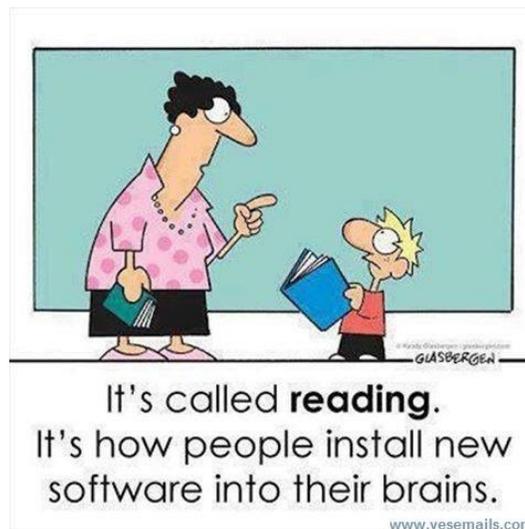
Armitage begins her narrative with the intention to walk the llano from her family farm thirty meandering miles along the Middle Alamosa Creek to the Canadian River. Along the way, she seeks the connection between her father and one of the area's first settlers, Ysabel Gurule, who built his dugout on the banks of the Canadian. Armitage, who grew up nearby in the small town of Vega, finds this act of walking inseparable from the act of listening and writing. "What does the land say to us?" she asks as she witnesses human alterations to the landscape--perhaps most catastrophic the continued drainage of the land's most precious resource, the Ogallala Aquifer.

Yet the llano's wonders persist: dynamic mesas and canyons, vast flora and fauna, diverse wildlife, rich histories. Armitage recovers the voices of ancient, Native, and Hispano peoples, their stories interwoven with her own: her father's legacy, her mother's decline, a brother's love. The llano holds not only the beauty of ecological surprises but a renewed realization of kinship in a world ever changing.

Reminiscent of the work of memoirists Terry Tempest Williams and John McPhee, *Walking the Llano* is both a celebration of an oft-overlooked region and a soaring testimony to the power of the landscape to draw us into greater understanding of ourselves and others by experiencing a deeper connection with the places we inhabit.

Biographical Information

Shelley Armitage is Professor Emerita of English and American Studies at the University of Texas at El Paso. Her numerous publications include *Bones Incandescent: The Pajarito Journals of Peggy Pond Church* and *John Held, Jr.: Illustrator of the Jazz Age*.





Test, Model, and Method Validation: The Role of Experimental Stone Artifact Replication in Hypothesis-driven Archaeology [Excerpts]

To cite this article: Metin I. Eren, Stephen J. Lycett, Robert J. Patten, Briggs Buchanan, Justin Pargeter & Michael J. O'Brien (2016) Test, Model, and Method Validation: The Role of Experimental Stone Artifact Replication in Hypothesis driven Archaeology, *Ethnoarchaeology*, 8:2, 103-136, DOI: 10.1080/19442890.2016.1213972

To link to this article: <http://dx.doi.org/10.1080/19442890.2016.1213972> [This is an excerpt. Original is 35 pp]

For many years, intuition and common sense often guided the transference of patterning ostensibly evident in experimental flintknapping results to interpretations of the archaeological record, with little emphasis placed on hypothesis testing, experimental variables, experimental design, or statistical analysis of data. Today, archaeologists routinely take steps to address these issues. We build on these modern efforts by reviewing several important uses of replication experiments: (1) as a means of testing a question, hypothesis, or assumption about certain parameters of stone-tool technology; (2) as a model, in which information from empirically documented situations is used to generate predictions; and (3) as a means of validating analytical methods. This review highlights the important strategic role that stone artifact replication-experiments must continue to play in further developing a scientific approach to archaeology.

What Is Stone-tool Replication?

Stone-tool replication can be defined as the act of creating or using non-artefactual flaked-stone specimens for the purpose of investigating archaeological hypotheses, questions, and methods. In some circumstances it may be useful to differentiate between stone-tool replication and “flintknapping,” which Reti (2014) defines as the act of creating flaked-stone tools as art, for personal pleasure (a hobby), or for business purposes (e.g. eighteenth-century gun flints) (see also Whittaker 2004). While a “replica” is often thought of as an object that matches as closely as possible to a specific original, a broader definition of the term “replica” may be more useful for our purposes here, namely a new-made object that possesses attributes relevant to better understanding prehistoric artifacts. Stone-tool replication falls generally under the subheading of experimental archaeology, although equating it with “experiment” would be misleading. If we define “experiment” as a form of scientific study that uses a structured, replicable procedure to test the validity of a hypothesis (Outram 2008), then it should be clear that stone-tool replication is but a single part of a process that also includes construction of hypotheses, derivation of test implications, and use of appropriate analytical methods (Lycett and Chauhan 2010). Equating stone-tool replication with “experiment” would be like equating the act of pouring chemicals into a beaker with a chemistry “experiment.” Stone-tool replication should be considered to be an act or task that is part of the experimental process, but not that process itself.

In archaeology, the artifactual record might be considered to have high “external validity”: it is the most direct, empirical (i.e., tangible) evidence that we have of what actually took place in the past. Conversely, however, the artifactual record has low “internal validity”: it is inherently biased, incomplete, and allows little control or randomization of the variables it produces. Further, excavation is unrepeatably and if one variable/trend/pattern is observed it may be difficult to determine how “typical” this may have been in other regions or temporal spans where such evidence is not currently available. In direct contrast to this, experiments might be considered to have high “internal validity”: they can be repeated, and their parameters and variables might be controlled and manipulated in multiple ways (Mesoudi 2011, 135; see also discussion in Clarkson, Haslam, and Harris 2015a, 121; Pettigrew et al. 2015). There is, however, an inevitable cost to this high internal validity: no experiment can “re-run” prehistory with exact precision, and its relationship to the parameters of direct interest (i.e., the archaeological record) requires the imposition of specific assumptions and inferences to give it archaeological meaning. The archaeological record, despite its problems, is the best and only direct evidence of the past that we have; experiments are very much an indirect means of making inferences regarding the past. In this sense, “internal validity” and “external validity” can be seen to refer to opposing strengths and weaknesses in reference to the data provided directly by the archaeological record versus experiments (Lycett and Eren 2013a). The issue of external versus internal validity leads to the related issue of replication experiments that involve the use of machines or other devices versus those that involve human knappers. Machine flaking has provided valuable insights into some potential causal variables that govern stone-tool fracture mechanics at the level of individual flakes² (e.g. Dibble 1997, 1998; Dibble and Pelcin 1995; Dibble and Rezek 2009; Dibble and Whittaker 1981; Magnani et al. 2014; Pelcin 1997a, 1997b, 1997c, 1998; Rezek et al. 2011), but it would be a mistake to assume machine-flaking experiments are automatically superior to human ones or vice versa. Certain variables such as “force of blow” or “angle of blow” can be measured or observed more easily through machine flaking than through human flaking, but the design of the machine itself may introduce variables whose effects on stone fracture relative to what is present in the archaeological record are unclear. Likewise, “control” may ac-



benefit from one degree or kind of control necessarily comes with an unavoidable cost. Not acknowledging these points and consistently advocating for greater and greater experimental control might be considered a controlled experimenter's fundamental conceit.

Designing a Replication Experiment

This discussion might sound axiomatic or commonsensical, but we have encountered archaeologists who think that the mere act of “busting rocks” or using a stone tool to butcher an animal constitutes publishable research. This may have been the case at one time in the same way that the act of dissecting a mollusk would have resulted in a published biology paper 150 years ago (e.g. Owen 1835). These kinds of exploratory or experiential studies have value and are one possible means of generating new hypotheses, questions, and ideas³ (McCall and Pelton 2010; Shelley 1990), but as archaeology matures as a science, so too must the hypotheses posed and the questions asked, which in turn requires greater sophistication in experimental design, instrumentation, and recorded variables. By “greater sophistication” we do not necessarily mean increased use of state-of-the-art laboratory gadgets or computer software alone, but instead progressively better linkage between a hypothesis and its predictions with an experiment and its results. This kind of structured research requires organization, planning, forethought, and, quite often, pilot experiments. If in order to robustly test the predictions of a particular hypothesis the highest-resolution 3D scanner available on the market is needed to record attributes on replicated stone tools, and the knapper must be in a highly controlled and sterile laboratory, then so be it. But other hypotheses may actually be better tested in less-controlled experimental conditions in the field using simple calipers to record, for example, flake length, width, and thickness. It all depends on the hypothesis being tested. Many hypotheses would benefit from multiple replications that systematically modify relevant factors and juxtapose the results (Eren et al. 2011a:2014; Lycett and Eren 2013a; Mesoudi 2011; see also Carr and Bradbury 2010; Marsh and Ferguson 2010; Pettigrew et al. 2015).

Core-reduction efficiency

A recent example of a replication experiment that tested core-reduction efficiency is that of Jennings, Pevny, and Dickens (2010), who compared the number of flake blanks produced and the transport mass of bifacial cores and wedge-type blade cores typical of Clovis Paleoindians in the western United States versus discoidal cores and amorphous cores typical of chronologically subsequent Folsom Paleoindians. While Jennings, Pevny, and Dickens (2010) investigated six replicated biface cores and five new blade cores, they bolstered their own experimental data with core-efficiency data from Prasciunas (2007, 10 biface cores and 10 amorphous cores) and Eren, Greenspan, and Sampson (2008, seven prismatic-type blade cores and seven discoid cores). They came to four conclusions:

1. When cores are small, amorphous cores are more efficient, but as cores increase in size, bifacial, discoidal, and blade cores approach amorphous cores in terms of production efficiency.
2. Small bifacial cores are less efficient than larger ones in terms of transport mass because larger ones produce more mass-efficient flakes.
3. Prismatic and wedge-type blade cores are equally efficient at producing flake blanks, and for both types efficiency decreases with core size.
4. Tentatively, bifacial reduction may be more efficient at producing noncortical flake blanks than blade reduction from wedge-type cores.

These conclusions allowed Jennings, Pevny, and Dickens (2010) to make several inferences about intra- and intercultural patterns of Clovis and Folsom tool making. For example, core size varies between the North American Southern Plains on the one hand and the Northern Plains and Rocky Mountains on the other. The former region contains numerous large tabular chert-nodule outcrops, whereas the latter two regions contain fewer outcrops, making small nodule and cobble sources more important. Based on their experimental results, Jennings, Pevny, and Dickens (2010) predicted different core-reduction strategies for Clovis and Folsom groups, namely the use of any or all reduction strategies in the Southern Plains and a relatively higher use of amorphous-core and discoidal-core reduction in the Rocky Mountains and on the Northern Plains. Informal assessment of the archaeological record suggested that Clovis knappers used biface and blade reduction, regardless of region, and that amorphous-core reduction was never dominant. Folsom knappers, however, conformed to the predictions of the experimental core-efficiency results, using biface cores on the Southern Plains and amorphous and discoidal cores in the other regions. Taken together, the experimental core-efficiency results and archaeological patterns inspired new, interesting, and empirically based interpretations of Paleoindian mobility, settlement, landscape use, and technological evolution.