

# PASTIMES

The Newsletter of the Panhandle Archaeological Society

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On the front cover: Griffin Brosowske holds a Late Archaic Dart Point made from petrified wood

The Panhandle Archaeological Society will hold its next meeting on Wednesday March 21, 2012, at 7:00 pm, at the Wildcat Bluff Nature Center Science Building, 2301 N. Soncy Road, in Amarillo, Texas. Our program will be presented by Robert A Wright.



Robert A. Wright

### **The History of Tree Ring Dating in the American Southwest**

Robert A. Wright  
West Texas A&M University

#### *Abstract*

Dendroarchaeology is a term used for the investigation and study of vegetation remains, old buildings, artifacts, furniture, art and musical instruments using the techniques of dendrochronology (tree-ring dating). It refers to dendrochronological research of wood from the past regardless of its current physical context (in or above the soil). This presentation will examine the history, methodology, and techniques of tree ring dating using case studies from the American Southwest. Specific topics examined include site selection, field and laboratory techniques, dendroclimatology, calibrating the CO<sup>2</sup> clock, dendroarchaeology at Pueblo Bonito, and historical archaeology at Johnny Ward's Ranch.

#### Biography

Robert A. Wright joined the WTAMU faculty in 1964. He received a B.S. and an M.S. in range management from New Mexico State University in 1955 and 1960, respectively. He earned a Ph.D. in plant ecology from the University of Arizona in 1965. He teaches evolution, wildland soils, introductory biometry, introduction to dendrochronology, general ecology, plant ecology, design and analysis of experiments, history of evolutionary thought, and human ecology. Wright is the author of a number of publications in dendrochronology and plant ecology. He is a member of the American Association for the Advancement of Science (AAAS) and has served in a number of offices in the Southwestern and Rocky Mountain Division of the AAAS. His research interests include the relationship of vegetation to soils.

# Fiber Spinning Technology on the Southern High Plains

By Scott D. Brosowske and Stacy Brown

When one thinks of prehistoric textiles in the Americas, the Southern Plains rarely come to mind. There are several reasons for this. First, the materials most commonly used to make these items, either plant or animal based, generally do not preserve well in open sites of the region. Second, while horticultural societies of the Southwest developed a strong weaving tradition that only flourished with the introduction of cotton and sheep, similar trends are not well documented among neighboring peoples of the Plains. Even so, as we will discuss in this article, there is direct and indirect evidence that indicate that prehistoric and historic peoples of the Southern Plains did produce plant and animal cordage by spinning.

Spinning is the process of combining plant fibers or animal hair into yarn or cordage. In its simplest form, this can be accomplished by taking the chosen material and twisting it in between your hands or by rolling the material on your thigh with your hand. The material will twist into a cord or yarn that is thicker, stronger, and more abrasion resistant than unspun fibers. While effective, the length of the yarn or cordage produced by this method is often limited to the length of the spinner's arm. Faced with this problem, people throughout the world progressed to the next step in the evolution of spinning.

By using a spindle combined with a weight or whorl, longer, continuous strands were efficiently spun by hand (Figure 1). The spindle whorl is used by attaching a mass of animal hair or wool or plant fibers to the end of the spindle and rotating or spinning the spindle. The process of spinning allows the strands of the material to be tightly twisted and drawn out into a length of yarn or cordage. The use of a whorl or weight on the bottom end of the spindle increases the inertia of the device enabling the spindle to spin for a greater length of time as it twists the fibers together. In other words, the whorl serves as a flywheel. As the length of the cordage or yarn increases, the spindle also serves as a gathering point for the spun material by wrapping it around itself.

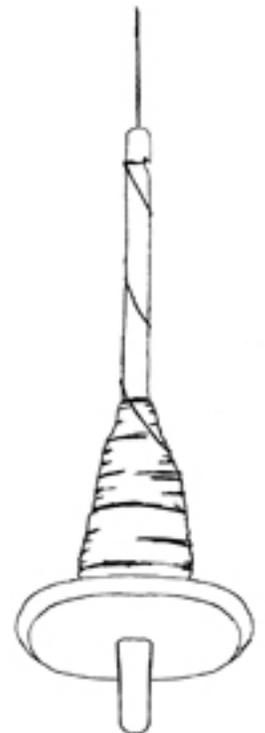


Figure 1 Spindle and Whorl

Numerous studies have examined in detail the use of spindle whorls (e.g., Barber 1991; Franquemont 2009; Freer-Waters 2011; Loughran-Delahunt 1996; Neff 2001; Teague 1998). These studies provide excellent insight into the physics underlying spindle whorl use and how different sizes of whorls are typically associated with the spinning of specific types of raw materials. Loughran-Delahunt (1996) determined that the inertia for a spinning disc can be determined by the following formula:  $I = 1/2MR^2$ , where  $I$  is the moment of inertia,  $M$  is the mass of the disc, and  $R$  is the radius of the disc. A higher inertia is more valuable for spinning due to its ability to produce and maintain speed. Whorls with a larger radius spin slower, but for a longer period of time than a whorl with a smaller radius. Loughran-Delahunt's (1996:54-57) conclusions support other studies that assert that larger diameter spindle whorls were often used for spinning coarse plant fibers and animal hair (i.e., wool). Whereas, smaller diameter whorls were typically associated with spinning fine plant fibers or animal hair to produce tightly wound, small diameter yarns.

Direct evidence for spinning on the Southern Plains comes from a few dry rockshelters or caves in the region. Archaeologists working at Curry Cave (41RD94) in Randall County, Texas and Kenton Caves in Cimarron County, Oklahoma recovered numerous artifacts produced by spinning and weaving. At Curry Cave, for instance, these items included sandals, matting, basketry, and cordage or yarn produced from plant fibers and animal hair (see Brosowske 2011). These items are believed to date to the Middle Ceramic period (A.D. 1250-1500). Although spinning technology does not appear to be widespread in the region because the products produced by spinning are usually not preserved in open air sites, judging from sites, such as Curry Cave and Kenton Caves, it is highly probable that it was much more common than the archaeological record indicates.

That some of the spinning traditions survived into the historic period among Plains societies is indicated by a short account written by Alphonso Wetmore as he crossed the plains on the Santa Fe Trail in 1828. This account documents Hispanic members of this caravan "spinning rope yarn out of the foretops of buffalo" (Lavender 1972:70). This report indicates that wool from the head and shoulders of the buffalo could be fashioned into a serviceable yarn or cordage. That the production of yarn or rope made of buffalo wool was not limited to Puebloan societies is demonstrated by the Kiowa and other Plains societies who used bison yarn for tying closed a number of different types of bags (Coverdale 2012, personal communication). With this being said, the spinning of bison wool and plant fibers, such as yucca, among Plains societies during the historic period appears to have been accomplished by hand and without the use of spindle whorls.

Possible evidence for spinning, albeit indirect, comes from artifacts generally referred to as spindle whorls recovered at prehistoric sites of the region. These items are generally circular, flat, and have been fashioned out of broken pottery sherds or local stone. These have been recovered at most Middle Ceramic period occupation sites throughout Oklahoma and Texas. Recently, five spindle whorls produced from broken sherds and recovered from Alibates Ruin 28 were examined as a part of this study. All of these specimens were on display at the Panhandle-Plains Historical Museum (Figure 2). Unfortunately, because these whorls were attached to a display board, catalog numbers and weights could not be recorded for these items. These items were assigned specimen numbers one to five (Table 1). These items ranged in diameter from about 41 mm to 69 mm. The thicknesses varied from 4.2 mm to 8.6 mm. There was also a great deal of variation in the diameter of spindle whorl holes, with the smallest being 2.8 mm and largest nearly 10.0 mm.

**Table 1 Metric Attributes for Spindle Whorls and Clay and Sandstone Discs in this Study**

Specimen #	Material	Diameter	Thickness	Hole Diameter	Weight
1	Clay	69.0 mm	5.2 to 6.0 mm	5.0 mm	-
2	Clay	62.4 to 64.4 mm	4.4 mm	3.1 mm	-
3	Clay	42.3 to 42.9 mm	4.2 mm	2.8 mm	-
4	Clay	37.4 to 40.9 mm	8.6 mm	9.2 to 9.9 mm	-
5	Clay	33.2 to 40.8 mm	4.0 mm	5.1 mm	-
28 A-3/M20	Clay	33.3 to 34.5 mm	5.0 to 5.6 mm	NA	8.6 g
28 A6-3/14	Sandstone	49.3 to 54.0 mm	13.2 to 14.7 mm	NA	52.8 g
28 B6-28/2	Sandstone	53.1 to 54.5 mm	13.3 to 13.6 mm	NA	55.5 g
28 A6-26/20	Sandstone	32.6 to 32.8 mm	15.9 to 16.2 mm	NA	20.0 g

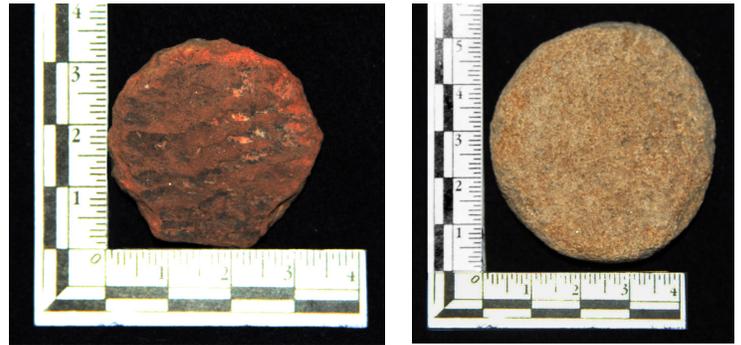
As noted above, these specimens were produced from broken sherds. Given the original diameter of the portion of the ceramic vessel from which they were made, some of these items were nearly flat, while others were notably concave. Although the outlines of these whorls were all roughly circular, some were quite symmetrical and others were not. The outlines of these specimens were produced by snapping the edges to form a circular shape. The more symmetrical whorls were further modified by grinding, perhaps with a sandstone pebble. Because these sherds were tempered with fine sand, the holes in these whorls were likely drilled quite easily. Experiments conducted as a part of this study indicated that holes can be drilled through a sherd 8 mm thick in a matter of a few minutes with an unhafted chipped stone drill. This was accomplished by drilling halfway through the sherd from one side, flipping the sherd over, and finishing the hole from the other side.



Figure 2 Ceramic Spindle Whorls Discussed in Text

Four additional artifacts from Alibates Ruin 28, which may or may not represent unfinished spindle whorls, were also examined (Table 1). These items included a single circular clay disc manufactured from a broken sherd and three sandstone discs. The clay disc was similar in all respects to the spindle whorls described above, but lacked a drilled hole. As such, while this specimen could represent a spindle whorl blank, it could also be a gaming piece or some other item. The sandstone discs examined were obviously shaped by grinding and also lacked holes. The latter specimens were much thicker and heavier than the clay spindle whorls discussed earlier. As such, these items may not

represent spindle whorl preforms. Nonetheless, they are included here for comparative purposes.



Clay and Sandstone Disc from Alibates Ruin 28

In closing, this brief study has examined spinning technologies as a means for producing cordage and yarns. Archaeological evidence from dry caves and rockshelters of the Southern High Plains suggest that spun yarns and cordage may have been widespread throughout the region during the prehistoric era. Possible evidence for spinning in the form of spindle whorls is widespread throughout the Southern High Plains during the Middle and Late Ceramic periods (A.D. 1250-1650). The types and sizes of spindle whorls examined in this study are likely representative of the range present in the region. The types present, if used for spinning, suggest that they were used for manufacturing small diameter yarn or cordage. The absence of large diameter and weight whorls suggest that the larger diameter cordage produced from coarse plant fibers present sites of the region were likely manufactured by hand and not with spindle whorls. The production of yarns and cordage among equestrian societies during the historic period is documented, but appears to have been less widespread than previously and did not include the use of spindle whorls. Although unknown, this apparent decrease in spinning may have been related to increased mobility, the lack of ceramic production or some other factor.

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SOUTHWESTERN FEDERATION OF  
ARCHEOLOGICAL SOCIETIES SYMPOSIUM

April 13th and 14th, 2012

Iraan Civic Center

Iraan, Texas

The Iraan Archeology Society (IAS) is hosting this year's SWFAS Symposium and other planned activities for this weekend, which we hope will be an "Old Fashioned Camp Meeting". Registration fee is \$10.00 per person.

Because Iraan is located so far south of the other member societies, we want to attempt to make it easier for everyone to arrive early and stay late by providing a place to stay the night before and the evening after the planned paper presentations on Saturday, April 14th.

The IAS will provide free tent camping and recreational vehicle parking on Friday, April 13th and Saturday April 14th in the Pecos County Park (located on west edge of Iraan). This camping is within 100 yards of the Iraan Civic Center where the symposium papers are to be presented. Electricity outlets are located on the curbside camping sites with many nearby water faucets within water hose distance. Two restrooms are located in the park (one of these has both women's and men's shower rooms). Those wishing to have full RV hookups can get a space in the Iraan City RV Park for only \$12.00 per night. A free dump station is also located in this city park which is only ¼ mile from the free camping area. Those not wishing to camp out can find motels in Iraan, Ozona, Rankin, McCamey and Fort Stockton (as well as some Bed & Breakfast facilities in or near Iraan). All of those out of town motels are from 25 to 60 miles away.

Because of a limited amount of open restaurants in town on weekends, the IAS will provide a free stew and cornbread and green chile supper (cooked by a real Chuck Wagon) the evening of Friday, April 13th for both campers and motel arrivals. This will take place in the Civic Center building starting at 5:00 PM until (?). No one should go hungry on the night of arrival.

For lunch on Saturday, April 14th complimentary homemade sandwiches, chips and drinks will be provided by IAS. This will be a good time to get involved with the Silent Auction activities and a visit to the Iraan Museum.

The evening meal on Saturday will again be prepared by the Chuck Wagon crew and will be paid for by donations from the participants. This activity will take place behind the Civic Center (and near the camping site).

Field trips are planned for mid-afternoon Saturday and early Sunday morning to nearby sites in Pecos County. The field trip Sunday will end early enough for everyone to return to your communities on Sunday afternoon.

A brief summary of the above discussed items:

Friday, April 13th – 12:00 noon until ? – Campout in County Park near Civic Center or get motel rooms. Meal prepared by Chuck Wagon is provided for all arrivals.

Saturday, April 14th – Symposium paper presentation 9:00 AM to 3:00 PM in Civic Center. Open Silent Auction, start registration and have coffee and donuts at 8:00 AM. Field trip to mortar hole and midden site 3:30 to 5:00 PM. Chuck Wagon cookout in park will follow.

Sunday, April 15th – 9:00 AM go to rock shelter 41PC23 near Iraan that was excavated by the University of Texas in the 1930's and found to be a major archeology site. Some very faint rock art is still located inside this very large shelter.



# PANHANDLE ARCHAEOLOGICAL SOCIETY

## Minutes of the February 15, 2012 Meeting

-President Donna Otto called the meeting to order at 7:05 pm at the Wildcat Bluff Nature Center. Twenty-six members and guests were in attendance.

-The next meeting of the PAS will be March 21, 2012 at 7:00 pm at the Wildcat Bluff Nature Center.

### PROGRAM

-Donna introduced the evening speaker, Teddy Lou Stickney. She has worked at over 100 rock art sites in Texas since 1989, including Rocky Dell in Oldham County. Her lecture included information about Rocky Dell, Chimney Rock, and sites in the Lower Pecos of Texas. She also provided information about Plains Indian art, primarily Kiowa and Cheyenne Ledger art, during the period of captivity at Fort Marion.

### BUSINESS MEETING

-The business meeting began at the conclusion of Teddy Lou's lecture.

-The minutes of January 18, 2012 required a correction: the field trip to Rocky Dell occurred on January 21st, not the 18th as recorded. The minutes were accepted with this correction.

-Jeff gave the treasurer's report for Lisa Jackson who was absent. The current operating balance is \$2661.49. The treasurer's report was accepted.

-Rolla submitted the Publication Committee report. The current balance is \$1842.05. Sales of the new publications have been slow. The publication report was accepted.

### OLD BUSINESS

-Donna will be working on updating the bylaws and plans to have a report for the next meeting.

-A motion was made to allow monies to be set aside to provide funding for out of area speakers and to allow the board to approve any monies spent for fuel and hotel costs. The motion was approved.

-Gerald Schultz spoke with Bob Wright about speaking at an upcoming PAS meeting. Bob stated he was interested, but would not commit to a date at this time.

-Jeff spoke with Waide Shaffer who is interested in conducting an open forum at a PAS meeting as to what historical and archaeological topics teachers and instructors should include in their history classes. Scott suggested that they look into the Teachers Guide that has been drafted by the Kansas State Historical Society.

-A list of possible field trips was mentioned including Box Canyon and an unrecorded site near Wellington, Texas. A formal reevaluation of the rock art at Rocky Dell was also suggested.

### NEW BUSINESS

-Scott brought up that the PAS newsletter needs articles and is interested in members making submissions.

-The Perryton Stone Age Fair will be held on April 28th from 10:00 am to 5:00 pm. The event is free and would be a great opportunity to see some excellent collections. Scott suggested that the PAS should have a table at the event to gain some new members and possibly sell some publications.

-The Lamar Elementary Science Fair will be held on May 18. Paul stated he would contact them and get details to present at the next PAS meeting for consideration.

-The meeting was adjourned at 8:50 pm.

## **Announcements, Updates, and Upcoming Events**

### **Panhandle Archaeological Society Monthly Meeting**

Wildcat Bluff Nature Center

2301 N. Soncy, Amarillo, Texas

March 21, 2012 at 7:00 pm

For more information visit the PAS website at:

<http://txpanhandlearchaeology.org/>

### **2012 Flint Hills Conference**

Hosted by Emporia State University, Emporia, Kansas

April 6 -7, 2012

For more information check

<http://www.emporia.edu/socanth/announcements/flint-hills-conference-2012.html>

### **48th Annual Meeting of the Southwest Federation of Archeological Societies Iran, Texas**

April 14th, 2012

To submit Papers or for more Information, Contact: Evans Turpin at: [evansturpin@yahoo.com](mailto:evansturpin@yahoo.com)

### **Society for American Archaeology Annual Meeting**

Memphis, Tennessee April 18 - 22, 2012

<http://www.saa.org/aboutthesociety/annualmeeting/tabid/138/default.aspx>

### **The 2nd Annual Perryton Stone Age Fair**

April 28, 2012 10:00 am - 5:00 pm

at the Museum of the Plains in Perryton, Texas

for additional information please visit the CAR website:

<http://www.coursonarchresearch.com/>