

**SHOOFLY CHAPTER
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Groundstone at Shoofly

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This paper examines groundstone excavated during the 1986 Arizona State University Field School expedition at Shoofly Village near Payson, Az. Because excavation continued after this paper was written, the data contained within it is not complete. However, patterns revealed in this brief survey could serve as clues for future excavations at Shoofly Village.

Groundstones are tools manufactured by grinding, pounding or pecking - the raw materials they are made from can not be prone to chipping, flaking or shattering. The types of groundstone found on Southwestern sites characteristically occur as manos, metates, mortars, pestles, rubbing stones, polishing stones, palettes, axes, mauls and shaft straightening tools. (See Appendix A for further discussion.)

Three questions are addressed in assessing the 1986 artifacts.

- I) What types of groundstone occur?
- II) Of what kind of materials is the groundstone made?
- III) Is the groundstone occurring on the site primarily in the core, on the periphery, or is it evenly distributed?

The reason for addressing these particular questions lies with R.C. Chapman (1977:372) who observed that two factors, 1) the availability of food (animal or vegetable) and 2) the availability of raw materials to acquire that food (catch or process it) serves as an indicator of a human population's

technical development.

I) Types of Groundstone

The groundstone recovered from Shoofly in 1986 was placed in the following typological categories:

1) One-hand Manos or Handstones. At Shoofly these stones generally occur as follows:

SHAPE	AVERAGE LENGTH	AVERAGE WIDTH/DIAMETER	AVERAGE DEPTH
Round	-----	7.46 cm	3.89 cm
Oval	8.2 cm	6.64 cm	3.08 cm
Disk	-----	8.32 cm	3.08 cm
Rectilinear	11.95 cm	5.55 cm	3.89 cm

2) Two-hand Manos. Larger versions of the One-hand mano and more frequently rectilinear.

- 3) Metates: a) basin
b) trough
c) slab

4) Others

These categories were chosen because the presence or absence of certain types of manos and metates and the types of materials they are manufactured from are considered good indicators of a population's technical expertise, its trading patterns (if any) and its dependence on foodstuffs gathered, foraged, or grown. In addition to grinding organic matter such as grain, bark, wild nuts, roots and seeds, manos and metates can be used to grind salt, clay, tempers, paints, slips, and other materials. Manos

can also be used as battering tools.

According to Nelson and Leblanc (1986:187), the traditional interpretation for the evolution of metate shape in the Southwest has been from basin to trough to slab. The basin was used to process small amounts of material, the trough for larger amounts, and the slab represented a specialized use of room space believed to have occurred in Puebloan times and was non-portable. Basically, they argue that a basin metate and a one-hand mano would be used to process small amounts of material, a trough or slab metate and two-hand mano to process larger amounts. Chapman (1977:423) agrees with this, writing that two-hand manos used with trough or slab metates are more efficient than one-hand manos used with basin metates. That efficiency could be measured not only in terms of the ability to process greater amounts of material, but also by reducing the amount of time and effort spent grinding.

II) MATERIALS

A multistage grinding design is the most efficient way to process corn or other grains. This means beginning the task of coarse grinding and crushing with a coarse mano and metate and as the process continues, using increasingly finer textures of mano and metate. K. Bartlett (1933:13) observed that the Puebloan manos and metates she studied corresponded to each other, being either fine, medium or coarse grained. On a site, the presence of

sets of manos and metates found in the same spatial and temporal area but manufactured of different types of materials could be evidence of a multistage grinding design.

Two important considerations when choosing the raw material from which groundstone is to be produced are 1) hardness and 2) texture. These affect the lifespan of the artifact and its ability to grind (not to mention how much of the stone itself ends up in your meal). Sometimes texture can be artificially introduced to a stone by pecking it with another stone (Chapman 1977:423).

At Shoofly the groundstone is usually composed of fine grained sandstone, coarse grained sandstone, basalt, or vesicular basalt (as per identification made by Arizona State University geologists). Simply stated, sandstone is of medium coarseness and somewhat friable, basalt is also of medium coarseness but is hard, and vesicular basalt is very coarse and hard.

III. Distribution

Finally, the distribution of groundstone types on a site may indicate specialized activity areas. If shaft straighteners and axes are found exclusively in one area while manos and metates are found exclusively in another, one could conclude that male- and female-oriented activities are taking place in specified

spots. Thus, a degree of societal influence could be predicted from the separation of activities associated with the groundstone.

With the questions stated at the beginning of this paper in mind, the data from Shoofly was collected and grouped in the following manner:

	MANOS		OTHERS	METATES			TOTAL
	one-hand	two-hand		basin	trough	slab	
fine grain sandstone	9	5	1 pestle 1 rubbing stone			1	17
coarse grn sandstone	3	17	1 palette		2	2	25
basalt	24	3	2 anvils 4 rubbing stones 2 polishing stns 1 pestle, 1 maul 1 palette	1			39
vesicular basalt	7	9	1 shaft strghter 1 anvil 1 rubbing stone	1	1	2	23
quartzite			1 maul				1
quartz			1 polishing stn				1
andesite			1 pestle				1
siltstone			1 polishing stn				1
TOTAL	43	34	21	2	3	5	108

Mano or metate fragments that could not be placed firmly within their sub-categories were not included within the data for this

study. Therefore, a total of 108 groundstones comprise the total data. Of these, 77 are manos, 10 are metates and 21 are "other" groundstones.

DISCUSSION

If the Shoofly inhabitants were using a multistage grinding process, one would expect to see the one-hand manos manufactured from fine materials and the two-hand manos from coarse materials. The data seem to support this possibility. Of the one-hand manos, 33 are composed of fine grained sandstone or basalt, 10 of coarse grained sandstone or vesicular basalt. Of the two-handed manos, 26 are composed of coarse grained sandstone or vesicular basalt, 8 of fine grained sandstone or basalt. Unfortunately, only 10 metates excavated could be identified with some degree of certainty as being basin, trough or slab. But, of the 10, seven trough and slab metates were composed of coarse grained sandstone and vesicular basalt, which would be expected if they were being used in the initial, coarse stages of the grinding process.

Regarding the distribution of the groundstone on the site, during the 1986 season the South Plaza area was intensively excavated with the groundstone recovered from eight units representing 19 levels and 21 loci. In the peripheral areas, groundstone from four units, 8 levels and 13 loci are represented. From the core, only two units, five levels and four

loci, and from outside the compound wall, one unit, one level and one locus. Intense excavation of any particular area will skew the data when attempting to look at site-wide distribution of a particular artifact type by virtue of the large number of artifacts that are recovered from one spot. In order to get a more meaningful idea of the distribution of artifacts, the 1986 data was combined with the data presented by M. Carroll (1985:21, 25) which includes material recovered in 1984 and 1985. The aggregate number of manos, metates and other groundstones (not broken down by type) were used to plot the distribution of these tools (see Appendix B) throughout the site.

Three major areas within Shoofly, the South Plaza, the Periphery, and the Core, are identified as follows (see also Appendix B):

- 1) South Plaza - units E89 N81, E92 N87, E93 N82, E93 N83, E94 N89, E95 N86, E97 N83, and E97 N85.
- 2) Periphery - units E49 N121, E59 N123, E89 N165, E117 N173, E123 N158, E129 N174, E178 N148.
- 3) Core - units E111 N125, E113 N124, E130 N125, and E134 N114.

The units within the above areas yielded the following artifacts:

- a) in the South Plaza, 39 manos, 4 metates, 1 shaft straightener, 2 anvils, 1 pestle, 2 polishing stones, 5 rubbing

stones, 1 palette, and 1 maul.

b) in the Periphery, 39 manos, 5 metates, 1 shaft straightener, 2 polishing stones, 2 rubbing stones, 3 palettes, and 1 maul.

c) in the Core, 18 manos, 4 metates, 1 anvil, 1 pestle, and 1 palette.

From the above information, it appears that groundstone is fairly evenly distributed throughout the site.

CONCLUSION

The types of groundstone occurring at Shoofly are primarily grinding implements (i.e. manos and metates). For the most part, the inhabitants obtained their materials from local sources, "the most commonly used material is basalt of various types, followed closely by sandstone. Both resources are easily secured in the area." (Gharrett and Gregory, 1984:3). And, the distribution of all types of groundstone is homogeneous throughout the excavated portions of the site.

It appears that we are looking at the remains of a group of people who practiced "cottage industry", manufacturing their own tools for their own use. It also appears that the type of social control as would be evidenced by the segregation of male- and female-oriented activities did not exist in terms of the entire compound.

APPENDIX A

Groundstone types can be broken down into subcategories such as the following:

- 1)manos - one hand - rectangular, circular, square
two hand - triangular, circular, loaf shaped
- 2)metates - basin - circular, oval
trough - full, 3/4, close ended

(list is incomplete).

Such fine delineations of these and other artifact types are possible, but are beyond the scope of this paper.

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