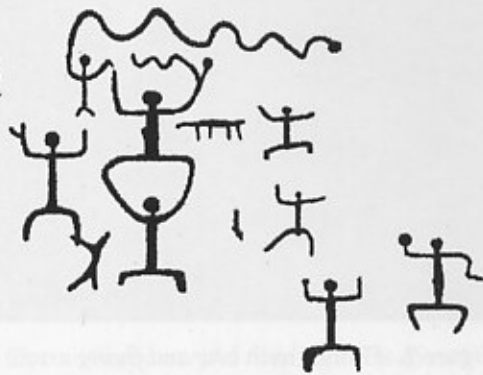


Hohokam Bola Petroglyphs in the South Mountains of Phoenix



JJ Golio and Mike Golio

The Gauchos of the Argentinean Pampas and the Inuits have shown the bola to be a very effective weapon. Bolas can easily be made from common materials. If leather were used to connect pouches of pebbles or naturally round stones, no remnants would remain to be found during site excavations. Fortunately, the Hohokam may have left their own record in petroglyphs depicting bola use. The panels show throwing techniques and game. By studying petroglyphs of bolas and comparing them with the archaeological record and ethnographic studies, much may be learned about this overlooked, but important weapon.

Before the rivers were dammed and the groundwater was pumped, lush river corridors and marshes laced the area now known as Phoenix, Arizona (Davis 2001). Waterfowl, mountain lions, deer, and bighorn sheep all thrived in the South Mountains which are at the confluence of the Salt and Gila Rivers on the south side of Phoenix. The Hohokam hunted the range from around 0 to A.D. 1450. Stone points from the arrows, spears, and atlatls are all that remain of their weapons. Bolas were probably used, but they were made primarily from wood, sinew, leather, fiber cord, and other materials that break down over time. With due consideration given for the occasional bad artist, braggart, or nut, petroglyphs may be a way to learn about Hohokam use of the bola.

While surveying for petroglyphs in the South Mountains during the 1980s (Golio and Snyder 1993), Golio found panels of hunting scenes featuring familiar weapons such as the bow and arrow and atlatl or spear (Golio and Golio 2004). Some of the petroglyphs also had features suggesting movement. In Figure 1, a flying arrow has recently left the hunter's bow. Damage to the panel prevents us from knowing the target. On the right side of

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Figure 1. Hunter with bow and flying arrow (South Mountains).



Figure 2. Trails of tracks leading up to back legs of deer. Hunter aiming bow and arrow upward at belly of deer on right side (South Mountains).

Figure 2, a hunter is aiming his bow and arrow upward at the belly of a deer. Two more anthropomorphs are on the left, but it is not clear what they are doing. All of the deer have a trail of tracks leading up to their hind legs. Another example of a petroglyph suggesting movement is shown in Figure 3. Light pecking on the inside and a thickened lower half give the circle a strong resemblance to a hole. A line shows the path the lizard would take to reach the hole.

Some of the South Mountain petroglyphs appear to be anthropomorphs twirling bolas. The bola is made of single or multiple weights



Figure 3. Light pecking inside and thickened lower half of circle creates illusion of hole. Line shows path lizard takes to reach hole (South Mountains).

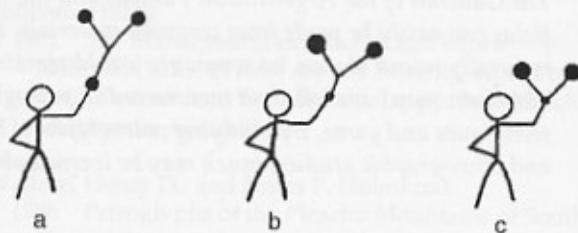


Figure 4. Anthropomorph in typical bola stance using different methods to twirl bola: (a) hold by one weight; (b) hold by handle attached to center of connecting material; (c) hold in center of connecting material.

connected by fiber cord, sinew, or a leather strip. It is held by one of the weights (Figure 4a), a handle from the center of the connecting material (Figure 4b), or directly in the center of the connecting material (Figure 4c). Any weights not held are twirled in a horizontal plane over the head. When thrown correctly, the weights stay separate and twirl horizontally. As long as some part of the bola's connecting material hits the target, the rest wraps around it. The bola does not have to be thrown as accurately as an arrow, spear, or atlatl. It is also unlikely to break on impact, or cause damage to the pelt or meat.

If ephemeral materials such as wood, hide, or pouches of pebbles were used for

bola weights, nothing would remain for the archaeological record. Hohokam artifacts that could have been used for bola weights are stone balls, stone rings, plummets, and fired clay blobs. Worked stone balls are generally labeled as game balls even when they aren't found in ball courts, while naturally round stones are generally ignored during excavations. Peru's 1984 New River surface collection report (Peru 1984) noted two naturally round stones made of very hard, dense material. Both stones were approximately 6 cm in diameter. They were found less than a meter apart. This suggested to him the possibility that they were bola stones. Peru's perceptive observation was probably due to his extensive knowledge of lithics and his previous familiarity with bolas.

Figures 5, 6, and 7 are close-ups from the top, center, and bottom of a single panel. In the center of Figure 5, two anthropomorphs are standing with their legs apart, one hand on a hip, and the other arm upraised. In order to avoid repetitiousness, this position will be referred to as a typical bola stance. The anthropomorph on the left may be twirling a two-weight bola by holding a handle as in Figure 4b or by holding one of the weights as in Figure 4a. A tilt to the bola creates the illusion of a horizontal twirl. The anthropomorph on the right appears to be holding the center of the bola's connecting material as in Figure 4c. Both bolas have bulges at the ends for weights.

Figure 6 shows an anthropomorph in typical bola stance twirling a multiple weight bola in a manner similar to Figure 4a or 4b. Four weights are at the top of the tilted bola. The wavy line crossing where the connecting material from the four weights comes together may be two more weights or an attempt to enhance the twirling motion already suggested by the tilt. Seven-weight bolas aren't exceptional; the Inuit, Argentinean Gauchos, and Pampas Aborigines had anywhere from one to eight or even more weights on their



Figure 5. Two anthropomorphs twirling bolas (South Mountains).

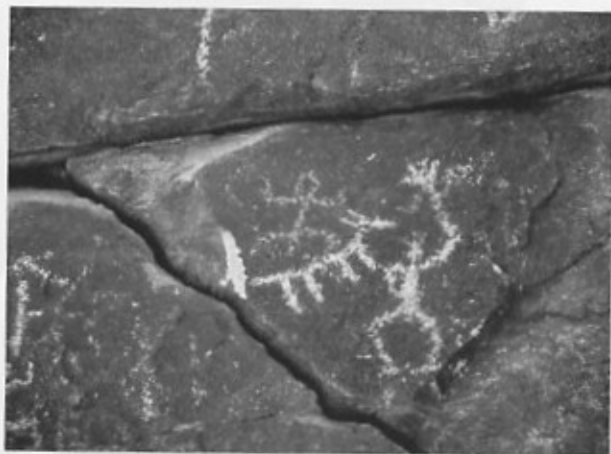


Figure 6. Anthropomorph twirling multiple-weight bola (South Mountains).



Figure 7. Anthropomorph twirling bola or sling (South Mountains).



Figure 8. Bubble-bodied anthropomorph twirling bola (Palo Verde Hills).

bolas. The number varied depending on the target and user.

On the bottom left of Figure 7, the anthropomorph is in a typical bola stance and has a V at the end of his upraised arm. Although there is a strong resemblance to the anthropomorphs with bolas in Figure 5, this anthropomorph could also be twirling a sling—with the V representing a pouch and the circle with the wavy line being a flying rock. The sling is an effective primitive weapon similar to the bola in that it is easy to make and use, but made from ephemeral materials unlikely to show up in the archaeological record. It is also twirled in a manner similar to the bola. To the right of the anthropomorph, the U-shaped object with circles at each end may be a two-weight bola.

Figure 8 is from Palo Verde Hills west of Phoenix. It shows a bubble-bodied anthropomorph twirling a bola over its head. Bulges for weights are at each end of the V. Another possible bola scene from Palo Verde Hills covers three contiguous faces of a boulder. An anthropomorph holds a bola on one side face,



Figure 9. Three-weight bola and two quadrupeds (Horseshoe Lake).



Figure 10. Hourglass style anthropomorph twirling two-weight bola by handle (South Mountains).

a three-weight bola is on the other side face, and an abstract zigzag line crosses the center face connecting the two side faces. Figure 9, from Horseshoe Lake north of Phoenix, shows a panel with two quadrupeds and a three-weight bola similar to the one from Palo Verde Hills.

Plentiful game in close association with an hourglass style anthropomorph suggests a hunting scene for the panel in Figure 10. A line from the anthropomorph's hand is attached to the center of two connected spirals. Slight bulges are at the end of each spiral. The spiral may be an attempt to depict a horizontal twirl on a vertical plane. In this case, the anthropomorph appears to be holding the handle of a bola with each spiral representing a twirling



Figure 11. Male throwing two-weight bola into flock of pelicans (South Mountains).



Figure 12. Anthropomorph twirling one-weight bola (Horseshoe Lake).



Figure 13. a. Possible atlatl shaft next to anthropomorph twirling two-weight bola by handle (Spur Cross). b. Closeup.

weight. Bighorn sheep and deer are together in this panel. The hunting panels in the South Mountains often feature both animals.

In Figure 11, a spiral element has bulges at each end. The outside bulge is near the hand of a male anthropomorph. This spiral may represent the twirl of a two-weight bola as it flies into a flock of pelicans. An anthropomorph is holding a curved line connected to a circle in Figure 12 from Horseshoe Lake north of Phoenix. The curved line may be an attempt to show the twirl of a one-weight bola. Figure 13 is from Spur Cross Ranch, west of Horseshoe Lake. On the far right, a line from the anthropomorph's upraised hand is attached to the center of a spiral with bulges at each end. This anthropomorph may be twirling a two-weight bola by its handle. A possible atlatl shaft is to the left of the anthropomorph with the bola. The two weapons featured on the same panel may indicate that both were in use at the same time.



Figure 14. Male holding center of connecting material to twirl two-weight bola (South Mountains).

Figure 14 shows a male anthropomorph holding the center of a wavy line that has equal-sized bulges at each end. A wavy line may have been another way to depict the twirl of a bola. Another interpretation for this panel is that the person is holding a rattlesnake,



Figure 15. Pipette next to anthropomorphs with bolas above upraised arms (Palo Verde Hills).



Figure 16. Anthropomorphs with bulges at end of upraised arm (South Mountains).

but there are many more obvious rattlesnake petroglyphs that have triangular heads and lines or dots for rattles. Unfortunately, this petroglyph is in a highly vandalized area where numerous panels are missing or damaged.



Figure 17. Four anthropomorphs on left side with bulges at end of upraised arm (South Mountains).

Figure 15 is from Palo Verde Hills. At the center of the bottom, two connected circles above one of the anthropomorph's upraised arms may be a recently thrown two-weight bola. Next to it, another anthropomorph is beneath a meandering line that is attached to the center of two connected spirals with bulges at each end. Golio et al.'s pipette study (Golio et al. 1995) found several pipette panels featuring weapons. One panel, from Cat Mountain near Tucson, features an arrow from a bow piercing a pipette. Hands are pecked near the bow and large game is on both sides of the pipette.

Each anthropomorph in Figure 16 is in typical bola stance and has a bulge at the end of the upraised arm. The four anthropomorphs on the left side of Figure 17 have typical bola stances and bulges at the ends of their upraised arms similar to the ones in Figure 16. These anthropomorphs may be twirling a one-weight bola. Across from both of these panels are petroglyphs of large game. The upraised bulge could be many things including a club, fist, rattle, rock, ball, bullroarer, or sling.

Figures 1, 18, and 19 are from a large petroglyph panel composed of hunting motifs. A hunter is aiming his bow at two animals in the center of Figure 18. Above the animals, an anthropomorph is holding a vertical line



Figure 18. Hunter with bow in center and anthropomorph with bola or sling on upper right (South Mountains).



Figure 19. Anthropomorph with atlatl or spear on upper left and anthropomorph with bola or sling in center (South Mountains).

topped by a circle. It is tilted toward a wavy horizontal line that also ends in a circle. The circle/horizontal wavy line element may be an attempt to show what happens when the anthropomorph throws the circle/vertical line element. With respect to the anthropomorph, the circle/horizontal wavy line is at the correct height for a thrown bola and it resembles a bola's flying weight followed by connecting material. This may also be a hunter holding a sling with the horizontal wavy line representing the flight of a recently slung rock. It is somewhat similar to the circle with the wavy line featured in Figure 7.

The anthropomorph on the upper left side of Figure 19 has a possible spear or atlatl. In the center, another anthropomorph is holding

a round object in his upraised arm. Close examination reveals that what initially looks like a large ball is actually a tightly wound spiral which may represent a twirling bola or sling. If it is a bola or sling, then its appearance with the bow and arrow and spear or atlatl indicates that these weapons were probably in use at the same time.

A large hunting panel is drawn in Figure 20. Game animals are on the left while hunters are on the right. One anthropomorph has a bulge and three others have a V at the end of upraised arms. A short wavy line is connected to one of the Vs. Another anthropomorph has a wavy line ending in a bulge attached to his upraised arm. The Vs and bulges may represent bolas or slings with the wavy lines showing their flight.



Figure 20. Complex hunting panel (South Mountains)

CONCLUSION

Stone points sprinkled throughout the South Mountain area attest to prehistoric use of the spear, atlatl, and bow and arrow. If bolas or slings were used, scattered stones may be all that remain. The main attributes of a hunter, bow and arrow, spear, and atlatl are two-dimensional which makes them easy to depict and recognize on a two-dimensional surface such as the flat face of a rock. A vertical hunter twirling a bola in a horizontal plane is very three-dimensional and difficult to project onto a flat surface. Spirals and wavy, tilted, or curved lines may have had different meanings for different contexts, one of which could have been to represent the twirl of a bola or sling. Other ways may also have been employed to represent motion and/or a third dimension. By studying petroglyphs and inspecting surface collections and excavated material for possible weights, much can be learned about Hohokam use of the bola.

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