

GAME PIECES OF KNUCKLEBONES: EVIDENCE ABOUT THE CONTINUATION OF LOCAL GAMES IN KHORASAN, IRAN

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Ethnoarchaeological studies in today's rural societies may reveal truths which are rooted in the history of earlier millennia. These facts and traditions constitute the cultural identity of a people which has maintained its existence over thousands of years. Bone pieces uncovered in archaeological contexts suggest that the game called "Bojul" which is still played in rural Khorasan (northeastern Iran) may be traced back centuries. Knucklebones, objects crafted from a specific ankle bone (the astragalus) of particular species of artiodactyla (cattle, goats, sheep, deer, and others), are evident in the archaeological record from as early

as the Neolithic in the Near East and have been found in many other locations around the world. Many historical and ethnographic parallels support the identification of the majority of these objects as gaming pieces. The number of knucklebones found in single deposits may be substantial, sometimes reaching the hundreds. Large deposits of knucklebones are found not only in domestic contexts, but also in contexts interpreted as having public, cultic, or funerary functions. The present brief communication discusses the natural and cultural context of this phenomenon in the region of Khorasan, the vast territory between the eastern terminus of the Alborz mountains and western end of the Hindu Kush range [Fig.1].

Fig. 1. The location of the study region: Khorasan in northeastern Iran.



The astragalus is a bone located at the lower (distal) end of the tibia where it connects to the tarsus. This skeletal feature in artiodactyls allows for the great flexibility of the ankle (metatarsus), something important for animals that run over uneven terrain [Fig. 3, next page]. Artiodactyls, or toed ungulates, include species such as cattle, sheep, goats, gazelle, deer, and pigs. The majority of astragali which have been found in archaeological contexts seem to come from domesticated animals (Gilmour 1997, p. 168). "Bojul" is the name given to one of the seven pieces of goat and sheep ankle bones [Fig. 2]. These bone pieces may also be called



Fig. 2. Knucklebones (Bojul) found in the Khorasan sites. Photo and drawings by authors.

called Qab or Ashiq. They are roughly similar to a cube, averaging in size 15-18 (L) x 19-23 (W) x 25-38 (H) mm. with four faces and notch and projection on different surfaces.

Given the enormous geo-temporal range of the knucklebone culture, it is not surprising that interpretations of how knucklebones functioned are varied and often widely divergent. Often these interpretations are influenced primarily by evidence from the largest collections of knucklebones. They are considered to have been used: as game pieces (Piccione 1980, p. 1; Decker 1992, pp. 128-31; Dandoy 2006, p. 131); in ritual activity (Minniti and Peyronel 2005; Lapp 1964; Gilmour 1997, p. 173); as tools (Koerper and Whitney-Desautels 1999, p. 74; Finklestein et al. 2006, pp. 395-96); and as a medium of exchange or tokens for the exchange of certain goods (Holmgren 2002, p. 212; Sasson 2007, p. 179). While most archaeological contexts do not offer any obvious evidence for the function of small collections of knucklebones, there is abundant historical and ethnographic information documenting a long tradition of using knucklebones as game pieces in cultures all over the world (Dandoy 2006, p. 131).

The shape of an unmodified astragalus is roughly rectilinear with the cranial and caudal ends rounded. Without any modifications, an astragalus is naturally suited to function as a four-sided die. Because of irregularities in the shapes of each side of the bone, the probabilities of any particular side landing upward are not equal. Thus, differential probability is reflected

in the rules of many of the games using knucklebones as dice, where sides are assigned particular values corresponding to their probability of landing upward (Koerper 2008, p. 11).

Although people could use astragali as knucklebones without any modifications, they frequently applied a wide variety of modifications which can be divided into two main categories. Both types of modifications have important implications when interpreting knucklebones found in archaeological contexts. Some alterations are not intentional such as the smoothing of prominent features of the bones due to repeated use and handling (Minniti and Peyronel 2005, p. 8).

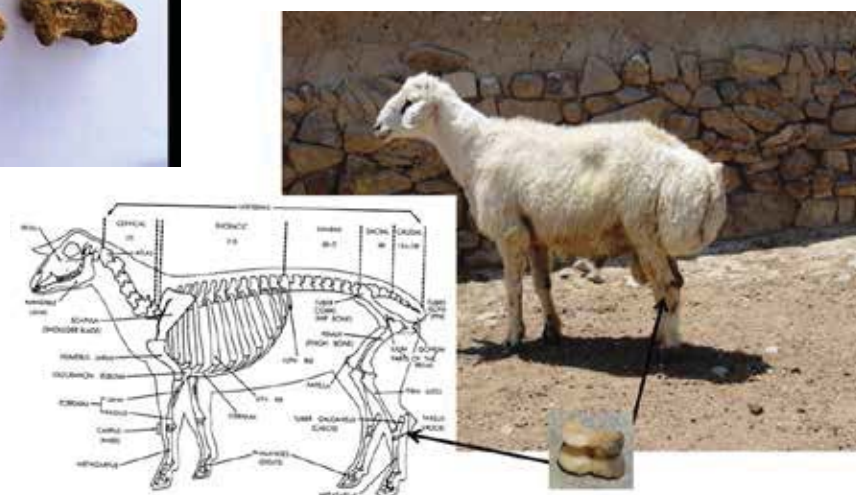


Fig. 3. Anatomy of a sheep showing the location of the knucklebone in its lower rear leg.

Intentional modifications may involve polishing or flattening of the lateral and medial sides (evidently to improve their function as dice) (Gilmour 1997, p. 171); scoring (Ibid.); drilling (Holmgren 2002, p. 213); burning; incising (Bar-Oz 2001, p. 215). Some are filled with metals to alter their weighting. In addition, there are skeuomorphs, fabrications of knucklebones from a variety of materials. An example, currently held at the Louvre, is a bronze knucklebone replica weight with a handle, weighing approximately ninety-three kilograms. This skeuomorph was recovered from the acropolis at Susa (Iran) and dates to the sixth century BCE (Perrot 2013, p. 362).

Knucklebones as game pieces in Khorasan

Excavations and archaeological surveys in the prehistoric and historical period sites of Khorasan frequently uncover astragali both as chance finds and in documentable contexts such as residences, pits, and burials (Basafa, 2009, 2011, 2013, 2014) [Fig. 4]. There are several reasons for arguing that the astragali so discovered were primarily used as knucklebones in games:



Fig. 4. Knucklebones in excavations of archaeological sites in Khorasan. Photos by authors.

- The astragali were found separately from other animal bone fragments in situ. Unlike other pieces of bone, the astragali show little evidence of burning.
- Since it is not easy to separate this bone from the joint of the leg, it seems likely that the separation of the astragalus was done for a particular application.
- The astragali show intentional modifications.
- Abrasion and corrosion on various aspects of these pieces suggests their continuous use.
- Ethnoarchaeological reports from villages of Khorasan attest to the use of goat and sheep astragali as “dice” in group games today, each with its own rules [Fig. 5]. Today, the game of Bojul is quite common, played by children and even adults in many villages of Khorasan. Each of the four faces of a knucklebone has a name: Chik, Pik, Khar (donkey) and Asb (horse) [Fig. 6]. The local residents acknowledged the long history of such games.

We conclude then that the Bojul (knucklebone) game in Khorasan may date to remote antiquity in that region. The continuation of such a tradition indicates the importance of research into societies and today’s context to interpret the evidence from past.

Fig. 5. Children playing the traditional Bojul game in the villages of Khorasan. Photos by authors.

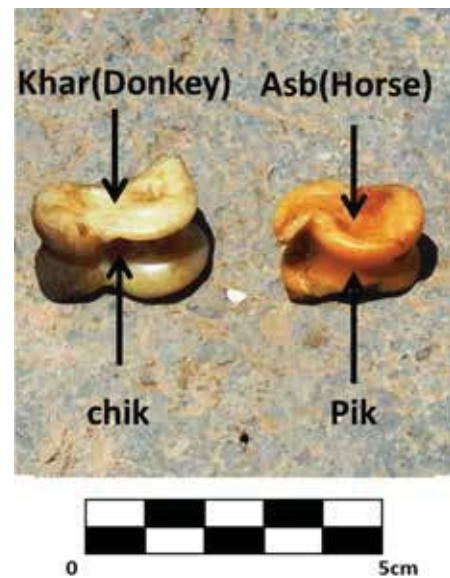


Fig. 6. Names of the four faces of Bojul. Photo by authors.

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