

A TAXONOMIC TOUR OF COGGED STONE TYPES

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This report surveys the broad range of coggled stone morphological diversity and provides a simple branching diagram to help categorize the several types of this artifact class. Discoidals of the kinds that were occasionally associated with coggled stones are also given mention.

No coastal southern California artifact receives as much attention from both professional and avocational archaeologists as the early Holocene coggled stone (Koerper and Mason 1998). The scientific/romantic appeal of the genre develops from an amalgam of historic, geographic, and aesthetic factors and especially from enigmas surrounding their functions and meanings.

The first step in efforts to lift “thought prints” from these mysterious crafted stones, and the major purpose of this study, is to set out a formal description of the class along with a quick set of taxonomic operations to identify basic categories and specific types of coggled stones. A branching diagram is provided (Figure 1) as a guide to those operations, and descriptive information and illustrations of coggled stones will further familiarize the reader with each type. This report also provides notes regarding discoidals.

THE COGGED STONE CLASS AND ITS VARIABILITY

The major diagnostics of the coggled stone class are certain vertical design elements, variable in number, fashioned along the lateral surfaces encircling the artifacts. The crafted accouterments are either elevations (“cog teeth,” “point projections,” and “clover leaves”) or depressions that, respectively, protrude from or intrude into the circumferential lateral panel.

We have grouped most coggled stones into two divisions, “right coggled stones” (Figures 2, 3a-b, 4 and 5) and “oblique coggled stones” (Figure 3c-e), depending on whether or not the opposite faces are identical in size (Figure 1). A third unnamed division serves as a kind of catchall for those oddities whose disparate forms at least vaguely recall clover leaves, in part because their projections number three to four for single specimens (Figure 6).

A right coggled stone is one whose faces are more or less identical in size. Thus, a

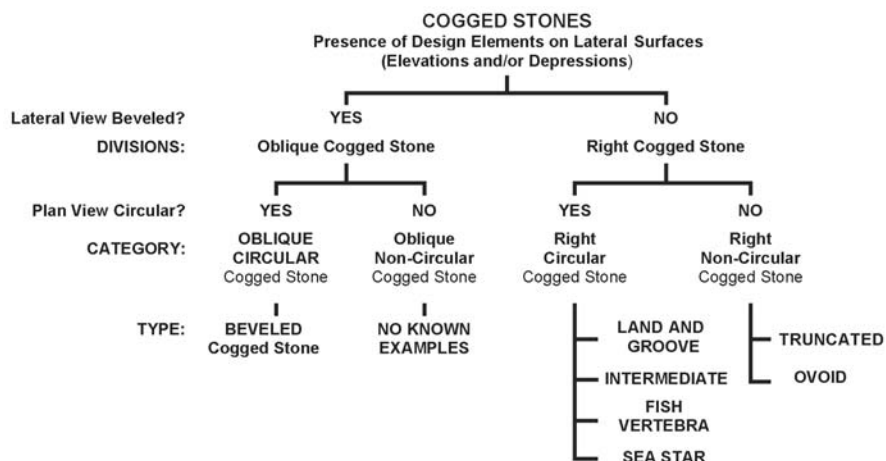
right coggled stone (see Figures 2, 3a-b, 4 and 5) is one whose lateral aspect is more or less perpendicular to the planes of the artifact’s faces, but an oblique specimen lacks that perpendicularity. With oblique examples, the dimensions of opposite faces are different enough so that the lateral panels together with their design elements must angle noticeably outward from the edges of the smaller face to the edges of the larger face (Figure 3c-e). Some scholars have used the term “beveled” to help describe oblique coggled stones (e.g., Treganza and Bierman 1958:66). We adopt that term as a name at the type level (Figure 1).

Top and bottom surfaces of most coggled stones are round. We know of no noncircular specimen that could usefully be placed in an oblique category.

Coggled stones that are circular in plan view occur in two basic morphologies that are easily distinguished from one another in side view. They constitute two categories: the “right circular coggled stone” and the “oblique circular coggled stone.”

Igneous rock (vesicular basalt, basalt, andesite, dacite, dolerite, pumice, and granite), often highly weathered, provided the preferred material to fashion coggled stones, although sedimentary and

Figure 1: Coggled stone typology chart.



metamorphic stone accounts for a not-insignificant proportion of the manufacturing materials. The origins for most of the igneous materials are probably the Santa Ana Mountains, especially the El Modena area (east Orange), and the southern San Joaquin Hills (McKinney 1968:42; Salls 1980:57).

Absent any documentation of historic connections between coastal southern California cogged stones and certain geometric sandstone artifacts found in Chile (Llagostera 1979:318-319) and certain artifacts known from the Northwest Coast culture area (e.g., Stewart 1973:85), we propose that the class name, "cogged stone," be exclusive to the regional phenomenon discussed herein.

Another class of artifact, the early Holocene discoidal (Figure 7), receives mention in this report, particularly since these discoidals hold some similarities with cogged stones, with which they occasionally share ritual venues (Koerper et al. 2006). They possess either right circular or oblique circular shapes but lack the aforesaid elevations and/or depressions, and their lithic materials fall generally within the range of stone noted above for cogged stones.

THE SEVERAL COGGED STONE CATEGORIES AND TYPES

Right Circular Cogged Stones

When a cogged stone lacks the beveled design and is circular in plan view, it falls into the right circular category (Figures 1, 2, and 3a-b). Eberhart (1961:362-363) defined several types that are subsumed comfortably under the right circular category. His Land-and-Groove type (Figure 2a-c) has grooves which through their lengths are either of equal depth or are deeper at the ends than at the center point along the lengths (Eberhart 1961:362 see also Salls 1980). In contrast, with the Fish Vertebra type (Figure 2d-e), cogs are produced when hemispherical indentations are made around the lateral surface of the artifact. These indentations do not break obviously into either top or bottom surfaces, and consequently in plan view no distinctive cog-like projections are present (cf. Eberhart 1961:362).

Eberhart also described cogged stones sharing attributes of both Land-and-Groove and Fish Vertebra types, which he called the "Intermediate" type. Figure 2f illustrates one such example from a Topanga Culture complex (Treganza and Bierman 1958:85). The indentations or grooves around the edges are deepest at their centers, but they break into the surfaces so that "cogs" are obvious when the artifact is viewed from either top or bottom (Eberhart 1961:363). Some Intermediates would more closely resemble the Fish Vertebra type, others the Land-and-Groove type. Eberhart unnecessarily split the Intermediates into two types, ones with a perforation through the middle and ones without.

Underbrink (2002:38-40, 45) designated a new type, the "Sea Star" (Figures 1 and 3a-b). The name reflects the artifact's resemblance to a starfish (see Herring 1967:41; McKinney 1968:48, 49). Rather than having typical cogs, the type has "point projections," currently known

to number from four to eight. In almost all cases, the mass of a projection is greater than the mass of a cog tooth for other types of cogged stones.

Oblique Circular Cogged Stones

When a cogged stone has a beveled design and is circular in plan view, it falls into the oblique circular category, and more specifically, at the type level, it is a "Beveled Cogged Stone" (Figures 1 and 3c-e). Cog width sometimes expands from the smaller surface to the larger surface. It is on the upper and/or lower surfaces of Beveled Cogged Stones that one is most likely to encounter distinct concavities. Surfaces might also be more or less flat.

Eberhart's scheme gives no recognition to Beveled Cogged Stones. McKinney used two terms, "jelly mold" and "summer squash," to describe and label oblique circular cogged stones. Parenthetically, "beveled" is a term that preceded "jelly mold" and "summer squash" (e.g., Treganza and Bierman 1958:66), and it is suitably descriptive since it refers to an "inclination that one line or surface makes with another when not at right angles" (*Random House Webster's Unabridged Dictionary* 1998). Besides, "jelly mold" and "summer squash" are somewhat arcane in modern parlance. Parenthetically, "jello mold" has crept into the lexicon.

Underbrink (2002:35) had once considered the Beveled Cogged Stone as a subtype of Eberhart's Land-and-Groove type. Also, following Chace (1965:12), Underbrink (2002:34, 36) had posited a "cup" subtype, based on a very deep concavity at the larger surface of what is a Beveled Cogged Stone type (see Figure 3d). The philosophy of this study is to avoid such splitting. Accordingly, lower-tier observations for all cogged stones, such as numbers of elevations and/or depressions or the presence/absence of pits, perforations, concavities, or convexities on top and/or bottom surfaces, would only supply additional description to further characterize any cogged stone type. Following a rule of parsimony, these various design elements noted immediately above are not employed to generate subtypes. The various lower-tier observations, if commingled with the types offered here, provide too many permutations and would generate a Pandora's box of subtypes, a splitter's dream but a lumpster's nightmare.

Right Non-Circular Cogged Stones

When a cogged stone lacks a beveled design and is not clearly circular in plan view, it falls into the right non-circular category. We are presently unfamiliar with any specimens that would warrant an "oblique non-circular" designation (Figure 1). Only the smallest number of cogged stones might be subsumed under the "right non-circular" rubric. These are scarce artifacts for which we propose the following types: "Truncated" and "Ovoid."

Truncated cogged stones are those whose circularity is broken by a flat to slightly curved edge element. The example of Figure 4a looks as if it might have been a Land-and-Groove type that had broken and was subsequently reworked. A somewhat similar object (Figure 4b) from

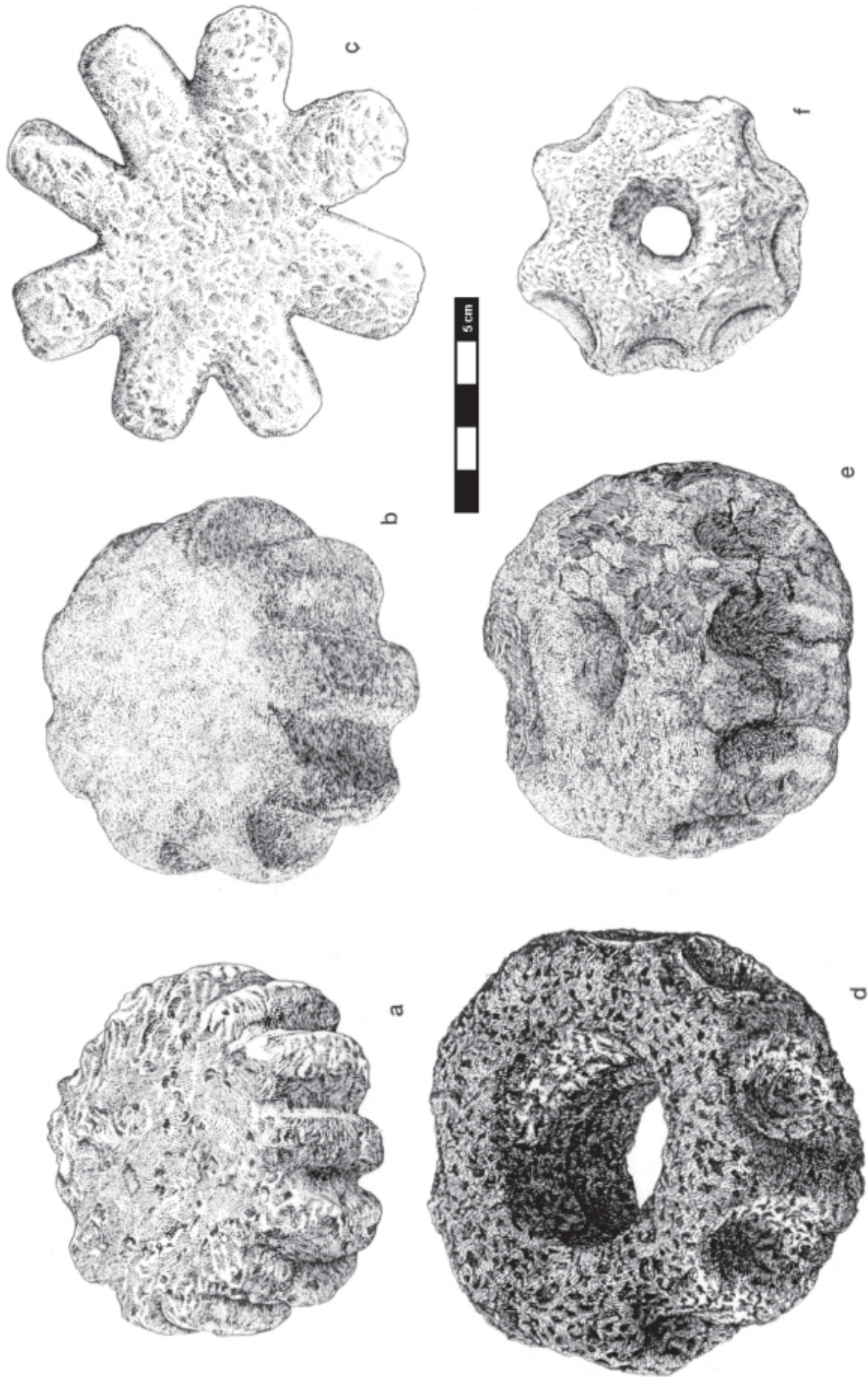


Figure 2: Cogged stone types. (a-c) Land-and-Groove; (d-e) Fish Vertebra; (f) Intermediate.

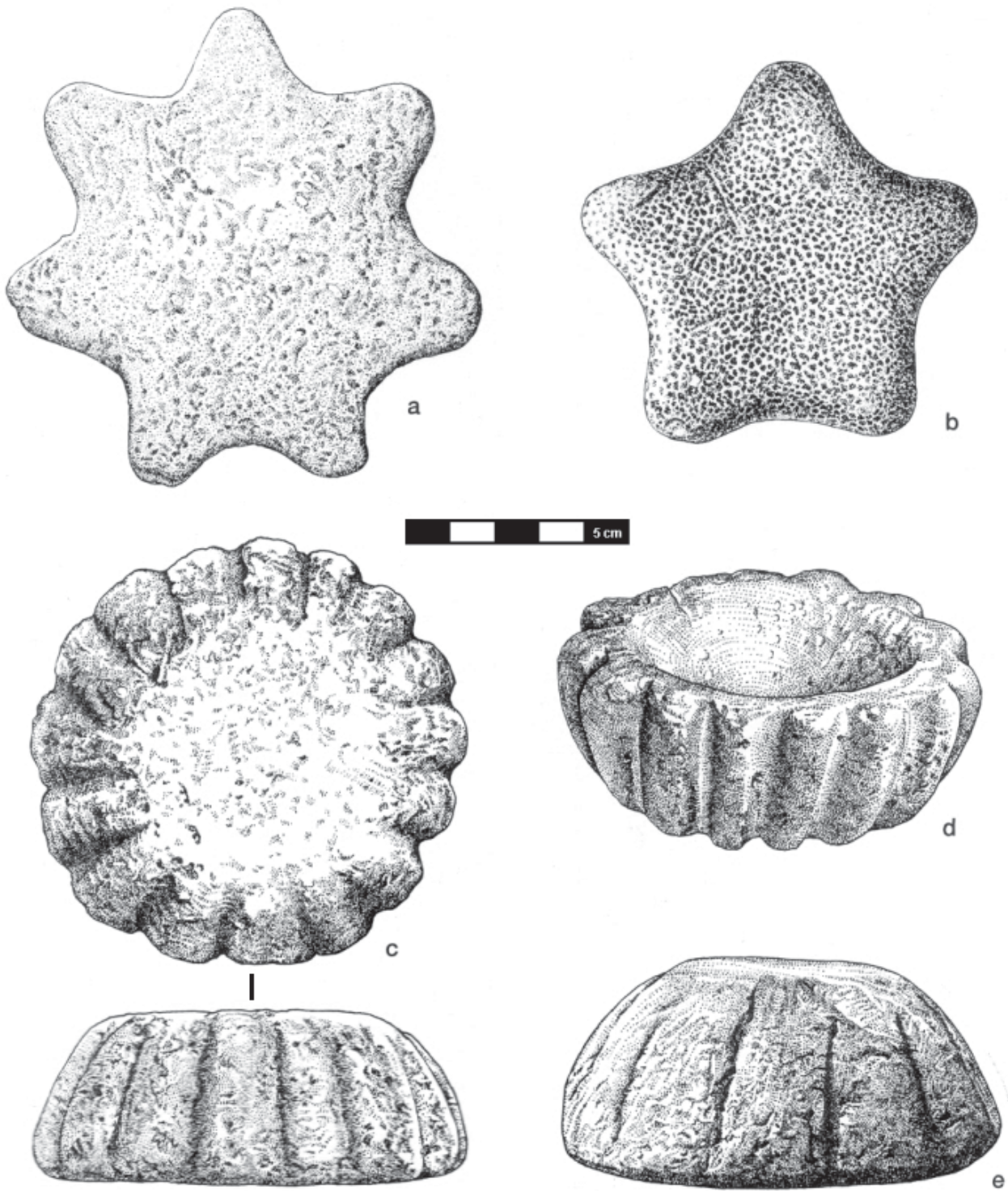


Figure 3: Cogged stone types. (a-b) Sea Star; (c-e) Beveled.

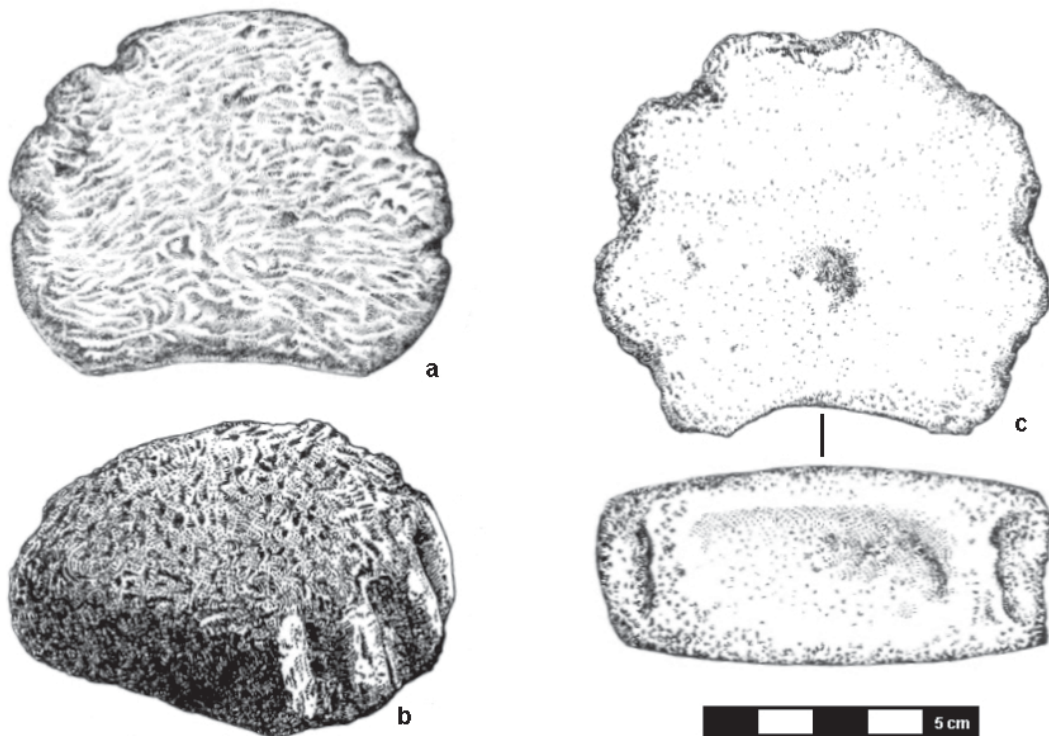
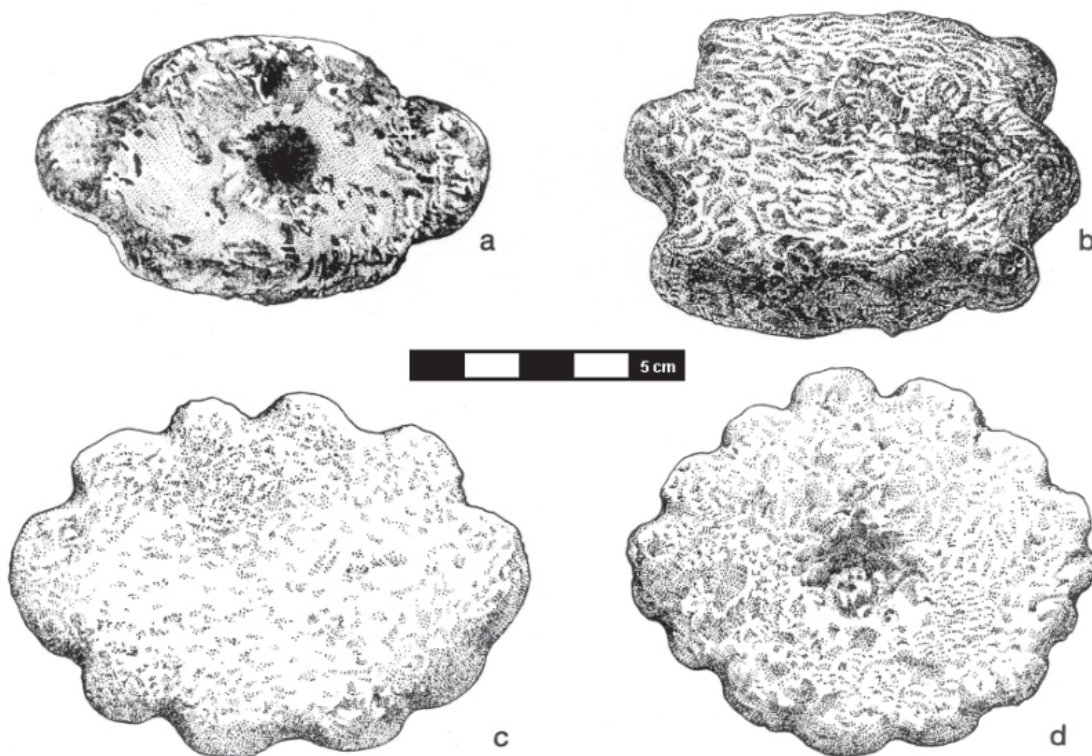


Figure 4:
Truncated cogged stones.

Figure 5:
Ovoid cogged stones.



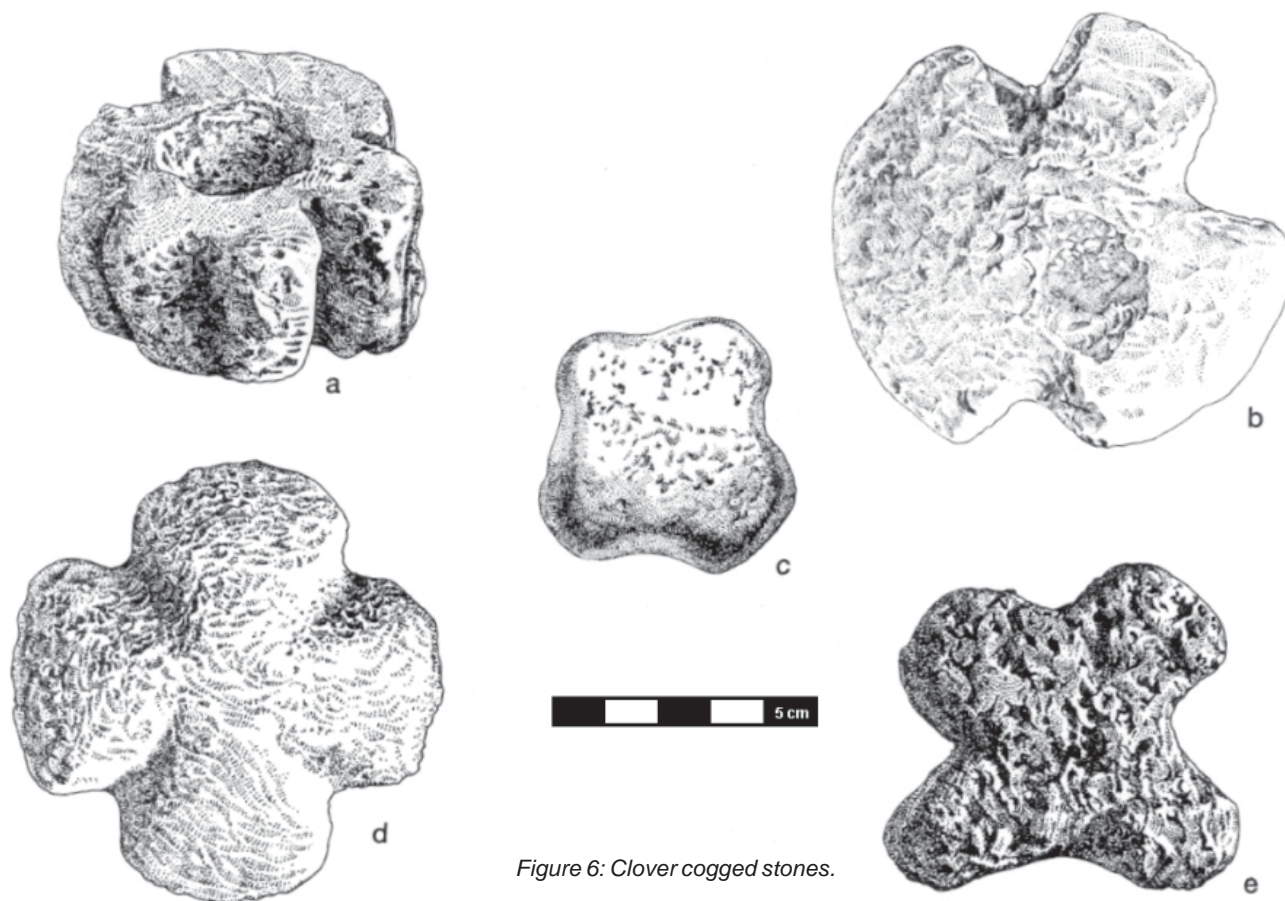


Figure 6: Clover cogged stones.

LAN-283 was discussed in detail by Roger Desautels (1968; see also Butler 1974:65) who described the red sandstone artifact as “circular in plan, but one segment has been removed forming a platform or flat edge.” A Truncated specimen found on the surface of ORA-83 (Figure 4c) was first pictured in MuZoz (1975:23), where it is described as an example of Eberhart’s “intermediate imperforate” type. One senses a

broken Intermediate subsequently reconfigured into a Truncated cogged stone. The broken edge is slightly curved, and it exhibits a crafted horizontal depression.

The four ovoids pictured in Figure 5 were all found at ORA-83, the Cogged Stone Site at Bolsa Chica Mesa. The Ovoid of Figure 5b was first

Figure 7: Discoidals. (a) Early Holocene Beveled Discoidal; (b) Early Holocene Straight Discoidal.



illustrated in Koerper and Mason (1998:Figure 5a).¹ That of Figure 5a (see Desautels 1986:cover, 150) is especially unusual for displaying but two cogs.

The Clover Type

There are certain oddities characterized by a low number of cogs, some amount of asymmetry, and superficial resemblance to clover leaves (Figures 6a-e). They constitute the “Clover” type. They do not key out with sufficient clarity by application of the set of operations presented in Figure 1.

Among the stone cogs from the Tank Site, Treganza and Malamud (1950:147-148, Plate 24j) reported a “stone cog,” or cogged stone, having “four shallow grooves running down the sides. When viewed from the top, it resembles a modified four-leaf clover” (Figure 6c). The asymmetric oddity of Figure 6a incorporates elements reminiscent of the Land-and-Groove, Fish Vertebra, and Intermediate types. This strange hybrid from ORA-83 (Plante collection) had previously been described as having a four-leaf clover design (McKinney 1968:44). The very asymmetric three-leaf clover of Figure 6b was previously published (e.g., Herring 1968:16). The unusual artifact illustrated in Figure 6e appears as a better mimic of a four-leaf clover than the similar artifact from the Tank Site; it was found at ORA-119-A. Perhaps the one closest in style to a four-leaf clover is the find from ORA-83, illustrated in Figure 6d.

EARLY HOLOCENE DISCOIDALS

Discoidals are disk-shaped objects with lateral surfaces that are flat to curved and that are devoid of elevated or indented accouterments. Malcolm Farmer offered a succinct general description of discoidals. He wrote:

A discoidal is a round stone usually a third to a quarter as thick as its diameter. Such stones are carefully shaped and may have flat, convex or concave surfaces and a slightly convex to flat edge. The edge is occasionally beveled. These objects are usually very close to a perfect circle in form, and occasionally they are perforated at the center [Farmer 1953:177].²

Farmer (1953:177) was apparently unaware of those rare discoidals with concave edges (lateral surfaces). Farmer wisely noted that “the symmetry and careful shaping of the stones suggest more than utilitarian usages.”

Significant connections between cogged stones and at least certain kinds of discoidals have long been assumed. Herring (1968:8) was prescient in viewing the cogged stone class as “basically a discoidal with cogs.” WPA archaeologists in Orange County noted the patterned co-occurrence of cogged stones with discoidals (see Eberhart 1961:368). Cogged stones and discoidals have been cached together, as with, for instance, a grouping found at Rancho Los Cerritos in Long Beach (seven cogged stones with four discoidals; see Dixon 1975) and a cache at ORA-950 (Koerper et al. 2006).

For those kinds of discoidals linked historically to cogged stones, particularly through their appearance in caches with cogged stones, we propose the class name “early Holocene discoidal” (Figure 7a-b). A sizeable proportion of the early Holocene discoidals are fashioned of vesicular igneous stone, as is the case for cogged stones, a circumstance further supporting historic connections, and suggesting perhaps an unknown degree of shared symbolic content. Further cementing the historical connection is the fact that several lower-tier design factors, such as centrally placed pits or depressions and concavities, cross over between cogged stones and these discoidals. Furthermore, early Holocene discoidals can be right circular (Figure 7b) or oblique circular (Figure 7a), and hence the suggested types “Early Holocene Right Discoidal” and “Early Holocene Beveled Discoidal.” Of the Early Holocene Beveled Discoidals, specifically those with curved lateral surfaces, the surfaces are usually convex, but concave examples are known.

By the class designation “Early Holocene Discoidal,” we begin to draw a needed distinction between this class of artifact and those kinds of discoidals whose floruit occurs later in time and which rarely if ever are crafted from vesicular materials. Rather, the materials are often granitic and other kinds of hard stones of the kinds that can be worked to smooth, even nicely polished, finishes. These are the kinds of artifacts Sutton (1978) illustrates and describes for SDI-4575. These later discoidals are never oblique circular, and their top and bottom faces exhibit varying degrees of convexity. These surfaces are nearly always without modifications such as pits or depressions.

SUMMARY AND CONCLUDING REMARKS

Characterizations of the variable range of vertical design elements encircling cogged stones’ lateral surfaces help establish a unity of class. The class designation draws additional refinement from observations of the range of manufacturing materials as well as from presence/absence observations of other design elements witnessed on the artifacts’ top and bottom surfaces, such as small pits, depressions, holes, or concavities. The vast majority of cogged stones share with all early discoidals either a right circular or oblique circular category status; however separation of class follows from the discoidals’ lack of elevations or depressions on lateral panels. Yet historical connections are a certainty, and at some point in time the two classes of artifact were probably manifestations of a shared cosmology.

A taxonomic challenge develops from the permutations of attributes selected by ancient artisans to create their cogged stones. This study has addressed that challenge, proposing a simple yet formal set of operations to more rigorously sort cogged stone variability into descriptive categories and into types.

In this exercise, we gave consideration to previous efforts to identify and label a diversity of morphologies, and when it was justified, we integrated them into the new conceptual scheme. We took into account configurations in lateral view and plan view and noted further details of outline as well as shapes of design elements on lateral surfaces.

For purposes of formulating types, our program left aside those modifications that might appear on the upper and lower faces of cogged stones, thereby avoiding excessive splitting at the type level or descent into the level of subtype. Other investigators might yet choose to consider the pits, depressions, holes, and concavities for, say, establishing subtypes. We think it sufficient that such observations upon upper and lower surfaces as well as other information, such as numbers of lateral elevations or depressions, be employed only to augment description of any particular specimen of identified type.

Our efforts have resulted in the following type distinctions: Beveled, Land-and-Groove, Fish Vertebra, Intermediate, Sea Star, Truncated, Ovoid, and Clover. It is anticipated that the distinction between Beveled and Land-and-Groove types and observations of counts of elevations will prove to be useful tools to decode some meaning from caches of cogged stones (see Koerper et al. 2006).

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Notes

¹Koerper's caption error mistakenly identified the specimen (Koerper and Mason 1998:Figure 5a) as "broken and subsequently reworked," when that description should have been applied to Koerper and Mason's (1998) Figure 5b. The intention had been to label the artifact as a "rectangular" specimen, but now "Ovoid" seems preferable.

²Our usage of "beveled" and Farmer's usage are identical, but a cautionary note is in order since the term "beveled" has been used in a different way. For instance, Treganza and Malamud (1950:148) observed a "beveled" option for both their Type I and Type II "stone discs." A check of their illustrations (1950:Plate 24) reveals that convex edges are referred to as beveled.

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