



# The lightning whelk: An enduring icon of southeastern North American spirituality



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## ARTICLE INFO

### Article history:

Received 19 March 2015

Revision received 5 January 2016

Available online 8 March 2016

### Keywords:

Lightning whelk

Shell artifacts

Shell Mound Archaic

Mississippian

Sinistral spiral

Native American spirituality

## ABSTRACT

We describe the lightning whelk (*Busycon sinistrum*) and show how its shells were used among coastal peoples along the Gulf of Mexico and lower Atlantic coast. During the Middle and Late Archaic periods, lightning whelk shells were transported hundreds of km from the coasts to the Midsouth where they were made into a variety of artifacts that were interred in graves. We explore the symbolic significance of sinistral (“left-handed”) snails in post-Archaic times, focusing on the lightning whelk as a metaphor of spiral/circle, fire/sun, and purification/continuity among Native Americans of the eastern United States. This particular marine mollusk shell had special spiritual significance—and hence economic and political value—for several millennia, particularly in the southeastern United States, but its ritual importance as cultural icon resonates with cultures around the globe. The importance of the sinistral whelk as both medium and message has been inadequately appreciated by American archaeologists.

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## 1. Introduction

In this paper we argue that the lightning whelk (*Busycon sinistrum*; hereafter LW) shell, specifically its rare sinistral spiral, is a venerable icon of southeastern North American native spirituality. Following a brief introduction to the LW's biology and taxonomy, we discuss the widespread awareness of chirality and its meaning among societies today. Manifested linguistically as well as behaviorally, the notion of left and right handedness has surprisingly widespread negative and positive connotations, respectively. We suggest that the sinistral spiral was also widespread and *iconic* (that is, it made reference to a concept by means of resemblance) among late pre-contact southeastern Native Americans, and that its ritual significance was established more than five millennia ago in the American Midsouth.

We show that LW shells and sometimes ceramic effigies of LW shells were used during consumption of an important ritual drink. We cite ethnohistoric accounts, eyewitness observations, and native testimony to suggest certain associations between the sinistral spiral, the daily path of the sun, and the progression from birth to death. We show that spirals are manifested in the directions of community dances, engravings on shells and other media, and even on certain mounds.

We speculate that the sinistral spiral may be a metaphor for the passage of humans from birth to death and beyond, while the dex-

tral spiral is indicative of the path toward life, vitality, fertility, and renewal. By means of examples, we show that *movement* with cognizance of the direction of the spiral—sinistral or dextral—is a prominent theme of southeastern Native American spirituality. We also suggest for consideration that the spiral may be connected cosmologically with an epic myth in which a fantastic snake-like creature travels to the Upper World and then returns; the snake creature is associated with the giant red star Antares and the constellation known as Scorpius. We do not argue that all these beliefs were and are manifested the same way throughout space and time. We do maintain that the LW shell with its characteristic sinistral spiral was and is for many southeastern Native Americans a sacred, iconic reminder of the inevitability of time, the mortality of human life, and—in at least some cases—cycles of renewal and rebirth.

## 2. The lightning whelk: biology, evolution, and nomenclature

### 2.1. Taxonomy and the fossil record

The lightning whelk is so-named for the colorful, jagged lines visible on its outer whorl (Fig. 1, top). It lives in marine waters of the southern Atlantic coast of the U.S., along the Gulf of Mexico from the Florida Keys to Texas, and along the Mexican Gulf coast as far as the Yucatán peninsula (Pulley, 1959: 77). It is much more abundant on Florida's west coast than its east coast (Stephenson et al., 2013). The LW population in the Gulf is not contiguous (Fig. 2). Individuals in the eastern Gulf are generally separated

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**Fig. 1.** Top: The lightning whelk (*Busycon sinistrum*) shell, showing characteristic jagged lines (courtesy Bailey-Matthews National Shell Museum); bottom: spiraling egg case of the lightning whelk (photo by Karen Walker).

from interacting with individuals in the western Gulf. This fosters morphological differences between eastern and western Gulf animals. The cause of this separation is the Mississippi River, which empties into the Gulf, creating a “dead zone” that has very little animal life due to reduced oxygen levels (Osterman et al., 2005), including a lack of LW snails. Although the dead zone has grown because of recent human activity, it has long existed.

The LW’s beautiful shell is collected by visitors to Gulf beaches (it is the state shell of Texas), and it was a common food mollusk for pre-Columbian southwestern Florida people, especially in settlements located in well protected, shallow estuarine settings, such as Pineland and Josslyn Island (Fig. 3; see deFrance and Walker, 2013; Walker, 1992). When archaeologists find LW shells, they are nearly always white or off-white in color, having lost the characteristic “lightning bolt” markings once visible in the proteinaceous periostracum.

The LW lives on sandy and muddy bottoms. Judging by studies of its close relative, the knobbed whelk (*Busycon carica*; Shalack et al., 2011), it can move about freely, although apparently some

individuals are more mobile than others. Magalhaes (1948: 393) measured the speed of knobbed whelks along coastal North Carolina and recorded rates of up to 40 m per day. One individual traveled a kilometer in one month. Paine (1963: 517) states that lightning whelks appear to be “highly mobile.” However, they are inactive when the water temperature drops below 68 °F (20 °C) (Janiskee, 2010).

The LW’s fossil ancestors can be traced to the late Cretaceous/early Tertiary. Specifically, both the knobbed and lightning whelk species have lived since the Miocene (Pulley, 1959: 73, 78). The LW is carnivorous, preying mostly on bivalves (Hollister, 1958; Magalhaes, 1948; Pulley, 1959). Research on predator–prey relationships and the co-evolution of its Pliocene fossil ancestor *Sinistrofulgur* with *Mercenaria* clams and other bivalves shows the long-term viability of its feeding strategy (Dietl, 2003). Like its ancestors, today’s LW moves along the sea bottom, feeling and smelling with its extended proboscis until it encounters a bivalve, then uses its shell lip (the terminal edge of its outer whorl) to chip and pry open the prey’s shell to expose its soft body.

Following copulation in late autumn/early winter, in early spring females lay long, spiraling strings of disk-shaped egg capsules that measure up to 86 cm in length and 3 cm wide (Kent, 1983; Ruppert and Fox, 1988; Fig. 1, bottom). Each disk can contain up to 40 tiny whelks. The string of eggs is anchored to the sand, and the capsules break loose when the eggs hatch. The whelk grows slowly but is long-lived, with some individuals reaching 15–30 cm long, even as much as 40 cm. Some develop thick shells and stout columellas. As we discuss below, robust individuals were especially prized for tool making.

From the point of view of the animal itself, there is an unambiguous front and back. Its constricted, pointed end is anterior and its larger, broader end is posterior. The aperture is the bottom of the shell because it moves along the substrate on its pseudopod (foot). This is not how humans conventionally regard gastropod shells, however. Americans are accustomed to viewing the snail set upon its anterior end with the aperture facing the observer. From this perspective, the LW reveals its most distinctive characteristic: unlike virtually every other snail in the world, it opens to the left, which is to say that its aperture (and operculum) is on the left, not the right (Gould, 1995; Robertson, 1993; Schilthuizen and Davison, 2005: 505; Vermeij, 1975). Snails that open on the left in this manner are referred to as sinistral; those that open on the right are called dextral. Another way of expressing this is to say that when viewed from the posterior end (the “apex,” or top of the spire) and tracing the helix from the ultimate edge of the whorl into the center, the LW spirals clockwise, not counterclockwise as do almost all other snails (Fig. 4).<sup>1</sup>

Nomenclature of this animal has fluctuated. During early explorations of eastern U.S. shell-bearing archaeological sites, such as those of Clarence B. Moore, the LW’s scientific name was *Fulgur perversum*. By the 1990s, it was *Busycon contrarium* and later became *Busycon sinistrum* (Hollister, 1958). A genetic study indicates that all North American left-handed whelks are conspecific, hence should be subsumed under *Busycon perversum* (Linnaeus, 1758); Wise et al. (2004) recommend that the latter term be applied to all North American sinistral whelks, with sub-species qualifiers *perversum* for the Yucatán peninsula, *laeostomum* for the Atlantic coast, and *sinistrum* for the northern and eastern Gulf of Mexico. In this paper, we retain *sinistrum* as the species name, still the current official nomenclature at this writing (World Register of Marine Species, 2014).

<sup>1</sup> Asian biologists conventionally picture snails with their spires down, so for them nearly all snails are left-handed, and the rare specimens are right-handed. French scientific illustrators follow a similar convention.

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