

THE MOTH AND THE MOONFLOWER: DATURA AND HAWK MOTH
ICONOGRAPHY ACROSS ANCIENT AMERICA

by

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DEDICATION

I dedicate this thesis to the many Native American cultures discussed throughout its pages, both past and living.

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LIST OF ABBREVIATIONS

Abbreviation	Description
ASC	Altered state of consciousness
SSC	Shamanic state of consciousness
PRS	Pecos River Style
SECC	Southeastern Ceremonial Complex

I. INTRODUCTION

All life is subject to change as time propels forward. In evolution a new species may emerge as its morphology, ecological niche, or DNA gradually change, diverting into a new unique organism. Culture, too, has the extraordinary ability to modify and adjust into new forms, through the procession of time. It is also dynamic by way of its fluidity and efficiency in adapting to new customs or ideas. Some practices are ever present and long withstanding while others are not so prosperous, extinguished to a relic of an old-fashioned age. However, due to human being's distinct representational systems -- such as art, storytelling, and writing -- a narrow glimpse into our collective sapien past is attainable. Analyzation of cultural survivals allows the present to visualize and grasp worldviews, thought processes, and lifeways of those that breathed before.

A forgotten symbol, lost in the ether of time, is that of the sphinx moth -- also known colloquially as the hawk moth or hummingbird moth -- which has reemerged to the eyes of American archeologists and anthropologists over the last few decades. In the natural world the moth belongs to the Sphingidae family and has two distinct identifiable characteristics: a long curved proboscis and sharp pointed wings (Lankford 2014:51; Johnson et al. 2016). The majority of sphinx moths are nocturnal, feeding on the nectar of flowers with their elongated proboscis. Sphinx moth larvae -- also known as hornworms -- feed on plants of the Solanaceae family (commonly known as nightshades ie. tomato, tobacco, potato) and later in life become their principal pollinators (Knight and Franke 2007:144). The sphinx moth also has an intimate relationship with another Solanaceae

plant, *datura*; it being *datura*'s essential pollinator. The large funnel shaped flowers require a pollinator with an extremely long tongue to reach its nectar; the sphinx moth's expanded proboscis enables their mutualistic affair (Darwin 1862).

Datura has psychoactive properties designating it a sacred plant to Native Americans. It contains tropane alkaloids such as atropine, hyoscyamine, and scopolamine making it poisonous if ingested or even touched (Bye 2001:59). Across the continent *datura* is revered and often used in rites, rituals, and acquisitions of supernatural power. Ceremonial usage of *datura* stretches from the Chumash in Southern California to the Algonkian's on the North American East Coast (Applegate 1975a;Furst 1972:46). Additionally, it is prolific in Mesoamerica and South America -- the latter will not be subject to this analysis. Preparations and practices vary from culture to culture, however, *datura* is indelible to the cosmology of all the groups that consume it. The essential relationship between sphinx moths and *datura* are visible not only in the natural world, but in folklore, mythology, and art. Iconographic representations of the plant and insect typically appear independent from one another throughout ancient America, but in some cases they appear jointly. Unfortunately, their meaning and significance has been misplaced over time.

Moth & Datura Iconography

V. J. Knight and Judith Franke have identified a sphinx moth, through the aforementioned characteristics, on a stone palette found at Moundville, Alabama (2007). A number of shell gorgets in the "Big Toco" style (referred to as Hightower style in this thesis), belonging to the Tennessee River Valley, also exhibit the distinctive protracted

proboscis and sharp pointed wings of the moth (Brain and Phillips 1996:45-46). All representations anatomically align to a sphinx moth, however, their appearance alongside the sacred “Birdman” motif suggest supernatural connotations outside of its naturalistic representation (Knight and Franke 2007:142-143). The “Mothman” or “Mothra” -- as it’s been deemed -- iconography has slowly come to light in the Southeastern Ceremonial Complex (SECC).

Current research has tested numerous ceramic and shell vessels in the SECC for *datura*. Adam King carried out a study where Mississippian and Caddoan vessels with particular imagery and motifs were chosen to test for *datura* residue. He examined possible thematic correlations between the motifs and the psychoactive plant (King et al 2018). The vessels that held *datura* residue (atropine and scopolamine alkaloids) displayed explicit beneath world themes and locatives -- a symbol that designates location (King et al 2018:317, 325).

Recently, a California rock art site, known as Pinwheel Cave, has been identified with an abstracted *datura* corolla design on the walls of the cave (Robinson et al 2020). Additionally, quids -- chewed wads -- of *datura* were found placed in crevices in the cave ceiling (Robinson et al 2020: 31028). Ritualistic usage of *datura* has long been tied to Native Southern California societies, such as the Chumash who are descendents of the Pinwheel Cave culture (Kroeber 1922, 1925; Applegate 1975a; Robinson et al 2020: 31028). The coinciding appearance of physical and representational *datura* support that Pinwheel Cave was used as a cultural and ceremonial space. Furthermore, an anthropomorphized figure with the appearance of a sphinx moth head is present amongst

the rock art (Robinson et al 2020:31034-31035). Pinwheel Cave is unique in containing rock art and physical *datura* specimens in the same space, reinforcing *datura* and the sphinx moth's relationship in Native American belief systems.

The Huichol, famously known as a peyote cult in the Sierra Madre Occidental of Mexico, incorporate *datura* into their mythology, referred to as “*kiéri*”. The plant *kiéri*, also known as the “tree of the wind”, is associated with whirlwinds, cyclones, tornados, souls of the dead and even Gods (Yasumoto 1996:239). Such types of wind can be the harbinger of illness or misfortunes to the Huichol. The plant *kiéri* is also anthropomorphized as *Kiéri* Tewiyari, a nemesis to the deer God and culture hero Kauyumari (Furst 1976:134). *Kiéri* is dangerous and unpredictable, much like the wind. Both *kiéri* as *datura* and *Kiéri* as supernatural power have the dual capacity to generate abilities and virtues, as well as to deceive and damage those that seek to ascertain its power (Aedo and Faba 2017:194-196). Often, Native American belief systems work within a system of dualities, used in conjunction with each other to bring order and harmony to the universe. *Kiéri* works antithetical to peyote in Huichol religion, an opposing disorderly dark force of the beneath world inverse to the revered above world and “sight giving” orderly peyote cactus.

Carolyn Boyd has used Huichol mythology to assist her in understanding the rock art of the Lower Pecos in West Texas. By using folklore, mythology, and ethnographic accounts a number of iconographic elements and motifs have been deciphered. Pictographic representations of peyote and *datura* have been interpreted on various panels throughout the region (Boyd 2003:90-91). A large number of anthropomorphs

(167) have been identified as shamans holding staff-like objects with distinct distal ends (Kirkland and Newcomb 1967). Originally, they were perceived as prickly-pear pouches, however, Boyd reinterprets them as spiny *datura* seed pods (Boyd and Dering 1996:266). Phil Dering recovered five *datura* seeds at Hinds Cave radiocarbon dating to 4510 ± 70 b.p. (Lens 9, Area AW) and 4990 ± 70 b.p. (Lens 11, Area AW) (Boyd and Dering 1996:267). These dates suggest a long and established culture involved with ceremonial *datura* use. Additionally, sphinx moth wings have been identified on a central anthropomorphic figure at Fate Bell Shelter in the Lower Pecos (personal correspondence with Carolyn Boyd).

The American Southwest may include the most substantial volume of the preceding iconographic motifs. Christine VanPool has identified “mothman” representations in pre-columbian kiva art at Pottery Mound, New Mexico (2009:185-88). One kiva mural shows anthropomorphized insects holding *datura* stalks with spiny capsules similar to the plant's seed pods. Another mural, originally identified as a “mosquito man” anthropomorphic figure, appears to be in fact a misidentified “moth man” (VanPool 2009:185-88). The figure has sharp pointed wings and a long proboscis complimentary to SECC iconography. VanPool suggests parallels between these moth motifs and religious shamanism involving *datura* usage (2009:185-188).

The Mimbres culture in New Mexico is notorious for its black on white ceramics. The ceramics are painted with a range of motifs, including geometric and natural forms. Mimbres painters depicted *datura* from seed pods to blossoms, sphinx moths (perhaps in multiple life stages), and visions associated with *datura* induced trances (Berlant et al.

2018). These images represent extensive *datura* practices and an indelible relationship that the plant and the moth have in Native American cosmological systems.

Methodology

A few major forms of methodology will be employed throughout the course of this examination. Panofsky's method of iconographic analysis will be applied as a guide to all representative forms of art -- however its full employment will be minimized for brevity due to the number of cultures overviewed and the fact that much of the previous research has already performed similar analyses. In essence, each piece has been broken down and evaluated by Panofsky's three step process: 1. Primary and natural subject matter (elements and symbols) 2. Secondary or conventional subject matter (motifs) 3. Intrinsic meaning or content (themes) (Panofsky 1939:5-7).

In order to understand motifs and themes expressed in each artwork, comprehensive research of ethnographic accounts and texts will be imperative to generating conducive interpretations. This data will be applied to the approach of upstreaming, a form of ethnographic analogy that uses more contemporary ethnographic accounts to explain past lifeways. Admittedly, each cultural study requires a more in depth and formal iconographic analysis, but the aim of this research is not to perform a conclusive and intensive breakdown. This thesis brings forth other research and compiles it into a cohesive collection of related iconography -- as well as shedding light on new findings throughout this overall investigation.

Most significantly, local knowledge and "folk taxonomies" will be vital to the examination of all sphinx moth and insect related imagery. The fixation of all modern

biological taxonomic systems is based upon the Western Linnaean system. The Linnaean system is beneficial in many regards to this study, such as the sphinx moth (Sphingidae) being the principal pollinator of the *datura* plant. However, our Western constructs of taxonomy severely limit interpretations of the ancient American world. It is not reasonable to assume that the Western naturalistic paradigm would be practiced amongst indigenous taxonomies (VanPool and VanPool 2009:531). Joseph Epes Brown demonstrates that modes of classification and structure in the Oglala world often appear incomprehensible to Western world views. The bison, elk, bear, dragonfly, moth, cocoon, and spider all carry a perfectly logical relationship to wind in Oglala cosmology (Brown 1983:10). Depending on the culture, taxonomic systems may classify butterflies, moths, and dragonflies in the same grouping because they are all winged insects. Additionally, colors, seasonality, and daytime activity -- nocturnal vs. diurnal -- may also play a role in classification systems. A review of past literature in the study areas of choice will seek to rectify and overturn previous interpretations; this study will rely on Native American cultures' view of the world. Albeit, contemporary views by Native Americans are not a straight through to the long ago past. But they can provide some interpretation and understanding to what is being looked at.

Goals & Intentions

The purpose and goal of this thesis will be to catalog sphinx moth iconography from across the North American continent. Specifically highlighting the Southeastern Ceremonial Complex, Southwestern motifs, and Lower Pecos and Chumash rock art. A close examination of the *datura* plant and its ceremonial usage will be essential to any

conducive understanding, due to their integral relationship in nature and shamanistic practices. Exploration of ethnographic accounts, indigenous mythologies, and folklore are fundamental to interpreting what the anthropomorphic “Mothra” and “Mothman” represent. Preliminary research has identified *datura* and sphinx moths in connection with various underworld themes: wind, fertility, disorder and even bouts of insanity. More in depth exploration of these themes will be considered in all cultures and their mediums of narratives (visual art forms, rituals, and oral stories). Finally, I will seek to answer why the iconography appears where it does, what it may mean, and why it was forgotten.

II. METHODS & THEORY

Panofsky's Iconology

Art is something that is uniquely human; serving many functions within the human domain, it can be used to promote expression, beauty, knowledge, and even power. It should also be recognized as a dialectic, constantly reinforcing one idea while negating another opposing belief. Art is often seen as its own distinct subject, however, by using Iconography to analyze art a holistic approach can be incorporated. Art is the manifestation of philosophy, religion, history, and culture. It does not just hold an aesthetic value, but it also is shaped and imbued with meaning from all facets of life. All of these elemental aspects come together to form what is a surviving image. The continuation of symbols from the past and their progression through time. These cultural survivals allow the present to visualize and grasp worldviews, thought processes, and lifeways of those that breathed before us.

Few academics are able to make immense and indelible impacts into their field of study. Even fewer are able to create such an enduring concept that it traverses multiple areas of study. Erwin Panofsky's innovative methodology of analyzing art revolutionized the way it is looked at by historians, art historians, and archaeologists alike. His *Iconology* takes a holistic approach that incorporates philosophy, religion, history, and culture. Art does not just hold an aesthetic value, but it is also shaped and imbued with meaning from all facets of life. All these elemental aspects come together to form what is a surviving image (Didi-Huberman 2017).

Panofsky's *Studies in Iconology* (1939) lays out the preliminary groundwork for his investigative method. *Iconology* is interested in a piece of art's subject matter and its meanings pertaining to a time or culture. However, each particular artwork is ingrained with multiple types of meaning that may not be recognizable on a surface level. In order to discern the total intrinsic value of a given work of art Panofsky proposed a method involving three steps of analysis. They are broken into: 1. The primary or natural subject matter 2. The secondary or conventional subject matter 3. The intrinsic meaning or content (Panofsky 1939:5-7). The modes of interpretation can also be broken down and viewed in terms of: 1.) Element & Symbol 2.) Motif 3.) Theme. This form of analysis has now become a norm in art history and for archaeologists that deal with artistic artifacts.

Primary subject matter -- or the first manner of interpretation -- is based upon identifying pure and elemental forms; like those of line and color. Easily identifiable symbols are also understood such as human forms, animal forms, and expressions (happy or sad). Panofsky (1939) deemed this form of interpretation a "pre-iconographic description" (5). This can also be viewed as a structural analysis, identifying the basic levels or foundational elements in the artwork. Little to no interpretation is made at this level, only identifications made from practical knowledge and experience.

Secondary subject matter combines multiple symbols into a motif (Panofsky 1939:6). These motifs are often known from a secondary origin outside of practical experience; commonly oral narratives -- like mythology -- or literary sources. For example, Christ on a cross combines the two elements of a man and a -t shaped structure,

an easily identifiable motif of the crucifixion to those familiar with Christianity. A narrow iconographic analysis takes place during this degree of investigation.

Lastly, the intrinsic meaning is discerned from the art. Motifs are not only applied to themes, but they are held up to a myriad of underlying principles prevalent to the time of the artwork (Panofsky 1939:7). A contextual analysis is thus performed as each theme may be imbued with a different meaning depending on a culture or period of time. The conditions and situations regarding not only the subject matter, but the artist and their worldview must be taken as a totality.

Panofsky's *Iconology* completely changed the way art history was performed before its publication and is still employed ubiquitously today -- a brief iconographic breakdown will be presented in this thesis in Chapter VI. However, while Panofsky reaps all the credit, his methodologies were borrowed from the study of semiotics, the philosopher Ernst Cassirer, and the early art historian Aby Warburg. Panofsky's *Iconology* adopts from Warburg's *Nachleben* or "survivals"; the continuation of symbols from the past and their progression through time (Didi-Huberman 2017:26). Edgar Wind illustrates Warburg's survivals as "[the] harmonious working together of an entire ensemble of operations, including forgetting, transformation of meaning, eliciting of memory, and unexpected rediscovery." (Didi-Huberman 2017:52). One of Panofsky's last publications, *Renaissance and Renascences in Western Art*, highlights idealist notions of aesthetic superiority that triumph the Renaissance as a time devoid of impurities and the pinnacle of art (Did-Huberman 2017:57). He proclaimed that the Renaissance could serve as a "standard" for the reintegration of content and forms. While Panofsky acknowledges

many of antiquity's survivals throughout the Medieval Period, he later disparages Medieval survivals against antiquity in an effort to bolster the Renaissance's preeminence (Panofsky 1939:18). The Medieval was the "impure" causeway of symbols from the "pure" antiquity to the reprised "purity" of the Renaissance. Panofsky's superiority bias and infatuation with Renaissance forms of art should be duly checked outside of Western art.

Panofsky's *Iconology* may have borrowed from Warburg's *Nachleben* but has its deviations from it. Within Warburg's "survivals" (*Nachleben*) sits the word *Leben* or "life". Warburg recognized a symbol's anachronism and was immersed into understanding its constant intermingling and "ensemble of operations" throughout a culture's existence (Didi-Huberman 2017:59,202). Warburg constantly stressed that a symbol had its own life cycle, essentially forms and symbols are also capable of surviving and dying. Its meaning is subjected to change and meander through time (Didi-Huberman 2017:290). Panofsky's field seeks decipherment, which is at fault. The symbol or image has no one distinct meaning in every situation. The job is not done with just identification, Warburg seeks interpretation based upon the many contexts and survivals the image has lasted through (Didi-Huberman 2017:322, 196). Panofsky's methodology only sought to understand the surface of an image, with a particular hindsight bias involved. Though Panofsky's methodology is still extremely applicable and beneficial today, its initial intentions may not align with modern art historical perspectives -- or anthropological. In short Warburg advocates for pursuing the life of an image, its many relationships and processes it underwent to its creation. Didi-Huberman

poetically states, “A network of infinities that join to a single ensemble”(323). The idea of a living image is important for philosophically interpreting art, but the very notion of a living image -- philosophically and literally -- is essential for understanding Native American art.

Ethnographies and the Objective Dilemma

Ethnographies are the most essential form of evidence when investigating a living cultural group, they act theoretically as an objective and scientific method of observation. An ethnography records interviews from members of a culture that are being observed and consist of meticulous notes and first hand accounts from the observer. However, since the inception of the field of anthropology a number of predicaments and oversights have ensued in its practice.

Beginning in the Enlightenment, rationalism and scientific thought have dominated Western viewpoints, generally competing heavily with religion (Whitley 2005:5). Numerous explicit and contemptuous attitudes towards religion from scientists often mischaracterize or denigrate cultural traditions or rituals, especially those that subsist of non-Western perspectives. This rational scientific approach can be hindering when studying rituals and indigenous belief systems. While these systems of belief incorporate numerous elements we consider to be natural sciences, analytical scientific scrutiny is not often prudent to these particular social domains. These spheres associate themselves more so with what we call art; expressing meaning, values, and ideas in symbolic manners (Beattie 1966:65). Furthermore the majority of ethnographers are predominantly Westerners, implicating many unforeseen biases. Their views and values

inherently underlie how they conduct aspects of research. This is especially common when studying religions. For example, entrenched Judeo-Christian traditions or values are successively thought to be applicable to all other cultures (Whitley 2005:7). Implicitly or explicitly the anthropologist sees foreign cultures through a lens shaped by their own cultural upbringing, conflicting with a purely “objective” view. It is virtually impossible to eliminate all biases, however, by acknowledging them a better practice of anthropology can be carried out. Practices by early anthropologists have left a stain on the field of study; it is important for new anthropologists to be aware of their history in order to not repeat it.

Folk Taxonomies

One significant predisposition is our Western constructs of taxonomy, which have severely limited interpretations of traditional societies. Local knowledge and “folk taxonomies” (Figure 1 and Table 1) are vital to ethnology (VanPool and VanPool 2009). The fixation of modern taxonomic organizations is based upon the biologically shaped Western Linnaean system. The Linnaean system is beneficial in many regards to all fields of science and this particular research, such as distributions of different genus of psychotropic plants or identifications of distinct and particular animals to a geographical locale. However, it is not reasonable to assume that the Western naturalistic paradigm would be practiced amongst indigenous taxonomies (VanPool and VanPool 2009:531). There is more than one way to view the world.

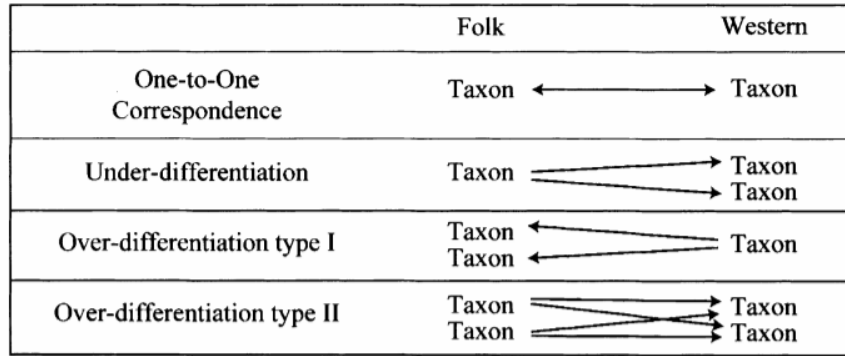


Figure 1. Relationships between the different types of correspondents (VanPool and VanPool 2009)

Table 1.

Expectations for different types of correspondence

Correspondence	Expected pattern with respect to western taxonomies
One-to-one correspondence	A folk taxon closely parallels field criteria for identifying a defined Western taxonomic unit, typically a species or genus.
Over-differentiation type I	Two or more folk taxa possess characteristics of a single Western taxon.
Over-differentiation type II	Two or more folk taxa possess characteristics of two or more Western taxa without a one-to-one correspondence between the folk and Western taxonomies.
Under-differentiation type I	A folk taxon possesses characteristics of two or more Western taxa.

(VanPool and Vanpool 2009)

Joseph Epes Brown demonstrates that modes of classification and structure in the Oglala Sioux world often appear incomprehensible to Western world views. The bison, elk, bear, dragonfly, moth, cocoon, and spider all carry a perfectly logical relationship to wind in Oglala Sioux cosmology (Brown 1983:10). All organizational systems are cultural -- even our own situated in science -- it is necessary to know when our Western

scientific definitions are and are not applicable (Whitley 2005:11). Additionally, the progress of modern science has generated a sense of depersonalization to nature (Beattie 1966:63). Native American belief systems are deeply tied to animism and the environment around them. For many indigenous people there is no clear separation between the “natural” world and the “supernatural” world, the “sacred” and the “profane”, or the “empirical object” and the “symbolic” (Eliade 1964:263). These categories are especially employed in academic settings, scholars create standardized language and systemize ideas for conducive discourse. It is vital that ethnographers confide in the culture they are studying views of the world, not they’re own.

III. SPHINX MOTHS

The insect order Lepidoptera contains all moths and butterflies; it is the second largest order of organisms, making up 10% of the world's species. Worldwide there are over 200,000 species of moths (Majerus 2002). More specifically, sphinx moths -- colloquially known as hawk moths or hummingbird moths -- are placed in the *Sphingidae* family, which are the focus of this research. The family group comprises about 1,400 species and 400 genera worldwide. The vast majority of these species -- around 70% -- inhabit Africa and the Americas (Johnson et al 2016). In North America and Mexico there are at least 115 species and 40 genera. They are primarily a tropical family, however they extend as far North as Alaska with three species (Grant 1983b:443). Sphinx moths are medium to large in size, primarily nocturnal or crepuscular -- active around twilight --, have sharp forewings, distinct hindwings, prominent antennae, and a functional proboscis. Proboscis length is variable between species, some are barely a centimeter long while others can reach up to 28 cm (Johnson et al 2016:2,3).



Figure 2. Sphinx moth (*Manduca sexta*) feeding on a typical hawk moth style flower, wild tobacco (*Nicotiana glauca*)
[\(https://neurosciencenews.com/olfaction-neuroscience-hawk-moth-4263/](https://neurosciencenews.com/olfaction-neuroscience-hawk-moth-4263/) accessed November 18th, 2022)

Adult hawk moths all typically feed on the nectar of flowers (Figure 2), while the caterpillars subsist off the foliage of living plants (Majerus 2002). Over the millennia certain flowers have specifically adapted to these insects; with flower tube lengths tailored to the sphinx moth's elongated proboscides (Johnson et al. 2016:2; Grant 1983b:447). Verne Grant deems these flowers "hawkmoth flowers". He states they are typically nocturnal, white or pale yellow or pink, fragrant, and have a long slender nectar tube (1983b:439). Charles Darwin (1862) famously predicted the existence of a long-nosed hawk moth that would be needed to pollinate the 29 cm flower of the star orchid (*Angraecum sesquipedale*) in Madagascar. Only in the last few decades have direct observations of the Malagasy hawkmoth (*Xanthopan morgani praedicta*) proven Darwin's hypothesis correct: a proboscis in equal length to the flower's corolla (Arditti et

al. 2012). Moth adapted plants exhibit a number of floral traits that signal to their pollinators their location and available resource; color, odor, and morphology are some of the most important features that attract a visitor -- most particularly moths. Some foraging behaviors are innate to an insect's biology, while others are learned through a pollinator's particular environment (Riffell and Alarcón 2013).

However, within the mutualistic system of hawk moths and long tubed flowers, the moth is not solely dependent on the flower. Generally, long tubed flowers are pollinated by only a few long-tongued hawk moths; but a hawkmoth with a long proboscis may feed on flowers with any array of lengths -- in this sense they are generalists (Lautenschleger et al. 2021:293; Johnson et al. 2016:10). Additionally, bees and bats have been observed to visit long tubular "hawkmoth flowers", such as *datura*. Their effectiveness is less than the moths, but they may serve as secondary or incidental pollinators (Verne Grant 1983a:282). Amidst the moth and flowers coadaptations they allow room for when the other is less available or not in season; both are not single-handedly dependent on the other. But it should be maintained that interactions between hawk moths and any "hawkmoth flowers" form the core of the pollination system -- that is the vast majority. The hawkmoth is the essential pollinator and only its long proboscis can reach the nectar at the base of an extended corolla (Grant 1983b:447; Grant 1984a:281).

Some of the most common species of *Sphingidae* in North America and Mexico are: *Manduca quinquemaculata*, *Manduca sexta*, and *Hyles lineata* (Grant 1983a; Grant 1983b). All three are found throughout a wide range across North America, but *H. lineata*

is the most widely distributed of the moths (Cranshaw 2004:70). The aforementioned sphinx moths are more common in the warmer months -- May to October -- but each can be found year round in parts of the deep south. Particularly, in the Southwest they are all associated with the monsoon season (Montagna and Kloiber 2022). Sphinx moths feed on a wide breadth of plants, but *Manduca* are known to feed primarily on those that are Solanaceous -- particularly tomato, tobacco, and datura (Grant 1983a; Grant 1983b; Montagna and Kloiber 2022; Riffell and Alarcón 2013). *Manduca* are associated with *Solanaceae* plants through their entire life cycle; both the larval and adult stages, initially as herbivores and lastly as pollinators.

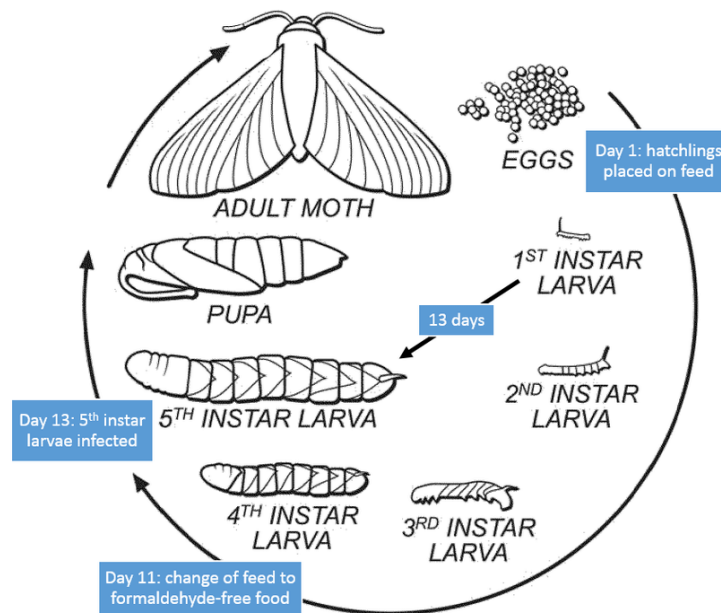


Figure 3. *Manduca sexta* life cycle (Lyons 2018)

The larval states are commonly referred to as hornworms. A horn-like tip on their posterior and final segment gives them their namesake. Often seen as irritable, they may thrash violently from side to side when disturbed or even regurgitate a sticky green liquid

(Wagner 2005). Hornworms are known pests to farmers of nightshades (ie. tomato, tobacco, potato, peppers). The caterpillar is born on the plants and eats away at the leaves before reaching its pupal state (Madden and Chamberlain 1945). Because of this, *M. quinquemaculata* and *M. sexta* are ordinarily known as tomato and tobacco hornworms.

An innumerable amount of studies have been carried out on *M. sexta*, because of this their lifecycle is intimately known. The caterpillar goes through roughly four or five instars -- a phase between periods of molting -- growing larger, sometimes changing color, and enduring several other morphological changes. In its last instar stage the caterpillar is at its largest; it drops from its host plant and begins "wandering" on the ground -- sometimes for hundreds of feet -- searching for a pupation site (Sprague and Woods 2015:523). Before wandering the caterpillar covers its body in a viscous proteinaceous labial gland secretion, termed "body wetting" (Dominick and Truman 1984). The caterpillar then purges its gut of any remaining contents and once a sufficient spot is chosen, burrows several inches into the soil beginning its construction of a pupation chamber underground. (Sprague and Woods 2015:523; Dominick and Truman 1984:39; Cranshaw 2004:68). Pupation chambers are made of soil, rocks, leaves, and insect secretions. The act of burrowing and creating a pupation chamber is a costly expenditure, if the soil is too dry then the caterpillars must exert excess energy and water to soften the soil. This ends in a significant loss of body mass, which in turn may depress fitness in the adult moth (Sprague and Woods 2015:530). Inside the chamber a larva creates a hardened pupal cuticle -- a specialized external shell like a chrysalis or cocoon (Sprague and Woods 2015:532). During the pupal state metamorphosis from a caterpillar

to a moth occurs. Most sphinx moths pupate over the winter months to emerge as adult moths in the mid to late spring. Sphinx moths -- such as the three mentioned above -- are known to migrate and travel great distances (Cranshaw 2004:68; Wagner 2005).

IV. DATURA

Datura is part of the *Solanaceae* family, commonly referred to as nightshade (Figure 4). Other Solanaceous plants endemic to the Americas include tomatoes, potatoes, and tobacco. Bye and Sosa (2013) have recently classified 13 species into the genus *datura*. It is, in turn, composed of two groups: the first is the section *Ceratocaulis* which only contains the species *D. ceratocaula*. The second is a conglomerate of other species allocated into two different sections: the first group is designated *Datura*: *D. arenicola* Gentry ex Bye & Luna-Cavazos, *D. discolor*, *D. ferox*, *D. kymatocarpa*, *D. leichhardtii*, *D. quercifolia* and *D. stramonium*; the other group a polyphyletic section *Datura*, containing *D. innoxia*, *D. lanosa*, *D. metel*, *D. reburra* and *D. wrightii* (Bye and Sosa 2013; Benítez et al. 2018). *Datura wrightii* is the largest native flower in the United States (Bye and Sosa 2013)

Datura is an emblematic representative of a “hawkmoth flower”, exhibiting all of the quintessential characteristics (Alarcón et al. 2010:289). It is a short herbaceous perennial that grows solitary and extended tubular flowers. Its corollas are most commonly white, however, can vary to an array of colors including hues of purple, pink, and yellow (Bye 2001; Yasumoto 1996). The tube lengths are relatively long, but vary through the species (Grant 1983a:280; Bye 2001). Each corolla spread out into five points at the opening of its funnel shape, resembling a star or pinwheel (Grant 1983a:280; Robinson et al. 2020). These five nectar channels run the length of the corolla to the basal nectaries (Bye 2001; Grant 1983a:280). There, copious amounts of sucrose-dominated

nectar are produced (Alarcón et al. 2010:289-290). The flower is nocturnal, secreting a noticeably palpable and sweet fragrance when it blooms at night. The flowers typically wilt by midmorning, only lasting a day. But new flowers can bloom as soon as the next night (Bye 2001; Grant 1983a:280). Due to its unique and vibrant trumpet shaped flowers, it is grown ornamentally around the world. One of its most distinguishable characteristics is the large fruit that it bears; a green ovoid capsule covered in spines (Bye 2001). Its common name of thornapple is in direct reference to this spiny bulb. As the fruit hardens it grows brown to eventually split open and disperse 200 - 400 seeds contained within each capsule (Bye 2001).

As noted before, its primary pollinator is that of a sphinx moth, particularly on the North American continent by *Manduca quinquemaculata*, *Manduca sexta*, and *Hyles lineata* (Grant 1983a; Riffell and Alarcón 2013). *Manduca* appears to be the most important pollinator, with an average proboscis length of 10cm. *Datura* corollas are typically in the range of 10-11cm in parts of the Southwest -- but vary between species -- aligning the two in direct correspondence in terms of proboscis to corolla ratio (Grant 1983a:280). *Hyles lineata* has a relatively shorter proboscis, around 3-4cm and can only reach the nectar in the upper parts of the *datura* flower's nectar canals (Grant 1983a:281). Normally, sphinx moths extend their proboscis into a flower while hovering atop of it -- much like a hummingbird. However, sphinx moths cease to hover when feeding on *datura* and tend to perch near the throat of the flower (Grant 1983a; Raguso et al. 2003:881). The moths also tend to revisit the same flowers. Additionally, bats and bees

have been seen to feed on the nectar of *Datura*, however their role of pollinator is much less significant (Grant 1983a:282; Raguso et al. 2003).

The entire life cycle of many *Manduca* revolves around the *Datura* plant, from larva to moth (Grant 1983a; Alarcón et al. 2010; Riffell and Alarcón 2013; Montagna and Kloiber 2022). It is an important host plant when it is a caterpillar and later in life it is an essential source for nectar (Riffell and Alarcón 2013:2). After moths feed on *Datura* they often act erratic or in an intoxicated manner (Grant 1983a). This is because *Datura* contains tropane alkaloids, causing it to be toxic and dangerous. Sphinx moths, however, are able to withstand constant contact and ingestion of the plant throughout their lives -- something no other organism can do.

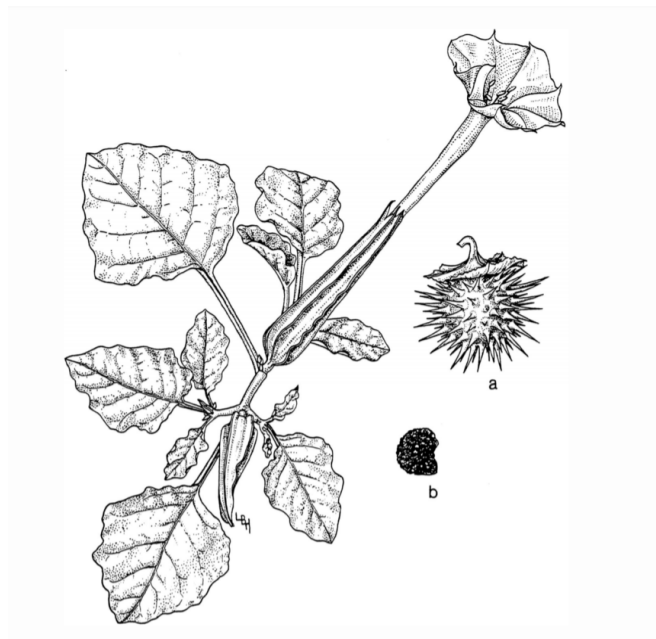


Figure 4. Drawing of *Datura discolor* discolor. Leafy branch with flowers. a.) Spiny fruit. b.) Seed (Bye 2001)

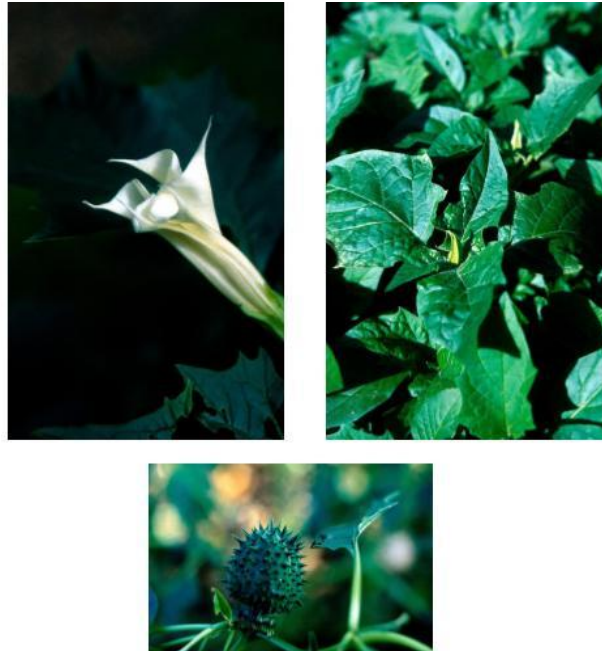


Figure 5. *Datura Stramonium*. Top left: *Datura* flower. Top right: *Datura* leaves. Bottom: *Datura* seed pod (Snell, n.d.).

Datura contains tropane alkaloids such as atropine, hyoscyamine, and scopolamine making it poisonous if ingested or even touched (Bye 2001:59). Every part of the *datura* plant -- stems, roots, seeds, flowers, and leaves -- contains these alkaloids (Bye 2001; Grant 1983a) Furthermore, these toxins have psychoactive properties. Other more commonly known Solanaceous plants of belladonna and henbane carry the same chemical compositions (Yasumoto 1996:242). The alkaloids within *datura* disrupt neurotransmitters to the parasympathetic nervous system, causing accelerated heart rate, dilated pupils, hot flashes, dry mouth, and difficulty swallowing (Yasumoto 1996:242; VanPool and VanPool 2009:181). The alkaloid scopolamine is actively used today in modern medicine, it is an essential compound in drugs that reduce motion sickness, treat Parkinson's, and dilate pupils (Mohammed et al. 2016:388). In small doses *datura* can be

used as an analgesic or to treat ear-aches, but with an increase of dose size fever, amnesia, delirium, hallucinations, and loss of consciousness ensue (Aedo 2011:139). This leads some to classify *datura* as a deliriant and not a hallucinogen. In large doses it may cause the central nervous system to completely shut down and lead to death (Yasumoto 1996:244; Schultes and Hofmann 1979:111).

Datura's origins over the years have been a place of contention. However, research on the molecular phylogeny of the species has established America as its land of origination (Benítez et al. 2018; Luna-Cavazos, Bye, and Jiao 2009). Other research has argued for the appearance of *datura* in the Old World prior to the Columbian Exchange (Geeta and Gharaibeh 2007); prompting some to suggest contact between the people of the two continents much earlier (Sorenson 2005). Nonetheless, at least eight *datura* species are native to Mexico: *D. discolor*, *D. inoxia*, *D. kymatocarpa*, *D. lanosa*, *D. metel*, *D. pruinosa*, *D. reburra*, and *D. wrightii* (Luna-Cavazos, Bye, and Jiao 2009). Mexico and the American Southwest -- sometimes considered the greater area of Mesoamerica -- have been established as the main center of origin and evolution of the genus (Benítez et al. 2018; Luna-Cavazos, Bye, and Jiao 2009).

Significantly, this area was inhabited by Uto-Aztecan speaking hunter-gatherers for thousands of years. These people are recognized to be the ancestors of both the Aztec and the Huichol through a common language tree, two groups known ethnographically to utilize *datura* (Boyd and Cox 2016). The Aztec were noted to employ the use of several varieties of *datura* in medicine and ceremonies, its Mexican Spanish name of *toloache* is rooted in the Nahuatl *toloatzin* (Yasumoto 1996:242; Schultes and Hofmann 1979:109).

Ethnographically, the first accounts of *datura* are from 16th century Spanish explorers and missionaries, which were focused primarily in Mexico. In the cases of Francisco Hernandez and Fray Bernardino de Sahagun, their works concentrated on herbal medicines (Emmart 1935; Litzinger 1979). The Nahuatl word for *datura*, *tolatzin*, is the source for the ubiquitously used Mexican-Spanish form of *tolache*, which means “nodding head”. It is believed that this refers to the spiny *datura* seed that hangs heavy off the plant, while also referencing what those who consume the plant do -- nod off into a deep slumber (Huckell and VanPool 2006:148; Litzinger 1979). Hernandez and Sahagun’s accounts of *datura* primarily describe its medicinal purposes for gout and as an analgesic. There is also a text written by Aztecs themselves, the Badianus Manuscript (1552). It represents a complete treatise on medicine and herbs from an Aztec point of view rather than an outside Spanish perspective (Emmart 1935). In the Badianus manuscript *datura* is again described principally as a pain reliever (Emmart 1935:500). While *datura*’s usage for pain maintenance is very common amongst many cultures, so is its employment in sacred acts. *Datura* was known to be incorporated into ritual and religious life very early on, but initial Spanish ethnographies -- and the Badianus -- do not mention any interactions with supernatural or religious contexts. Generally, only particular religious practitioners garner the knowledge of how to implement *datura* in ritual (Stevenson 1915:46; Litzinger 1979; Applegate 1975a). It is likely that these characteristics are absent for a number of reasons: the informants' lack of knowledge on such rituals, a fear of conveying aspects of Aztec religion to outsiders, or even an aversion to upsetting the plant and its dynamic spirit (Litzinger 1979:148-150).

Nonetheless, the Aztecs had a plethora of hallucinogenic plants to choose from (peyote, mushrooms, morning glory). Indigenous medicine is often used to not only heal the body but the spirit as well.

The Aztec ethnologies point to at least half a millenia of *datura* utilization, regardless of its context or implementation. The Aztec homeland, that of Central Mexico, also neighbors the southern end of the Southwest network (Pohl 2001). Oftentimes, this region is even incorporated into a greater “Southwestern” interaction sphere. Aztec knowledge can carefully be used as an ethnographic analogy -- upstreaming -- for some particular indigenous Mexican and Southwestern people. Native American belief systems are incredibly sophisticated, with each culture having their own distinctive ideology and organization, no one system the same. But sometimes a collection of traits may be shared amongst a group of people in a broad region and for astoundingly long periods of time. The cultures highlighted in this research all incorporate the usage of *datura*.

Datura was not only utilized across Mesoamerica, but widely in North America as well (Schultes and Hofmann 1979:110-11; Furst 1976; Applegate 1975a; Kroeber 1922; Gayton 1928; Stevenson 1915; Huckell and VanPool 2006; Litzinger 1979). Ancient Americans revered *datura*, implementing it in medicines, rites, rituals, and acquisitions of supernatural power. Additionally, it was used regularly for hunting-magic, love-magic, and acts of sorcery (Furst 1976; Yasumoto 1996). Preparations and practices varied from culture to culture, however, *datura* remains indelible to the cosmologies of the groups that utilize it. A number of cultures stretching from the Chumash in California, to the Zuni in the Southwestern United States, and to the Aztecs in Central

Mexico incorporated *Datura* into their worldviews (Furst 1976; Yasumoto 1996; VanPool and VanPool 2009; Schultes and Hofmann 1979). The plant tends to have mythical associations with nighttime, the underworld, madness, eroticism, fertility, wind, and death (Yasumoto 1996; Furst 1976; Aedo 2011). It is oftentimes conceptually tied to dynamics of opposition or dualities such as up/down and light/dark, perhaps long-standing Amerindian schemes of the world (Aedo 2011:120).

V. SHAMANISM

Shamanism has an integral relationship in Native American religions and belief systems. Miceae Eliade (1964) describes shamanism as the utilization of ecstatic techniques, forms of trance known as altered states of consciousness (ASC), carried out by select practitioners within a magico-religious system (4-6). Through ASC shamans are able to directly interact with supernatural zones and commune with the spirit world (Eliade 1964; Winkelman 2000; Grim 1983). Within this observance the universe is made up of a tripartite system (Figure 6) regarding an above world (day sky), middle world (earth), and underworld (night sky); all connected by a central axis (Eliade 1964:259). ASC may be induced through drumming, singing, chanting, fasting, intensive exercise, sleep deprivation, sensory deprivation, blood loss, or ingestion of psychoactive substances (Eliade 1964; Winkelman 2000; VanPool and VanPool 2007:180).

In an integrative process shamans use their own experiences and feelings from ASC to reason through myths, symbols, and rituals practiced in their specific cultural belief system (Winkelman 2000:88). In this way shamanic rituals may be less standardized and more spontaneous than those by priests (Grim 1983:10). These rituals are enacted to gain knowledge or help from the supernatural world for healing, divination, control of the weather, success in hunting, fertility, and finding lost objects or



Figure 6. The tripartite division of the World separated into the Above World, Earth, and Below World (Photo courtesy of F. Kent Reilly III, originally illustrated by Jack Johnson)

souls (Eliade 1964; Furst 1976; VanPool and VanPool 2009, Winkelman 2000). All shamans are healers and bestow their healing energy to an individual or community in need; but not every healer can be deemed a shaman (Grim 1983: 10). It is important to clarify that not all ASC can be regarded as shamanic states of consciousness (SSC). When an ASC is interpreted through a culture's religious framework as an encounter with the supernatural realms or entities, SSC are achieved (VanPool and VanPool 2009). SSC

regularly involve the soul leaving the body to ascend to the sky or descend to the underworld, termed soul flight (Eliade 1964:5). Additionally, common elements of death/rebirth, cosmic mountains, and world trees are seen in almost every shamanistic practicing culture (Eliade 1964). This is especially true for Native American societies.

Shamanism, over the last three decades, has been under much scrutiny for its applicability, terminology, and general validity in cultures to which it is attributed to (Grim 1983:11). Klein et al. (2002) suggest a number of criticisms to the shamanistic model, particularly within Mesoamerica. They find fault in Eliade's insistence of an archaic shamanism and its employment of a "universal mind" theory (Klein et al. 2002:387). Klein et al. proceed to insist that Eliade frequently wrote about "archaic" people not having a real sense of history, because they saw time as cyclical and recycled, not "linear and progressive". Additionally, they state that Eliade was not concerned with political organizations or socioeconomic interactions of the groups discussed in his influential work *Shamanism*. Perhaps most importantly, the most frequent denunciation of shamanism involves scholars wantonly using the word without definition or explicating on its terminology (2002:387). The term *shaman* itself comes from Tungusic speaking people in Eastern Russia -- *samān* being their word for a magico-religious practitioner (Eliade 1964). Some of these critiques are well-founded and should be addressed, while others are partisan and obstinate dismissals to any forms of legitimacy to shamanism.

In response to Klein et al.'s criticisms, linear or progressive models of history should always be questioned. In a Warburgian lens, cultures are continuously being broken down and re-created in perpetual oscillation; amoebas shaped by values and

traditions recurrently altered through time. This cycle involves the death, resurrection, and reappropriation of symbols and ideologies over a culture's duration (Aedo 2011:109; Didi-Huberman and Mendelsohn 2017:26). Linear models often involve an inclination towards evolutionary trends, implying a ranking or ordering system. This can easily slip into ethnocentric or elitist ideals -- counterintuitive to the entire field of anthropology. Most importantly historical truths are narratives that in actuality are not straight lines, but shaped by a multitude of factors and influences. Pertaining to this particular scrutiny of Klein et al.'s, Native American cultures in fact do see the world as cyclical -- just as many other indigenous traditions. Time can be viewed as linear, cyclical, or stationary depending on the domain, sometimes all are occurring at once. Unlike Western views there is no separation between the natural or supernatural; powerful energies are constantly in a moving state of flux. Entire cosmologies are engrossed with principles of renewal and reenactments of particular mythological stories to maintain a balance in the cosmos. This will be demonstrated in the theis' following case studies.

Eliade's universality of shamanism has gained support through numerous ethnographies produced over the years and through the work of Michael Winkelman (Winkelman 1990; Winkelman 2000). Winkelman suggests that there are biologically based neural structures innate in all humans for ASC potential (2000:4). He hypothesizes that these "universal and cross-cultural characteristics" of shamanism suggest it as the primal origins of religion (Winkelman 2000:71). In Weston Le Barre's *The Ghost Dance* he proposes that shamanism is the "*de facto*" source of all religion (1970:352). Regardless of how far back shamanism goes, every religious system across the globe

incorporates one of the many ways to induce ASC. Many Eastern traditions employ ASC and are often incorporated into meditative practices. Saint Teresa was famous in the 16th century and eventually canonized for her ecstatic experiences with Christ. Her mysticism has been immortalized in numerous European artworks, notably the sculpture by Gian Lorenzo Bernini entitled *The Ecstasy of St. Teresa* in Rome (Janson and Davies 2011:687).

Over the years scholars have regularly used the term shaman without explaining or defining what it is. This has caused confusion and resentment towards its validity, as many cultures deemed shamanistic do not all follow the same description, practices, or symbolism. This has led to attempts of new categorical systems and terminology. Winkelman (1990) proposed shamanism transformed into different types of magico-religious healers through changes in stratified societies, such as shifts towards sedentary-agricultural lifestyles (310). These variations should be mindfully recognized and considered when shamanism is applied across cultures, but the proposed terminology confuses the debate even more. Aspects of the newly created groups, such as “priests” and “shamans”, have characteristics that overlap creating intrinsic issues within the proposed typology.

VanPool and VanPool (2009) suggest a broad definition of “a religious system in which individuals work for their people by directly interacting with the spirit world” (179). This approach is more suitable for this thesis’ position. It should be principally noted here that shamanism acts as a tool or a specific practice within an overall religious system, an interpretation of shamanism must begin with an individual's cultural context

(Grim 1983:19). Emerson (2003) asserts that when recognizing shamans in prehistory we are purely acknowledging shamanistic practices and techniques, not presuming a culture's overall religious doctrine (148). The shamans do not create the cosmology or mythology within their respective cultures, but use it as a map for interpreting their ecstatic journeys into other cosmic zones. This is done for the purpose of obtaining spiritual aid for their own or their community's endeavors (Eliade 1964:266). Shamanism is not a panacea to all indigenous or Native American belief systems, however, its mechanism and principles are heavily secured in much of their practices.

Shamanism is imperative to understanding Native American belief systems, how they function, and importantly how they order the cosmos. A system predominantly based within animism and dualism; shamanism in indigenous American beliefs regulates a number of religious and societal observances. Ritual is shaped by core elements of shamanism and shamanistic thought. Native American shamanism differs from other regions by incorporating psychoactive agents into their rituals; most commonly tobacco, datura, and peyote (Furst 1976; Aedo 2011; Myerhoff 2001; Schultes and Hofmann 1979). Rituals involving these psychoactive materials may be carried out for: ancestor worship, spiritual contact with other realms, healing, acquisitions of power or wealth, hunting magic, and acts of sorcery.

VI. ICONOGRAPHY & MOTH STRUCTURAL ANALYSIS

Artistic depictions of sphinx moths can be found around the world and throughout a seemingly unending length of time. In today's more recent popular culture, the Death's-head hawkmoth (*Acherontia*) is the most widely recognized of the Sphingidae insects. It features a human skull-like pattern on its back and emits an unsavory noise similar to a mouse's squeak. It is typically seen as a harbinger of death or bad omen in many European cultures (Robischon 2019). For most people, they may recall the ominous moth from the novel and film *The Silence of the Lambs* and for the more artsy few they may recognize it from the Surrealist classic *Un Chien Andalou*. There is no record for how far back in time folktales regarding this creature may have gone, but imagery for this one particular sphinx moth extends to at least the 16th century in European Art (Robischon 2019:456).

Native American artworks also depict sphinx moths for a vast stretch of time. These images reach into antiquity, past the 16th century, as far as one thousand years ago in Mimbres ceramics and possibly several thousands of years ago in Lower Pecos pictographs (Berlant et al. 2017; Boyd and Cox 2016). The main goal of this thesis is to catalog the known iconographic depictions of sphinx moths in North America and to try and discern what they might have meant to the Indigenous people.

Typically, when investigating a motif or symbol a plethora of examples are at hand. The larger the collection of symbols or artworks, the better the investigation and understanding of the iconography's meaning (where, what, why, and how it is depicted in

various scenes). This is especially important when carrying out an iconographic analysis in the vein of Panofsky's method -- even more so when attempting to carry out a stylistic analysis. Unfortunately, the entire corpus of moth images is relatively small in Native American artworks, but more than enough to highlight and inquire into its existence. Only one culture area -- the Hightower region in the American Southeast during the Mississippian era -- has a large enough number of moth related artifacts (6) to perform a genuine iconographic study, breakdown, and analysis; which has already been performed (Knight and Franke 2007; Reilly III and Garber 2011; King and Reilly III 2011; Lankford 2014; Reilly III 2020). The purpose of this thesis is not to offer exhaustive artistic analyses of these artworks element by element, but to place them under a single umbrella. For the most part, structural analyses have already been carried out by previous researchers. This thesis may be seen as a library of sorts for Native American moth iconography. With all that being said, a simple structural analysis on a few artifacts in the vein of Panofsky's method will be provided, in hopes to familiarize the reader with what will be seen in the following sections that delve into each culture area.

The Willoughby Disk, Hightower style shell gorget, and Pottery Mound kiva mural are done in three separate art styles and mediums -- calling attention to how the images may be iconographically similar across art forms. Two of these moth depictions are from the Southeastern Ceremonial Complex, both dating around the 13th and 14th

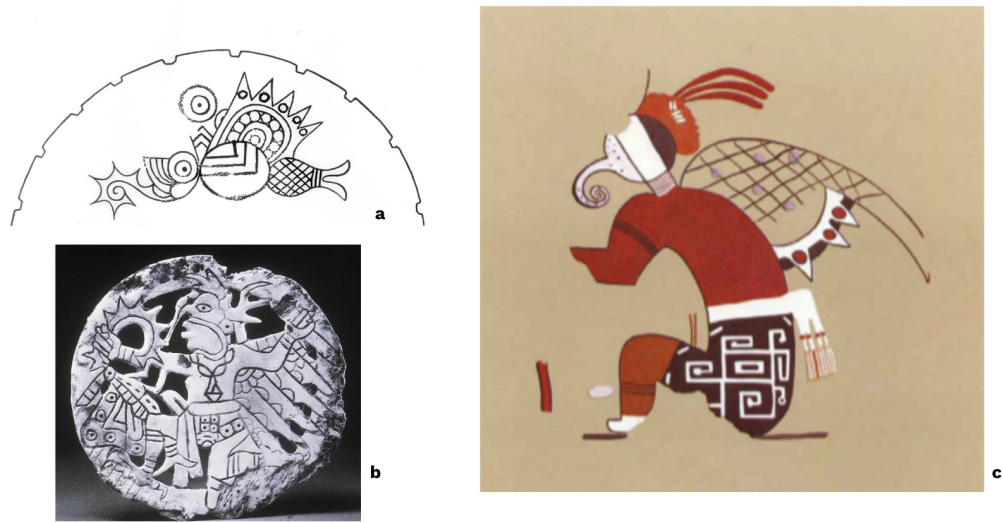


Figure 7. Top left (a): Willoughby Disk (Knight and Franke 2007), bottom left (b): Hightower Style Gorget (photo courtesy of F. Kent Reilly III), right(c): “Mothman” Kiva mural (VanPool 2009).

centuries (Brain and Philips 1996; King 2011; Reilly III and Garber 2011). One is an object made of marine shell known as a gorget, while the other is on a disk or palette made of stone. The remaining rendering is a painted mural from the American Southwest that dates to the Pueblo IV phase (AD 1375-1600) (Schaafsma 2009). Panofsky’s first level of analysis identifies elements and symbols. All three display elements of long lines curling into a tight spiral that emanate from the mouths of a character; these elements are jagged and rayed in the SECC images, but smooth in the Southwestern mural. The formal lines and elements can easily be identified as a symbol for a proboscis seen on an insect.

The figures in the Willoughby Disk and the “Mosquito Man” have sharp fan like designs protruding off of their backs. Each triangular projection contains a circle. The

Hightower shell gorget exhibits one large triangular shaped element protruding off the side of a sinuous body which ends in a forked design. This large triangular element is bordered by circles with dots. In all cases, these compositions can readily be detected as symbols for wings. All three images efficiently appear to depict a winged insect.

Through the identification of artistic elements as symbols for wings and a proboscis, the motif of a winged insect can be ascertained. This interpretation is involved in the second level of analysis in Panofsky's method. In recalling knowledge gathered from the natural world, one group of winged insects is the order Lepidoptera -- containing both moths and butterflies. The circle elements on the wings can be inferred as spots or "eyes" that are common on a number of species of butterflies and moths. Both of these insects have a proboscis, which solidifies the artistic renditions as likely depictions of a moth or butterfly and not another insect. In order to decipher what particular species these representations portray, more information needs to be gathered.

Panofsky's third level of analysis is contextual, more or less what are the motifs' overall meaning. This level of analysis is informed through a particular culture and period of time. While these three iconographic representations may represent the same thing or similar motifs, each culture's worldviews and beliefs shape the intrinsic meaning of the subject matter and what is being conveyed to the viewer. Backgrounds, histories, and ethnographies provided in each subsequent culture areas' sections will help to elucidate some understanding of their cultures artwork. Each cultures mythologies, ritual performances, particular practices of shamanism, and connections with *datura* are essential to apprehend the themes and contexts conveyed in a given artwork.

VII. CHUMASH

The documented use of *datura* by Native Americans traverses large swathes of the vast American continent, with new evidence broadening its significance every few years. *Datura*'s usage by indigenous Americans has been regularly marginalized within and outside the field of anthropology. For many decades its research has been disparaged by critics, thought to be eccentric academia influenced by counter-culture bohemians. Or if accepted, its employment in past societies is viewed as relatively meager. Historically, governmental and religious endeavors of Anglo or non-indigenous Americans desired to stamp out the practice of using entheogens by Native people. The term entheogen was created to depart from the pejorative connotations with the words "hallucinogen" and "psychedelic", that may imply an individual experiencing "false and deluded perceptions" (Winkelman 2017:126). This remodeled term reflects the agent's religious or spiritual properties and its use to connect with the sacred (Winkelman 2017:126-127). Early ethnographic accounts indicated that a large majority of the Indigenous cultures in Southern California utilized *datura*, most notably the Chumash and Luiseno, who seemingly revered it to a greater extent than other Indigenous Californians (Gayton 1928:27; Applegate 1975a; Blackburn 1975).

The Chumash occupied South Central California for over ten thousand years, spanning an area from San Luis Obispo to Malibu (Dartt-Newton and Erlandson 2006:416; 418). Their reach also included the Santa Barbara Channel Islands of Santa Cruz, Santa Rosa, and San Miguel; markedly regarded as the birthplace of their people

(Blackburn 1975:8, ...). The Chumash cultural range extended from the Santa Barbara Channel out eastward into the mountains and valleys of the mainland. The general term of Chumash is actually a bit deceitful, it does not denote one singular group of people but many autonomous groups that all spoke languages from the Hokan tree (Baker 1994:254). The Chumash diet incorporated efficient techniques of hunting, gathering, and fishing that utilized the abundant and diverse resources of both the terrestrial and marine terrains (Dartt-Newton and Erlandson 2006:416, 418; Timbrook 1990:236; Baker 1995:255). Communities varied from small settlements inland to densely populated towns on the coast which could reach to almost a thousand people (Brown 1967:79). Complex trade-networks incorporated the many people of the substantial region and a lively economic system operated with a shell bead currency throughout the land (Dart-Newton and Erlandson 2006:418). The Chumash had an extensively sophisticated society involving refined technology, elaborate ritual, and a highly intricate worldview (Dart-Newton and Erlandson 2006:416-418; Baker 1994:254-259).

The devastating effects of colonialism and the implementation of the Spanish Mission system in the late 18th century resulted in an immense population decline. Not only were the lives of the Chumash eradicated, but their lifeways eroded. Lands would eventually be overtaken by settlers, resulting in the U.S. history of California we know today. Descendants of the Chumash still occupy the lands of their ancestors, however, the many languages they once spoke died out in the 20th century. As a subsequent result much of the traditional knowledge has vanished to their descendants. While their blood lives on, much of the culture has been displaced (Timbrook 1990:238).

Early Ethnographies

As a more established Anglo-American presence made its roots in California during the second half of the 19th century, a growing interest in the indigenous peoples arose jointly with the field of anthropology. The most prominent of Californian ethnographers was A.L. Kroeber, who famously earned the first doctorate in anthropology at Columbia University under Franz Boas. Kroeber worked extensively with Native Californians across the state, amassing ethnologies covering material culture, social structures, and folklore throughout the early 20th century (Kroeber 1922; Kroeber 1925). In result he was one the first academics to intimately document ritual and religion amongst Native Californians. Kroeber divided the state into different religious “cult” regions based upon their practices: The Northwestern, Central, Southern, and Colorado River. Cults are defined in this thesis as a node of intensification within an existing religious system. In popular culture cults are typically seen with negative connotations, however, in anthropology there should never be any demeaning undertones in association with the word. The Southern cult actively involved the use of *datura* in many ceremonies -- also referred to as *toloache* in California and Southwestern ethnographies, (Krober 1922:304-305). Kroeber conveys that in these religious systems boys are given *toloache* during their initiation into a secret society and educated on its formal principles by elders or high-ranking members (1922:307). While the particular practices may vary amongst the many regions of Southern California, the use of *datura* itself is upheld as of utmost importance within these religious societies. Additionally, Kroeber believed that a pantheon of female deities associated with *datura* appeared across the Southern *toloache*

cults (Kroeber 1925:622-624). He concluded that due to the rapid decline of the Chumash people, knowledge pertaining to their religion, beliefs, and ceremony was virtually unknown and was unknowable (Kroeber 1925:567). However, as more research came to light over the subsequent decades, this would change.

Datura is incorporated into a number of cultures in Southern California and numerous ethnographies have mentions or details of its uses and rituals. Gayton (1928) stated that the most common elements among the Southern California *datura* cults were that the plant was not administered before puberty and it was used in effort to seek out a supernatural or spirit helper (27-28). It should be noted that each region differs in its employment and ceremony. Gayton separated the *datura* cults into three different groups based on their particular practices and characteristics; geographically they are composed of cultures in the Southwestern, Northern, and Eastern regions of Southern California (Gayton 1928:28-38). The Chumash fit most adequately with the Northern group, alongside the Yokuts and Western Mono (Gayton 1928; Applegate 1975a:8).

For the Chumash one of the most important contributors of ethnographic works was John Peabody Harrington; from 1912 to 1922 he endeavored to preserve the diminishing traditions and language of the Chumash people. Over the years he met with numerous Chumash-speaking elders -- and their children in subsequent decades -- amassing over several hundred thousand pages of notes, now housed at the Smithsonian (Timbrook 1990:239; Applegate 1975b:190). These ethnographies are integral to Chumash research and provide a missing link in Kroeber's previous investigations. Harrington's and other ethnographers' informants came from the Ventureño, Barbareño,

and Ineseno Chumash; additional Chumash groups do not survive in any written accounts (Applegate 1975a:8). The Chumash should be seen as related diverse populations sharing significant cultural traits, but are not necessarily composed as one cultural entity (Blackburn 1975:8). A diversity of beliefs and actions would have been carried out amongst the varied tribes, instituting the overlooked dilemma of a no “one size fits all” portrayal of Chumash lifeways. Unfortunately, due to the demise of the ensemble of Chumash culture, all of the once spoken languages are now extinct. Therefore our look into the past is forever limited and not a complete reconstruction.

Datura in the Chumash

In the 1970’s scholars helped to further investigate aspects of Chumash lifeways that before were overlooked and not as highly inspected; most especially they applied new theories to examining folklore and linguistics. Thomas C. Blackburn probed the mass of Harrington’s papers and compiled over a hundred distinct cultural narratives, which he used to assist in interpretations on material and social culture of the Chumash (Blackburn 1975; Applegate 1975b:190). Although there are inherent exaggerations and distortions of lifeways within folklore, there is no doubt that these narratives are relevant and an extremely beneficial aid in better understanding erased cultures (Blackburn 1975:xvi; Applegate 1975b:189).

Significant to this study are the stories that involve *Momoy*, who appears distinctly in Chumash stories and nowhere else in California cultures. In these narratives Old Woman *Momoy* is one of the First People who lived in a time before human creation, when animals were still people. *Momoy* plays a central character in several of the most

prominent Chumash myths. She is a wealthy old widow who often has a daughter and at times becomes the adoptive mother or grandmother in the Chumash “twins” story (Blackburn 1975:36, 104-140). *Momoy* does not actively participate in outcomes or battles with the nefarious villains, but does have the wisdom and ability to see the future, allowing her to warn the leading figures. The protagonist may drink water that the old woman has washed her hands in, which in turn permits them to see visions of the future or present them to sources of supernatural power (Blackburn 1975:36). *Momoy* or *mo'moy* is also the Chumash word for *datura* itself and at the time of the Great Flood, in their mythology, the old woman became the living plant now seen on Earth (Timbrook 1990:252; Applegate 1975a:16; Baker 1994:254). The Old Woman herself is the embodiment of the plant. This integration of mythology with the natural world reveals many of the observances and qualities that the Chumash associated with *datura* (Applegate 1975a:16). Aspects of Chumash mythology affiliate *Momoy* with being able to “teach you all things”, see the future, and grant prayers for luck, wealth, or power (Applegate 1975a:16).

Furthermore, *datura's* uses were multifaceted amongst all Native Americans peoples, it being very strong medicine wherever it was handled. The Chumash regard for *datura* was no exception, as they viewed it as having supreme curative powers, amongst countless other things (Applegate 1975a:14). As medicine it may be utilized for broken bones, a poultice for wounds, “freshening” of the blood, and preventing misfortunes or soul loss (Applegate 1975a:13-14). Its main function, however, was to aid in providing contact with a spirit or dream helper known as *'atiswin* (Applegate 1975a:8). This tutelary

spirit is typically an animal but may also be a plant, ghost, or personified natural force. Throughout Native American cultures all reality is seen as animate; aligning with this belief, in the worldview of the Chumash all things have the potential for supernatural power (Baker 1994:260; Grim 1983:75-76; Hallowell 1960; Bird-David 1999; Harvey 2017). It provided life-long protection and perhaps a predilection towards certain traits, such as hunting (Applegate 1975a:7). An '*atiswin*' also refers to a particular talisman that an individual may possess; it would promote a stronger connection to their spirit helper -- an amplifier to non-human powers (1975a:7). A spirit companion is attained through accompanying rituals or right of passage events that are ubiquitous throughout Native Americans cultures. The process of attaining a spirit companion typically involves any number of ways that reach ASC, as stated before, like dancing, fasting, lack of sleep, and forms of self-torture (Applegate 1975a:10; Grim 1983:63; Heckewelder and Reichel 2015). The Chumash, however, believed that only *datura* would help grant access to these supernatural forces (Baker 1995:260).

This rite was taken individually and oftentimes only once, the first use always to acquire the '*atiswin*'; but *momoy* could be utilized any number of times to strengthen an individual's connection to supernatural powers (Applegate 1975a:8). While not required, those that partook in this initiation rite were inducted into the '*antap*' society; an elite and secretive institution (Applegate 1975a:10; Blackburn 1975:13; Baker 1995:257). As well as taking *datura*, initiates were taught esoteric language, songs, dances, and the fundamental principles of the secret society -- like how to know and wield the powers of the universe. Members of the '*antap*' society would perform at large public ceremonies

and preside over important sacred observances. Although it was a closed society it was thought to be fully integrated into Chumash life. This religious order was a highly elitist and stratified sodality involving the chief or *wot*, shamans, and other important officials connected across the landscape through the different Chumash communities (Blackburn 1975:13). The '*antap* network was an extensive unifying mechanism for the greater Chumash area, seen as a protecting entity for the community (Hayden 2018:2). To gain admittance large sums of money were required to be paid, presenting a disparity between societal positions and the access to wealth, power, and prestige (Blackburn 1975:13; Baker 1995:257).

Rock Art

Rock art is one of the most captivating and alluring features left behind by humankind -- literally giving a glimpse into the minds and stories of the faraway past. However, in the eyes of American archaeologists it has been regularly marginalized. In California there are roughly 1,500 pictographs and petroglyphs; when compared to the number of all other kinds of archaeological sites, rock art is considerably rare (Whitley and Whitley 2012:256). Among California archaeologists its emergence, creation, and meaning have been in question for the better part of a century. Chumash rock art has been interpreted in a number of ways over the years as: hunting magic, territorial markers, restricted religious centers, tied to astronomical associations, and even a system of socializing the landscape (Whitley and Whitley 2012:256-257; Robinson 2010). However, there is no all-encompassing or singularly definitive answer to this dispute.

Art serves a variety of functions around the globe and differs in its meaning within a communal or individual basis. Chumash societies would have differed slightly from village to village and each may have viewed these rock paintings in an ever so different light. It is evident that ceremonies involving *datura* themselves changed slightly from village to village and even more greatly between Indigenous Southern Californian cultures (Gayton 1928; Kroeber 1922, 1925). But, it is also very likely that some general rules or wide understanding -- within the context of the Chumash belief system -- would have been in place throughout the greater area. Each Chumash village may have focused on particular stories, powerful spirits, stars, sacred geographical locals, or principles within the greater corpus of their mythology and doctrine. Just as there are many different Christian sects that focus on particular principles and stories within the Bible, there can be a variety of denominations existing under the main corpus of a belief system.

The rock art of the Chumash in the Santa Barbara region is renowned for its polychrome paintings consisting of black, red, and white pigments. It has interested archaeologists and anthropologists for decades, as far back as Kroeber and Steward in the beginning of the twentieth century (Whitley 1998:23-24). Since the earliest deliberation on the subject, shamanism has been suggested as the essential practice involved with rock art creation and interaction; but its exact relationship has always remained in question. Kroeber originally suggested that the artwork was connected to hallucinogens or shamanistic ASC, the paintings themselves depictions of trance states (1925). During the 1970's this point of view grew in popularity and has become endorsed by various

archaeologists, Whitley being the premier advocate (Whitley 1998; Whitley 1994; Lewis-Williams 1988).

A decade later Lewis-Williams (1988) proposed the acclaimed “entoptic phenomena” connecting rock art to ASC. This theory suggests that geometric elements of grids, zigzags, dots, and spirals are universally seen during ASC; these elements are then replicated in rock art paintings (202). Lewis-Williams contends that this phenomena crosses cultures globally and dates back to the first rock art paintings of the Upper Paleolithic (1988). This viewpoint advocates a universal mind theory, where all human brains are essentially wired in the same ways and have the ability to produce similar responses. In this way, all humans around the globe have the capacity to see such designs without any cultural diffusion. Rock shelters or cave walls don’t just represent natural canvases but hold unique positions on the landscape and in ideologies of Native Americans. Caves and rock shelters in many Indigenous belief systems are thought to be portals to other supernatural realms and often represent liminal spaces between worlds or powers (Whitley 1999:16). This belief is true for many Native American groups including those in the SECC, the Maya, and the Chumash.

Whitley contends that ethnographic accounts of the Chumash suggest rock art was created by shamans -- and furthermore, puberty initiates or persons in crisis -- in order to access supernatural power, principally via a tutelary spirit or *'atiswin* (1998:24-25). This perspective often believes that the images are self-portraits of shamans in trance or depict a shaman’s particular experience while in ASC. In many Native American societies dreams and visions are seen as a source of power or can allow access to different kinds of

power (Applegate 1975a:10; Grim 1983:101-102; Heckewelder and Reichel 2015). Once a Chumash initiate drank a concoction of *datura* they would lose consciousness and fall into a deep slumber; there they were told to pay attention to their dreams (Applegate 1975a:12). These *datura* induced dreams allowed contact with the supernatural world; the visions would then be interpreted through the framework of Chumash mythology, symbolism, and wisdom. It can thus be understood that dreams, shamans, spirit-helpers, caves or shelters, and rock art in the Chumash world are all very closely intertwined (Whitley and Whitley 2012:257).

Pinwheel Cave

Recently, investigations by Robinson et al. (2020), at the California rock art site of Pinwheel Cave, have produced some of the most meaningful rock art and *datura* research in years. Pinwheel Cave is situated in the interior Chumash borderlands of Southern California, between Santa Barbara and Bakersfield (Figure 8). It is associated with a bedrock mortar complex (BRM) where food processing and other communal activities commonly took place. Its name is in reference to a large red pinwheel motif painted on the cave wall (Figure 9). The distinctive element is thought to represent a *datura* flower. When a *datura* corolla -- or bloom -- opens up, it unfurls to resemble a five pointed pinwheel (Robinson et al. 2020; Robinson 2013).



Figure 8. Location of Pinwheel Cave in California (Robinson 2020:31029).



Figure 9. Pinwheel painting in the cave (left) and a flower (*Datura wrightii*) opening up (right) (Robinson et al. 2020:31027).

Interestingly, numerous clumps of organic material are wedged into crevices on the cave ceiling (Robinson et al. 2020: 31028). These clumps are known as quids (Figure 10), or chewed wads typically composed of plant material. Robinson et al. conducted



Figure 10. Quids *in situ* in Pinwheel cave's ceiling (Robinson et al. 2020:31029).

liquid chromatographic-mass spectrometry (LCMS) analysis on the quids and found that they contained atropine and scopolamine; the two psychotropic alkaloids particularly found in *datura* (2020: 31028-31030). Scanning electron microscope (SEM) results showed that all but one of the 15 quids analyzed were of *Datura wrightii* -- the outlier was composed of *Yucca*. *Datura wrightii* is native to California and the American Southwest, it being the most common *datura* species in these regions. A few populations extend into northern Mexico, but it is commonly noted as a particularly American breed (Luna-Cavazos et al. 2009:271). SEM analysis additionally showed that quids were made up of different parts of the *datura* plant, but mainly consisted of leaf and stem fragments (Robinson et al. 2020: 31030). Quids were radiocarbon dated with ranges from 420 B.P. to 295 B.P. (AD 1530 to AD 1655; 95.4% range; quid H) to 270 cal B.P. to 85 cal B.P. (AD 1680 to AD 1865; 95.4% range; quid C) (Robinson et al. 2020:31034). These dates align with others collected from materials on the cave floor and the neighboring BRM area, showing multiple centuries of *datura* usage persisting from the Late Prehistoric to the Historic Period (Robinson et al. 2020:31035). The quids are the first detailed

evidence of rock art and hallucinogens in direct association with one another. It serves as the most substantial find of its kind throughout the entire world.

Microscope imaging suggests that each individual quid was initially chewed and then placed into a crevice in the cave ceiling. Therefore it can be inferred that each quid represents a singular dose for an individual. Drinking *datura* is thought to be the main practice of consumption in initiation and ritual use, but Pinwheel cave fascinatingly exhibits another procedure (Applegate 1975a; Applegate 1975b; Blackburn 1975; Baker 1994). Perhaps the quids represent other forms of ritual that were not those of initiation, like pre-hunting rituals; or it could represent individuals seeking to attain additional personal power (Robinson et al 2020:31034). Other archaeological remains found were: projectile points, debitage, arrow shaft straighteners, small mammal remains, groundstone, and edible plant materials. This suggests that Pinwheel cave was utilized for more than just ritual use, contrasting with Whitley and others supposition that rock art sites should only show signs of shamanic activities. Robinson contends the site was part of many social activities that occurred throughout the year, perhaps indicative of it being used as a seasonal residence or round (Robinson et al. 2020:31034; Robinson 2013). Shown in the archaeological record of Pinwheel Cave, rock art was very much a part of the social landscape and integrated into aspects of everyday life (Robinson 2010; Robinson 2013).

The pinwheel design appears to be repainted several times, indicating that it is unlikely to be the product of one singular shaman's vision. Instead a different hypothesis may be considered, the pinwheel depicts the opening of a *datura* flower. This inference is

further substantiated by another painted figure in the cave (Figure 11), a human-like body with additional antennae and dichoptic eye orbits. Its resemblance to a hawk moth is significant and reasonable; white-lined sphinx moths are common in the area and are known pollinators of *datura* (Robinson et al 2020:31034-31035; Grant 1983a). The hawk



Figure 11. Anthropomorphic painting in Pinwheel cave and a hawk moth head (Warnert 2020).

moth anthropomorphic being may either represent a spirit helper or perhaps what the participants themselves turn into after ingesting *datura* (Robinson et al. 2020:31035). Hawk moths are symbolic of interactive relationships with *datura*; many Native American cultures were aware of their natural connection -- as will be demonstrated throughout this research. Therefore the artworks within Pinwheel cave are not depictions of ASC, but representative of the actions that are taking place in the cave and the interactions between people and other-than-human beings at this particular locale. Just like a label on a medicine bottle, the art tells the contents of what is within the cave and details what interactions may take place inside it.

The artwork is comparable to a surrogate of power for the plant and the moth, not depictions of the transitory experience endured in ASC (Robinson 2013:71). In Native American perspectives art does not function the same as it does in the Western world. Art is not passive, but active. The depictions are not just representative, but are indeed alive and have forms of agency once they have been created -- acting as conduits between humans and spirits (VanPool and VanPool 2021:8). The physical world, in Chumash thought, is inhabited with many transomorphic beings -- plant, animal, or physical phenomena -- that can possess power (Robinson 2013). Throughout the landscape these powers are distributed and may manifest in specific places -- creating a sacred geography. Through interactions an individual may attain some of a particular supernatural's power (Robinson 2013:63). *Datura* allows the person to see these spirits that inhabit particular places on the landscape. For example, if one took *datura* at a shrine on a hill just south of the Santa Ynez River, they would encounter a huge serpent that lived in a cave below the bluff (Applegate 1975:12-13). Shrines, rock art, sweat lodges, and other various ceremonial constructions were used throughout the Chumash territory to add additional layers of symbolism to significant natural features in the landscape (Perry 2007:103). It can be assumed that Pinwheel Cave functioned much in the same way, as a sacred landmark integrated into everyday life. To reinforce its power the rock art conveys culturally specific symbols for Chumash society, acting as a visual catalyst communicating information to its viewers (Robinson 2020:31035). However, it also has the dual purpose of being more than just an instrument, but a place where spirits live.

VIII. HUICHOL

The Huichol are a living Native American culture that reside in West Mexico, principally the states of Jalisco and Nayarit (Powell 2010:1; Yasumoto 1996). The given Spanish name for this respective group of people is the Huichol, while they actually refer to themselves as the *Wixarika* (pl. *Wixaritari*) (Powell 2010; Aedo 2011). They live on *rancherías* dispersed throughout the rugged Sierra Madre Occidental, and practice a rural lifestyle still engaged with surviving forms of ancient agriculture (Powell 2010:2). The Huichol belief system is thought to be one of the least “contaminated” Mesoamerican religions, as they resisted heavy colonization from the Spanish for several hundred years during the European conquests (Powell 2010; Maclean 2001; Yasumoto 1996). The Huichol have a particular assortment of cultural survivals that have remarkably endured a trodden existence. Their cosmologies are reminiscent of many ancient Uto-Aztecan speakers in the greater Mesoamerican region, such as the renowned Aztecs themselves (Boyd and Cox 2016).

Common themes of sacred mountains, acts of renewal, and numerous similarly related deities or mythological figures appear across Uto-Aztecan ideologies. The Huichol's understanding of the universe is tied to an exceedingly ancient system of beliefs. Most importantly the concepts of balance and renewal are central to *Wixarika* thought (Powell 2010:6). Though they maintain strength in their traditional belief system, Christianity is not without influence and is incorporated into many of the townships today. It should be noted that not all Huichol belief systems are homogenous.

Pronunciations and differences in language vary from community to community, as well as kinship systems, what ancestral spirits are venerated, and a number of other traits that may diverge (Knab 1977; Aedo 2011). However, the core cultural traits and customs are unified amongst the various *Wixaritari* communities.

The Huichol are famously known as a “peyote cult” who make a yearly pilgrimage through the desert in the Mexican state of San Luis Potosi to gather or “hunt” the illustrious cactus (Powell 2010:10). The peyote cactus (*Lophophora williamsii*) contains psychotropic alkaloids, appointing it primary importance in *Wixarika* healing and ritual practices (Aedo and Faba 2017: 193) . The 300-mile pilgrimage to the sacred mountain and homeland called *Wirikuta*, must take place every year to bring order and balance to the universe. The Huichol mythological stories of the birth of peyote and the creation of the sun have numerous complementary themes, each taking place at *Wirikuta* (Boyd and Cox 2016:58-61). The stories of the sun and peyote involve acts of sacrifice to create the living world of today in the Huichol understanding. In essence the sun and peyote are responsible for the fundamental institutions in *Wixarika* cosmology, providing light, life, laws, and time itself (Boyd and Cox 2016:58). The beliefs surrounding peyote, the sun, and deer represent a complete communion, designating different nodes in Huichol forms of knowledge and life experiences (Aedo and Faba 2017:194). These stories that uphold their institutions must be re-enacted and carried out in ritual each year, otherwise the world would fall into apocalypse and catastrophe.

On the pilgrimage to *Wirikuta* shamans, or *mara'akáme*, lead the way to collect peyote, called *hikuri*, for ritual use in order to gain access to the sacred mountain. While

there is not a direct translation of *mará'akáme*, they perform functions most similarly attributed to the aforementioned definition of a shaman. “Shaman-singer” may provide a more apt translation as chants and songs are vital to any of their practices (Yasumoto 1996:238). The peyote is also gathered for use in additional ceremonies performed throughout the year, as it is integral to socio-religious aspects of Huichol life (Knab 1977:80; Aedo and Faba 2017). The psychotropic compounds in peyote generate a vibrant color field when ingested and people often report seeing geometric patterns amongst their visions (Maclean 2001:308). Maclean reports that these vivid colors include: violet, purple, blue, brownish oranges, chocolate browns, light dove-gray browns, fluorescent greenish-yellow, and fluorescent orange-yellow (2001:314). A *mará'akáme* who develops an intimate relationship with the peyote is able to directly communicate with the gods and the spiritual realm (Aedo and Faba 2017; Powell 2010; Maclean 2001). To some *mará'akáme* the colors can act as a sort of language or form of communication between them and revered spirits. *Hikuri* is believed to literally “give sight” to the *Wixarika* (Aedo and Faba 2017; Powell 2010:10). It represents a sense of order in their cosmological system. Before the birth of *hikuri*, the primordial beginnings of the world were dark and disorganized (Boyd and Cox:58-61). Without *hikuri* the world would be in complete disarray. From a rigid anthropological standpoint it could be viewed that *hikuri* represents “culture” implementing its domain over the untamed entities of “nature”. More poetically, a light given to those who before were wandering in the dark.

Kiéri Complex

Past ethnological works have been extensively interested in the psychotropic plants that the Huichol utilize. Robert Zingg was one of the first American Anthropologists who worked with the Huichol, and perhaps the first ethnographer to take note of the significance of *Kiéri* in the *Wixaritari* world -- a force antithetical to *hikuri* (Aedo 2011; Furst 1997; Powell 2010; Yasumoto 1996). He believed it to be the *datura* plant, often used in the neighboring American Southwest and California. Peter Furst further acknowledged this finding and spent multiple decades, field seasons, and publications dedicated to investigating this relationship (1997). Furst and Myerhoff (1966) notably relayed the myth of a contest between the prominent culture hero *Kauyumári* and his rival *Kiéri Tewiari* (Figure 12).

Kauyumári, known as “Elder Brother Deer”, plays an immensely pivotal role in Huichol mythology, principally his alter ego is peyote. *Kiéri Tewiari*, a sinister supernatural sorcerer, was believed to be a personification of the *kiéri* plant -- in this case *datura* (Furst and Myerhoff 1966; Furst 1997; Myerhoff 1976). Myerhoff explains in *Peyote Hunt*, “Elder Brother Deer Tail gave the people peyote, protected them from the evil sorcerer, Kieri Tewiyari, and from the dangers of being driven mad by *datura*. And it was Kauyumari who was responsible for the first act of procreation and thus for the perpetuation of the Huichol race” (1976:202). In the myth *Kauyumári* defeats *Kiéri Tewiari*, but the sorcerer is not killed. *Kiéri* is instead turned into a tree, “The Tree of the



Figure 12. Yarn painting of *Kauyumari* battling *Kieri Tewiyari* by Ramon Medina (Boyd and Cox 2016).

Wind”. Thus, Furst and Myerhof assumed the myth signified a competition between a sort of good versus evil, similar to connotations of heaven and hell intertwined into the two psychotropic plants (1966). In this context, *datura* could be seen as the darkness to peyote's light.

Anthropologists interested in Huichol mythology, symbolism, and art have engaged in numerous disagreements as a result of conflicting information gathered between the different communities in the Sierra Madre (Knab 1977). Over the years perceptions of *kiéri* -- like what plant it actually is -- have radically changed. Tim Knab suggested that the *kiéri* in Furst and Myerhoff’s myth was unlikely to be *datura* because

of its herbaceous qualities (1977:81). He noted “The Tree of the Wind” has five branches in the aforementioned account (connotations with World Tree symbolism), thus supposing the actual plant would likely be larger and woodier (Furst and Myerhoff 1966; Knab 1977). The *datura* bush is more of a shrubbery, lacking tree-like limbs. Knab hypothesized that a species of *Solandra* (Figure 13) would better fit this description of the Huichol “god-plant”. Growing up to fifteen feet high, *Solandra* produces similar trumpet shaped flowers to *Datura*. Its yellow blossoms allude to its vernacular name in Mexico of “gold cup”, the plant is also indigenous to the country (Mohammed et al. 2016:385). Still in the *Solanaceae* family, *Solandra* has similar alkaloid compounds to *datura*, containing hyoscyamine and scopolamine (Yasumtoto 1996:245; Aedo 2011). Most importantly to Knab, it fits the tree narrative.



Figure 13. *Solandra Maxima* (Hellmuth 2018).

Knab proposed some other considerable key revisions to *kiéri*. He found that several Huichol communities referred to *datura* as “bad” *kiéri*, while *Solandra* was seen as the “real” *kiéri* (Knab 1977:81). Contrary to Furst and Zingg’s reports of *Kiéri Tewiari* being an evil deity, Knab’s ethnographic accounts found it to be powerful but not always malevolent (1977:82). Esoteric knowledge of how to use the *kiéri* is limited to only a few special *mara’akáme*, however, any ordinary person can seek to attain its power. Knab’s informants indicated that its energy is predominantly associated with witchcraft and sorcery (1977:84-85).

Following Knab’s new claims, *kiéri*’s taxonomic classification came into much contention for the following years. After two decades a new Huichol ethnographer brought forth further research and evidence for a more accurate composition on the *Wixarika* view of *kiéri*. Masaya Yasumoto found that the plant *kiéri* is associated not only with a particular god, but with whirlwinds, cyclones, tornados, and souls of the dead (1996:239). These particular types of wind can be harbingers of physical or mental illness, as well as other types of misfortunes to the Huichol. In this way *Kiéri* is seen as dangerous and unpredictable, akin to the nature of the wind. Elaborating on Furst and Myerhoff’s myth, *Kiéri Tewiari* is recognized as a *kakauyari*; an unknown being or ancestor -- this term has an important emphasis on coming from a place of the supernatural or unknown (Yasumoto 1996:240). Yasumoto’s interest in how the Huichol people experience the phenomena of *Kiéri* through their belief system, fundamentally enhances how outsiders can comprehend its extensive essence.

Angel Aedo, like Yasumoto, has undertaken significant research on the *Kiéri* complex. Proving to be a leading authority on the matter, Aedo completed an extensive dissertation entirely on the subject of *Kiéri*. Both Yasumoto (1996) and Aedo (2011) have established in their ethnographic studies that *kiéri* is not only *datura*, but a number of Solanaceous plants acting in a *kiérite* system (*ite pl.*). Yasumoto proclaimed from his studies that *Solandra* is the “good” or “true” *kiéri*, while *Datura* is seen as “bad” or “dangerous” *kiéri* (1996). Furst re-evaluated his decades of research and arrived at the same conclusion of a “good” and a “bad” *kiéri* (Furst 1997). Aedo recognizes Yasumoto’s findings of *kiéri* as *Solandra* and concurs, solidifying Knab’s claims made more than three decades earlier. However, Aedo even goes a step further, amending Yasumoto’s findings and concluding the plants of *kiéri* actually work in a hierarchical structure -- not just “good” or “bad”. (2011:140). In the *Wixarika* world the highest and most revered form of *kiéri* is *Solandra*, followed by *Datura*, known to the Huichol as --



Figure 14. *Brugmansia suaveolens* (Ring 2003).

*kiérix*a (*ixa* = “like”). Last in this order is *Brugmansia* (Figure 14), referred to as *kiériwiyeme* (*wiyeme* = “to rain”), a cousin of *Datura* native to South America that is more tree-like than herbaceous (Aedo 2011:127). All three belong to the *Solanaceae* family and contain similar chemical compounds and tropane alkaloids -- hyoscyamine and scopolamine (Aedo 2011:127; Bye and Sosa 2013; Benítez et al. 2018:134).

The plants in the *kiérite* system grow on rocky cliff sides and steep slopes in the Huichol landscape (Aedo 2011; Yasumoto 1996:247). Mythologies and folktales repeatedly tell stories of characters traveling to cliffs or mountains to engage with *kiéri*, because of this it is associated with large rocks (Aedo 2011:136). Principle pollinators of *Datura* and *Solandra* are predominantly nocturnal insects, chiefly hawk moths (*Sphingidae*) (Grant 1983; Riffel et al. 2008; Aedo 2011:136). This natural relationship reflects itself into representations of the supernatural entity of *Kiéri* with nocturnal winged insects and other flying animals. These mythical characters are manifested with nefarious attributes of the night thought to bring the *Wixaritari* sickness and death (Aedo 2011:136). One such creature is the *'iteuki* who the *wixaritari* of the Santiago river canyon believe is linked to the *kiéri* cult (Aedo 2011:227). It is said to be “a magical animal that comes out of the fire and prevents the gods from making it rain” and “roars like a lion but also flies in the air buzzing like an insect” (Aedo 2011:173). In some cases a *mara'akáme* that does evil may turn into an *'iteuki* themselves and fly away (Aedo 2011:227).

To attain the position of a *mara'akáme* one must undergo intense training for five years, making journeys yearly to *Wirikuta* (Yasumoto 1996:239). A number of

observances and taboos are to be practiced during this time period, such as celibacy and fasting (Yasumoto 1996:254; Aedo 2011). However, a person can bypass these arduous tasks and seek out the more hasty power of *Kiéri*. Making a vow or praying to *Kiéri* is relatively easier and quicker than other modes of attaining supernatural aid. It is frequently called upon to swiftly grant wishes in acquiring wealth, successful deer hunts, and playing the violin (Yasumoto 1996:251; Aedo 2011). But the nature and force of *Kiéri*, as has been demonstrated above, can be incredibly dangerous. Yasumoto (1996) explains, “To make a contract with *Kiéri* is to submit to its extremely dangerous control” (254). This shorter road to reward is complemented with an increased chance of peril or even death.

The *kiéri* semantic system represents an indigenous organizational scheme outside of the Western scientific paradigm. In Western thought they are ordered in a biological taxonomic system, a *Solanaceae*. But to the Huichol they are ordered under *Wixaritari* beliefs and ontologies. Its significance does not exist purely in its form as a plant, even less so as a narcotic. The plants are never used as poisons, but are prayed to and wished upon to their supernatural spirit. The pharmacological knowledge of the plant is incorporated into the symbolism of *Kiéri*; its physical form and the energy tied to it (Yasumoto 1996:261). Its properties and role in the environment situate it neatly into the mythology of the night, setting up foundations for a complex indigenous theory of the world (Aedo 2011:137,139).

The forces imbued and embodied in both *Kiéri* and Peyote exist in a multitude of spaces: inorganic, organic, plant, animal, human, and celestial (Aedo and Faba

2017:194). These psychic forces are attributed their own characteristics, personalities, and stories attached to them. For the Huichol they are living, breathing energies that order the world and shape their experiences. Semantic systems often are generated from biological responses to multitudinous phenomena. Regularly, relationships are garnered from a group's particular environment. The eternal oscillation of day and night also acts as an ordering principle for so many of the things experienced (Aedo 2011:59).

Universally, all cultures have similar notions related to the night of death, anxiety, and the unknown. Most Native American belief systems incorporate a system of dualities used in conjunction with each other to bring order and harmony to the universe. These ontological systems were created absent of Western philosophies or acts of knowing. Both *kiéri* as *Datura* and *Kiéri* as supernatural power have the dual capacity to generate abilities and virtues, as well as to deceive and damage those that seek to obtain its power (Aedo and Faba 2017:194-196). *Kiéri* works antithetical to peyote in Huichol religion; the opposing disorderly dark force of the beneath world, inverse to the order maintained by the revered above world and “sight giving” peyote. However, the view of Heaven versus Hell or an epic of good and evil mischaracterizes the semantic field that this -- and many other -- indigenous belief systems follow. *Kiéri* is assuredly dangerous, but above all serves as the notion of disorder and irregularity to the Huichol. It is not only tied to the Underworld, but also anything foreign to the *Wixaritari* (Aedo 2011:196). Modern sciences of botany, chemistry, and ecology have aided in the identification of the “authentic” *kiéri*, however, this has proven to be only a small part of its overall organization (Aedo 2011:261). Western views anchored in the modern world are not

always appropriate to apply in anthropological studies -- especially in the understandings, perceptions, experiences, and acts of knowing to indigenous people, like the Huichol.

IX. SOUTHWEST

The vast majority of Indigenous cultures in the Southwest have been reported to use *datura* as medicine or in ritual. Through the investigations of ethnography and archaeology it is clear that *datura's* employment in the Southwest is widespread geographically as well as temporally; spanning centuries or perhaps even millenia (Huckell and VanPool 2006; Boyd and Dering 1996; Yarnell 1959). Ethnographically there are records of *datura* practices in the Hopi, Zuni, Acoma, Laguna, Jemez, Navajo, Apache, Southern Paiute, Yavapai, Havasupai, Mohave, Yuma, Pima, and Yaqui (Huckell and VanPool 2006:150; Litzinger 1979:149). Unfortunately, organic material is relatively rare to find at archaeological sites, likely due to a number of preservation biases such as the fact that the utilization of the plant doesn't always require cooking. However, seeds have been found at multiple Pueblo ruins in the Southwest, the oldest of these locations extending as far back as Basketmaker III (AD 500-750) (Yarnell 1959; Yarnell 1965:668,671). The most noteworthy of these sites is Higgins Flats Pueblo, near Reserve, New Mexico. Hundreds of seeds were found on a room floor in association with ceremonial objects -- the largest collection of seeds ever to be found in the archaeological record of the Americas (Cutler 1956; Cutler and Kaplan 1956; Yarnell 1959).

Consequently, it should be no surprise that the American Southwest contains some of the most abundant *datura* and hawk moth motifs on the continent. Due to the vast scale of cultures and iconographic motifs within the greater region of the Southwest,

only a few representative case studies will be highlighted in the subsequent section.

Indeed, an entire thesis on its own could cover this particular region.

The American Southwest in anthropology refers to both a cultural and geographic range, recognized as having related characteristics as well as shared lifeways by its past and present inhabitants. It is not strictly confined by political boundaries and is often viewed through Erik Reeds (1951) lyrical definition of: “Durango (Mexico) to Durango (Colorado) and from Las Vegas (New Mexico) to Las Vegas (Nevada)” (Wilcox and Fowler 2002: 121-122). Typically the region is composed of the Four Corner states -- New Mexico, Arizona, Colorado, and Utah -- with parts of Northern Mexico included; all cultures within this geographical zone can be deemed Southwestern.

In 1924 A.V. Kidder published his seminal work *An Introduction to the Study of Southwestern Archaeology* and subsequently held the first Pecos Conference three years later. Kidder and other early archaeologists at the Pecos Conference were able to establish a chronology based on ceramic artifacts dubbed the Pecos Classification, which is still used today -- like Basketmaker III previously mentioned. It was further solidified and expounded upon in 1929 with the addition of dendrochronology -- better known as tree ring dating (Wilcox and Fowler 2002:182-186). Kidder’s research and the Pecos Conference gave the first extended timeline for any indigenous culture in America, being able to separate sites into different distinct eras within their overall occupations. This was revolutionary in the field of American archaeology. The Southwest’s arid climate allows for natural preservation of organic materials, staking its place as a hotbed for archaeological investigations over the last century. This environment combined with

romanticized perspectives of American westward expansion, the “untamed” wild west, and a new burgeoning science of man prompted the Southwest as a land for any and all types of humanistic inquiries for the last two centuries. Due to these particular circumstances the Southwest has had an incredible amount of research and investigations carried out in the region over the years. This has enabled an extreme wealth of knowledge to be accumulated on the many numerous cultures that lived and continue to live on the land.

Archaeologists have debated whether shamanism is applicable to the historically Southwestern peoples. Winkleman (1992) suggests that Zuni and Casas Grandes practitioners should be categorized as “priests” and not “shamans” due to societal changes caused by the shift from hunting and gathering to agriculture. However, shamanistic worldviews are indelible to many of these societies and form the basis for many Southwestern belief systems. Ekkehart Malotki contends that “shamanism’s survival was assured because agriculturalists continued to have the same metaphysical, psychic, healing, and fertility needs as their archaic predecessors” (1999:108). The practice of shamanism is still very much employed historically and can even be seen to some extent presently (VanPool 2009:185). All cultures presented as case studies in this section -- and in the other chapters -- handle *datura*. Definitions and categorizations aside, the tool of shamanism is in operation by these societies through *datura* utilization in order to convey with supernatural forces.

Flower World

In the Southwest *datura* using societies employ aspects of a certain belief system or religious perspective known as the Flower World. The Flower World or Flower Mountain complex can be seen throughout Mesoamerica and the American Southwest (Hays-Gilpin and Hill 1999; Taube 2004a). This complex of imagery, metaphor, and thinking is a longstanding concept in Uto-Aztecan speaking cultures. It objectively dates as far back as Teotihuacan and is still incorporated into the beliefs of the Huichol, Zuni, and Hopi -- to name only a few. The sacred mountain of *Wirikuta* for the Huichol corresponds to the Flower World or more appropriately to Flower Mountain. Karl A. Taube also contends that the Flower World Complex extends outside of Uto-Aztecan societies and as far back as the Middle Formative Olmec (900-500 BC) and Late Preclassic Maya (1000 BC-AD 250) (2004: 69, 90; Coe and Houston 2015). This particular flower symbolism has very deep roots in North and Central America, connecting it to a number of beliefs that shape indigenous thought and perspectives about the world.

The Flower World is believed to be the land of spirits, the place where the dead go, and sometimes where ancestors or godlike beings may reside. It is a paradisiacal afterlife, a colorful world that contains not just flowers but birds, butterflies, water, and rainbows. This dimension can be evoked or invoked with ritual objects that are associated with flowers, songs, and oral recitations all using flowery imagery. Flowers are often associated with fire or the sun, but are importantly metaphors for the heart and soul (Hays-Gilpin and Hill 1999:2; Taube 2004a:69). Female beauty and fertility can be

represented through flowers, however, in the Flower World complex they are most frequently linked to male domains -- such as hunting and war (Hays-Gilpin and Hill 1999:2; Hill 1992: 122). For example, when Aztec warriors died in battle or were sacrificed they were thought to pass on to a paradisiacal spirit land to live as birds or butterflies (Hill 1992:130; Taube 2004a:87). This Aztec belief may have been modeled after ideology originating at Teotihuacan, where butterfly iconography was ubiquitously propagated and heavily connoted with military symbolism (Headrick 2007:130, 145; Taube 2004a:88). The butterfly symbol and its allusions appear on a variety of different artifacts, such as: nose-plates, censurs, and murals (Headrick 2007; Taube 2004a:88).

Reappropriation of classical symbolism occurs throughout history and around the globe, a similar example is the Romans integrating and emulating symbols from Greek antiquity. Even further down the line Renaissance artists intimate Roman and Greek symbolism, tinged with a new 15th century attitude. This western example has many parallels to the prodigious cultures of Mesoamerican. In this case the butterfly has remained important to beliefs regarding certain concepts of the world and human souls for multiple millenia. However, its implementation and specific representations have changed through time and cultures. When different cultures trade and interact they not only exchange goods but ideas as well. The Flower World complex is not the same in every culture, but retains many similar key concepts in them all.

Intriguingly, concepts involving the soul, breath, wind, sweet smelling aromas, and music all have connections with one another in the Flower World complex (Taube 2004a:69). They are part of a cogent relational system, in much the same regards as the

Oglala Sioux's sophisticated relationships with the wind. The concepts of breath, flowers, and fragrance can be plainly seen in Hopi Katsina masks or regalia, breath is usually depicted as cotton cords hanging from the center of flower effigies (Taube 2004a:90). Breath has extreme significance in many indigenous worlds, in the Hopi worldview it constitutes all life. It is what's needed to create and maintain the universe (Loftin 2003). This relational system is further reinforced in the Hopi with a myth that connects the emergence of their people with plants (Boyd and Busby 2022; Loftin 2003:59). The Flower World system and its symbolism are most distinctly apparent in Aztec and Hopi societies, but many other Puebloan and Southwestern cultures have strikingly similar views. Most notable are the Zuni and Navajo, who employ aspects of chromaticism and the Flower World in their beliefs (Hill 1992:122; Hays-Gilpin and Hill 1999; Haile 1978; Schultes 1972; Schaafsma 2009).

Zuni

The Zuni reside on the western edge of New Mexico, today they represent the largest Pueblo in the state numbering around eleven thousand people. Perhaps one of the most well known indigenous groups in America, they encountered Coronado and his Spanish fleet in the 16th century, led the 1680 Pueblo Revolt, and have been the subject of countless ethnographies throughout the 20th century (Weber and duBoys 2017). Unknowingly, when the new field of anthropology took root in the Southwest it was convoluted with romanticism and ethnocentric ideas, many Zuni ethnographies often revealed more about 20th century American society than the Pueblos. Zuni Pueblo is a quintessential example for how early anthropologists set a stage on “which they could

play out their fantasies of pre-industrial wholeness and cultural superiority” (Weber and duBoys 2017:275). These particular ethnographies -- and all others -- should be carefully reviewed, now acknowledging the lenses they were written through. Nevertheless, they still offer some faithful first hand accounts of Zuni lifeways -- especially those engaged with their relationship to *datura*.

The Zuni word for the *datura* is *A'neglakya*, they used it for a variety of different functions -- both medicinally and spiritually. It is believed to be of divine origins; in Zuni mythology *datura* was originally human, a brother and sister respectively named *A'neglakya* and *A'neglakyatsi'tsa*. The Divine Ones, afraid of the siblings' power to see the future and speak to the dead, banished the brother and sister into the earth. The brother and sister eventually emerged from the ground as the *datura* flowers seen growing today (Stevenson 1915:46).

For the Zuni, each particular plant or medicine belongs to the domain of certain priests or religious fraternities; they are the only ones allowed to handle the plant. In the case of *datura* only the rain priests and the directors of the Little Fire and Cimex fraternities may administer it (Stevenson 1915: 39). They must gather their own medicine and deposit prayer plumes to the plants so their treatments may be a successful cure (Stevenson 1915: 46). Four plumes are offered to the *datura* plant, all of these plumes consist of feathers from birds that correlate to the six directions -- four cardinal, the zenith, and the nadir (Stevenson 1915:64, 89).

As a medicine it could be applied externally as a poultice for wounds or bruises; as well as an anesthetic administered before surgery or resetting fractured bones (Le

Barre 1972; Schultes 1972; Stevenson 1915). Roots are most commonly used for medicine, routinely ground into a powder. However, its ceremonial use was even more significant. Rain priests, or *A'shiwanni*, administer small amounts of the powder into their ears, eyes, and mouth to see at night and ask the birds for rain (Stevenson 1915:89). In their trance the priests communicate with the birds and spirits of the feathered kingdom -- the Zuni correlate of the Flower World (Schultes 1972:47).

The Zuni relationship to flowers is entrenched in a multitude of lifeways; not only are they used for medicine or other spiritual purposes, but are worn by youth trying to attract a lover. Women with *datura* blossoms in their hair is a common motif in numerous Southwest cultures as well. Like the many other cultures that employ aspects of the Flower World, in Zuni ontologies flowers are associated with butterflies, pleasant fragrances, and music (Stevenson 1915:63-64). It can also be deduced that *datura* has some associations with moisture to the Zuni, as it is used to help the *a'shiwanni* appeal to the spirits for rain.

Navajo

Archaeologically the Southwest is not just composed of the aforementioned Uto-Aztecan cultures through time, but many others like the Ancestral Puebloans, Mogollan, and Navajo. These cultures shared many similar lifeways and some common beliefs, but are very distinctly their own systems, languages, and people. The Navajo are relatively late-comers into the region of the Southwest, migrating south into the Rockies and San Juan Basin around AD 1300 to 1500. Like all Apachean people they speak an Athapaskan language -- notably spoken in the Northern Territories of Canada and Alaska

(Kuznar 2015:198). They were hunter and gatherers who supplemented with some maize horticulture, but also heavily relied on trade with the already established Hopi and other Puebloan peoples of the Southwest. Their homeland, *Dinetah*, is marked by four particular mountains in the four corners region and has utmost importance in Navajo cosmology and mythology. Not only is the landscape integrated into mythology, but so are the social systems and interactions they had with Puebloan people after immigrating to the Southwest (Haile 1978).

Navajo religion used to often be associated with magic and sorcery -- another affliction caused by early anthropologists. This perspective should be viewed as demeaning and no longer appropriate; it is not fanciful “magic”. More accurately, the Navajo belief system relies heavily on religious action carried out through prayers and processes of ritual to attain a specific outcome -- a heavy emphasis on action (Gill 1987). This religious action can also be applied to many Native American religions or belief systems. Encoded in these prayers and practices are the directions (cardinal or intercardinal), colors, time, sexuality, geography, and materiality that reflect cosmological and cultural values (Gill 1987:95). Each individual item or thing has its own purpose and symbolism in the Navajo world. As stated before, in many Native American belief systems other-than-human beings have agency and are alive the same as a people (Hallowell 1960; Bird-David 1999; Harvey 2017; Viveiros de Castro 1998). Moreover, the Navajo view prayers themselves as actively living entities that communicate with the spirits. Once prayers are spoken, breath animates them; they are entities with fully realized agency. They are even esteemed much like a holy person (Gill 1987:126).

Viewing these systems and beliefs as magic denigrates the actuality of Navajo perspectives and point of view; many things westerners view as inanimate are active and operative forces in the Native American world.

Navajo ritual and ceremony is primarily concerned with the healing of sick individuals and restoring balance, what they call *Hózhó* -- sometimes defined as “balance and beauty” in English translations. Ceremonies and rituals are called a Way, they are used for specific incidents -- usually a transgression or taboo -- or against a particular sickness. The Enemyway is performed when an individual is infected by contact with a foreigner or non-Navajo, originally it was performed after warring with Navajo opponents. The foe's spirit infects the Navajo individual causing the sickness; the practitioner hopes to expel the malevolence or sickness that is attacking the ailing individual's spirit. A Way must be undertaken -- it is believed to be the only manner of cure against any and all forms of sickness. Every Way consists of prayers and a number of distinct rituals. Each ritual is modeled after its very first performance, that is to say that every ceremonial is a recreation of the original myth and the events of the story. A Way or prayer act is associated with a number of rites and procedures that are to be completed, sometimes they may last multiple days (Gill 1987:99-100).

Father Berard Haile, recounts the *Ajilee* and *Mothway* myths in his collection *Love-Magic and Butterfly People* (1978). The word *ajilee* has no direct English translation, Father Berard translated it as “Prostitutionway” while other scholars have chosen “Excessway”. The debate around the translation itself has many disputes -- most notably in the correctness of terms and their further stretched implications on Navajo

society. Nevertheless, its connotations with sex and intoxicating emotions of craziness are evident (viii-x). The first story in the *Ajilee* Myths is entitled *The Scrap-picker Boy*, a rags to riches narrative of a soon to be Navajo hero, who begins as a poor beggar on the outskirts of a Puebloan culture -- in this version the town is called Hopi (1-12). The hero's father is the Sun and his mother is Earthmother, who is represented in all flowers. One of four plants -- Riverward knoll, Jimson weed, Yellow thistle, or Loco weed -- gives birth to the boy hero, but which particular one is not distinguished. In one of the *ajilee* myths, *Hopi Virgins Seduced and Antelope Hunted*, the child's grandmother admits that he was born from plant tips that turn white -- possibly alluding to Jimson Weed's white flowers (31). All of these plants in Navajo tradition are poisonous or contain hallucinogenic properties, giving them great importance in their belief system and implementation in ceremony. The other three plants give birth to White Butterfly, Red Butterfly, and Yellow Butterfly; all seen as the hero's siblings. Yellow Butterfly is believed to be a moth and so is White Butterfly in other *ajilee* stories (2-3). Often in Navajo mythology distinctions are not evidently made between the two species of moth and butterfly (83).

The many following stories of Haile's *Ajilee* myths involve the hero enduring trials, obstacles, and overcoming the oppression of the Hopi people. In a *Puberty Initiation at Riverward Knoll* the hero is given a "new adult identity" by the Sun himself, who is his father. He learns ceremonial knowledge, the secret names of things, and the specific means of love-magic -- songs, prayers, and the use of pollen from the four hallucinogenic plants. He is also given the means of shamanic travel -- rainbows and

sunbeams (Haile 1978:13-28). This story is analogous to many Native American puberty rites where boys are newly initiated into secret societies and learn the ways of the world (Applegate 1975a; Furst 1976:46). Additionally, the connotations of a Flower World are ever present in this narrative and all others in Hailee's *Ajilee* accounts. Rainbows, butterflies, hallucinogenic plants, songs, and solar paradises are ubiquitously incorporated in all Flower World complexes (Hill 1992:122; Hays-Gilpin and Hill 1999; Haile 1978; Schultes 1972; Schaafsma 2009; Taube 2004).

The Mothway Myth is seen as an extension of the *ajilee* mythology, occurring during the same time period and with the same recurring characters. In short the Butterfly people neglect clan and family boundaries by engaging in incestual relationships. This causes them to act in an exceedingly wild manner, eventually rushing into flames and burning themselves to death in their own fires. To rectify this, the Big Bear Man (possibly a First Being shaman) completes a ceremony involving the use of four particular herbs -- these herbs are not named, but are to be used in the *ajilee* or "Prostitutionway" ceremony (Haile 1978:82-90). During the ceremony the application of pollen, smoking of tobacco, singing of songs, and jumping through buckskin hoops help to reenact key aspects of the original myth (Haile 1978:81).

The word *iich'aah* means moth in Navajo, but also conveys the insanity that comes after blood relatives are married (Haile 1978:90). Another variant of the word for moth, *'Iich'Qh*, means to fall into the fire. This sickness called Moth Madness is still feared amongst contemporary Navajo; some researchers suggest that it is feared much like American society fears AIDS. Seizures and epilepsy are believed to originate from

Moth Madness, caused by those transgressing the incest taboo (Levy et al 2022). The erratic behavior observed in moths around a fire is implemented into the language and beliefs of the Navajo people. The Zuni have no singular retribution for sibling incest, but do believe that clan incest leads to natural catastrophes. It appears that the Navajo borrowed myths and symbols from the Pueblo cultures when they moved into the Southwest, but did not adopt all the same beliefs from their new neighbors (Levy et al 2022:151). Recurrently, symbols and beliefs adopted by a new culture can shift to hold divergent meanings from their source, on the grounds of being supported by different ontological systems.

Hopi

The Hopi, much like the Zuni, are descendants of the Ancestral Pueblo culture; they now reside on a reservation in Northeastern Arizona. However, they recognize much of the Southwest region as *Hopitutskwa*, or Hopi land. Many archaeological sites and natural features of the Southwest tie into the cultural landscape, oral traditions, cosmology, and beliefs of the Hopi people (Hopkins et al. 2017: 33-35). The Flower World is likely the most prevalent in the Hopi than other living Native American societies today. Hopi songs chronicle a place called *sìitálpuva*, meaning “along the flowery land” or “along the fields in bloom”. This flowery world again includes colorful flowers, birds, and butterflies. It too can be brought into the living world through prayer, songs, and actions (Newsome et al. 2010:2).

Furthermore, in Hopi traditions the Flower World is also tied to the Underworld, fertility, and rain (Newsome et al 2010:4; Schaafsma 2009). The notorious hair of

Princess Leia in *Star Wars* is based upon hairstyles used by Hopi women called *pol'ini*, which means “butterfly whorl” -- it can also be translated as “squash blossom”.

Hairstyles can be seen as a type of status change for the Hopi, as the distinctive *pol'ini* signifies to others that an adolescent girl or young woman is available for courting. This is just one example of how butterflies -- or blossoms -- and fertility are intertwined in the Hopi view of the world (Patterson et al. 1994; Schlegel 1973: 456,459).

The Flower World is almost always alluded to in song, but it appears iconographically in a multitude of different media throughout time periods. Most clearly in the Southwest, it can be seen in 11th to 12th century Mimbres pottery and 15th century murals across the Hopi Mesas (Newsome et al 2010; Hays-Gilpin and Hill 1999; Berlant et al 2017; Schaafsma 2009). While contemporary Hopi do not share the same views as these cultures from centuries before, they do provide the best related information to advance ethnographic analogy. Hopi, Zuni, and other Pueblo cultures have many shared basic cosmological principles, which together help to inform researchers in understanding the ideas conveyed in past Southwestern verbal art (Schaafsma 2009:664; Newsome et al 2010).

Pottery Mound

Pottery Mound is located on the west bank of the Rio Puerco, southwest of Albuquerque, New Mexico. It was partially excavated by Frank C. Hibben from 1954 to 1962, where eleven painted kivas were recorded (Schaafsma 2009:665; Kay 2005:2). Kivas are typically round, semi-subterranean structures with cosmological significance found in many Southwestern cultures; they are believed to have been places for ritual and

ceremonial use -- in a Western sense they may be similarly seen as a church (Lekson 1988:213). Pottery Mound and other locations in the area are representative of an ancestral Hopi culture. Its kiva murals date to the Pueblo IV phase (AD 1375-1600), but the imagery is thought to have been painted during the 15th century. During this time the region was experiencing massive demographic, political, economic, and ideological change. An influx of migrants occurred from around the Four Corners and settlements grew greatly in size (Schaafsma 2009:664-665). Importantly, ritual and art flourished during this time. Iconographically a new style emerged and complex murals were displayed across entire kiva walls. Schaafsma and Taube believe that the worldview of these people transformed markedly to rainmaking beliefs based upon those from Mesoamerica (Schaafsma and Taube 2006; Schaafsma 2008:666).

Kiva murals at ancestral Hopi sites of Awat'ovi, Kawàyka'a, and Pottery Mound all call forth flower and rain imagery (Schaafsma 2009; Hays-Gilpin and Hill 1999:13). These murals depict flowers, birds, feathers, rainbows, clouds, and flying insects (Hays-Gilpin and Hill 1999:13; Hibben 1975). Many of the flying insects have been identified as butterflies by archaeologists, which in some instances are clear (Schaafsma 2009; Hays-Gilpin and Hill 1999). Dragonflies and butterflies have quite distinct iconographic representations. However, there are a substantial number of figures that, in context, likely represent hawk moths and not other winged insects. In cultures that utilize *datura*, the plant's principal pollinator is regularly found in myth, art, and symbols -- as evinced in the previous chapters. Ethnographically, *datura* is common around Hopi villages and even archaeologically seeds have been found at multiple Pueblo ruins in the

Southwest (Yarnell 1965:668,671; Cutler and Kaplan 1956). One of those Pueblo ruins was Pottery Mound (Yarnell 1959).

The identified “mosquito men” (Figure 15) are common anthropomorphic figures at Pottery Mound (Hibben 1975:Fig 86). They have humanoid shaped bodies, but also include sharp pointed wings and a curled proboscis. VanPool (2009) points out how in the natural world mosquitoes do not have a curled proboscis, rather short straight ones (186). Hawk moths are known to have some of the longest proboscis in the animal kingdom, often curled up when not in use. Additionally, the figure's skirt has a symbol that is reminiscent of a *datura* corolla opening -- like the motif seen at Pinwheel Cave. If the figure represents a shaman or an individual in the middle of transformation, then perhaps both the moth and *datura* are reinforced in this iconography (VanPool 2009:185-186). While the “mosquito men” are not naturalistic figures, elements of transmorphic and supernatural beings incorporate aspects observed in the natural world -- hawk moth representations are certainly in the realm of possibilities.

Another mural at Pottery Mound depicts a procession of winged anthropomorphic figures (Figure 16) that have been previously identified as butterflies (Hays-Gilpin and Hill:12-13; Hibben 1975:15). They have antennae, human-like arms and legs, and large sharp wings similar to the “mosquito men”.



Figure 15. “Mosquito men” at Pottery Mound (VanPool 2009:186)

The winged anthropomorphs carry long stalks in their hands terminating with spiny capsules, whom Lisa Huckell has identified as *datura* seed pods (VanPool 2009:186). Some have argued that the terminal ends represent sunflowers, which is plausible. However independent researcher, Paul T. Kay pointed to a Hopi synonym for moth, *tsimonmana* (*tsimonmanant* pl.), which translates to “jimsonweed maiden”. This word alone indicates that the Hopi were well aware of the mutualistic hawk moth / *datura* relationship. Kay contends that each anthropomorph has a hair whorl, identifying them as females or more specifically the “jimsonweed maidens” (2009:5).



Figure 16. Moth figures or “jimsonweed maidens” holding datura seed capsules (VanPool 2009:186)

Mimbres

The Mimbres black on white ceramics are some of the most sought after Native American artifacts, deemed by art historians and antiquarians alike to exhibit exquisite artistry and aesthetically magnificent forms. Mimbres black on white ceramics display stylistic representations of humans, plants, animals, complex narratives, and impeccable geometrics. Made during the Mimbres Classic period (AD 1000-1115), the Mimbres were part of the wider Mogollon tradition. During this time residences began to favor pueblos and an intensification of ritual practices ensued. These ceramics were regularly placed upon the heads of burials and ritually “killed” with a hole punched through the potteries base. The designs painted on ceramics also became more elaborate and ornate during the Classic period (Leblanc 1978:8-10). Because these ceramics are associated with burials many Underworld themes are prevalent, but so are Flower World images -- for the Mimbres it is likely the two are associated with each other (Hays-Gilpin and Hill 1999:5).

Berlant et al. (2017) suggest that some of the geometric forms and abstract designs on Mimbres ceramics are representations of trance states, adopting Lewis-Williams' entoptic model. They contend that *datura* would have been one of the most likely psychoactive agents involved in inducing trance states -- the plant still grows on Mimbres archaeology sites and is quite established throughout the Southwest. One hundred miles north of the Mimbres Valley, 900 *datura* seeds (*D. wrightii* Regel.) were found at Higgins Flat Pueblo -- a Tularosa Phase Mogollon site. The seeds were found on a room floor in association with ceremonial objects (Cutler 1956; Cutler and Kaplan 1956; Yarnell 1959). More directly, in the Mimbres Valley a number of *datura* seeds were also found on a room floor at Mattocks Ruin (Yarnell 1959).

Berlant et al.'s hypothesis is further substantiated from what the researchers assert as a vast number of ceramics depicting *datura* in various stages of its life cycle; from seed pods and its blooms to its withered form. In addition, they suggest that Mimbres artists painted *datura*'s pollinator, the hawk moth in multiple stages of life, from pupa to moth (2017:2-10). This would suggest that the Mimbres were not only active *datura* users, but substantial consumers; integrating *datura* into forms of shamanistic rituals and their belief system. Berlant et al. expound their interpretation to include a number of story bowls, which they believe depict transformative shamanistic experiences -- acts of soul flight to the spirit world. One ceramic depicts a person riding what appears to be a hawk moth, while another details an anthropomorphic hawk moth figure -- perhaps a transomorphic being or a shaman in trance (Berlant et al 2017:8). This research suggests that the Mimbres -- at the very least -- were well aware of the integral relationship *datura*

and moths have with one another. So much so that aspects of the Mimbres beliefs were painted onto a vast array of ceramics containing *datura* and *datura* related motifs.



Figure 17. Moth and *datura* related Mimbres ceramics: a.) Figure riding a hawk moth. b.) Abstract hawk moth. c.) Exploded *datura* seed pod. d.) Bowl with abstracted exploded seed pod. e.) Anthropomorphized hawk moth figure. f.) Hawk moth shaman. g.) Unfurling flower. h.) Abstracted unfurling flower. i.) Multiple abstracted unfurling flowers. j.) Abstracted spiral and entoptic bordered bowl (Adapted from Berlant et al. 2017)

X. LOWER PECOS

Mimbres ceramics may represent the oldest *datura* practices, observances, and iconography in the Southwest. However, the culture that occupied the Lower Pecos throughout the Archaic period may illustrate the oldest *datura* practices in North America. In the Chihuahuan desert hundreds of panels have been found detailing narratives and mythologies from a forgotten people, dating to at least four thousand years ago (Boyd 2003; Boyd and Cox 2016; Boyd and Dering 1996). Archaeologists believe these paintings were the product of an ancient shamanic hunter-gatherer culture (Turpin 1982; 2004; Boyd and Dering 1996; Boyd 2003; Boyd and Cox 2016; Boyd and Busby 2022). Perhaps representing the earliest of the Uto-Aztecan people, many contend that peyote was an important facet to the beliefs and lifeways of these archaic hunter-gatherers. The Lower Pecos region lies within the natural distribution range of the cactus and it has been found in archaeological contexts (Terry et al 2006; Boyd and Dering 1996). Carolyn Boyd has spent the last three decades deciphering specific panels and interpreting the complex and manifold symbols within the rock art's iconography. By using Aztec and Huichol mythologies to aid in understanding the pictographs, Boyd has identified a number of motifs amongst the Lower Pecos rock art -- such as peyote (Boyd and Cox 2016). Another motif believed to be depicted in the iconography is *datura*, which likely held extreme significance in the Lower Pecos culture's beliefs and practices (Boyd and Dering 1996; Boyd 2003; Boyd and Cox 2016)

The Lower Pecos Canyonlands are situated amid the northeastern stretches of the Chihuahuan desert, encompassing parts of Southwest Texas and Coahuila, Mexico. This area consists of a liminal zone where the Edwards Plateau and the Chihuahuan desert meet. In this region the Pecos River and Devils River converge with the mighty Rio Grande. Over the innumerable years these rivers and their tributaries carved through the landscape, sculpting it formidably. The waterways radically eroded the boundless limestone to create impressive -- often cinematic -- sceneries of valleys, bluffs, and narrow gorges through the desert terrain. Inundated in this environment are rock outcroppings or overhangs -- better known as rockshelters. Rockshelters are crucial to archaeologists, as they housed humans in this area for millennia. The shelters would have fostered a number of tasks and endeavors for ancient people, often producing deposits of food, fibers, bones, stone tools, and medicinal plants -- all essential artifacts for understanding any culture. However, unique to the Lower Pecos, many of the rockshelter walls are magnificently painted with multicolored pictographs (Boyd 2003; Boyd and Cox 2016; Boyd and Dering 1996; Turpin 2004).

The Archaic period in the Lower Pecos lasted from roughly 7550 cal BC to AD 650, being divided into three separate periods: Early (9,000-6,000 BP), Middle (6,000-3,000 BP), Late (3,000-1,000 BP) -- AD 650 marks the beginning of the historic period (Turpin and Eling 2018; Boyd and Busby 2021). Because the climate is arid and dry like much of the Southwest, the region has supported great preservation of artifacts. Archaeologists have been fortunate to uncover a great deal about the people of the Lower Pecos. The Lower Pecos cultural area is defined by distinctive rock art styles and

materials produced by hunting-and-gathering lifeways. Subsistence was primarily on small game, fish, and locally available desert plants (Dering 1999; Boyd and Dering 1996:258). During the Middle to Late Archaic a greater number of sites and archaeological materials aggregated near canyons, signifying a decrease in mobility patterns. This consequently resulted in a rise of the population density. Happening simultaneously during this time, was an increase in the production of earth ovens; which were used to roast sotol (*Dasyllirion texanum*), lechuguilla (*Agave lechuguilla*), and prickly pear (*Opuntia spp.*). A greater reliance on earth oven technologies may have been caused by a reduction in moisture during this period. In terms of caloric levels, sotol and lechuguilla are low-ranked resources. Because of this their increased consumption during this time may point to utilization during seasonal periods of stress in the highly variable environment of the Lower Pecos (Dering 1999:671; Turpin 2004:272). Aside from being food sources, these xeric evergreen rosette plants were also the foundational materials for many technologies, like clothing, baskets, sandals, netting, bedding, and fuel (Dering 1999; Boyd and Cox 2016:15, Turpin 2004:270). As these hunter-gatherers became more stationary during the Middle Archaic, their societal structures began to change, too. The increase in sedentism fostered an intensification of ritual, which in turn produced an abundance of multicolored pictographs. Turpin contends the murals were conceived through a common belief system rooted in shamanism (see chapter IV shamanism). These artworks depict themes of shamanic flight, assuming the form of an animal familiar, and a supernatural world accessed through a central axis (Turpin 2004:271). The expressed images on rockshelter walls likely held great power and influence throughout

the region (2004:279). Termed Pecos River Style (PRS), the multichromatic pictographs are emblematic of the Lower Pecos cultural region.

Pecos River Style

Five different rock art styles have been categorized in the Lower Pecos region, however, the interests of this thesis are primarily concerned with the PRS. Over 300 rockshelters containing PRS have been found in Texas and at least thirty five have been identified in Coahuila, Mexico (Boyd and Busby 2022:24). Pecos River Style is unmistakable for its use of multiple pigments -- typically shades of black, red, yellow, and white. It incorporates impressive geometrics, anthropomorphs, zoomorphs, and enigmatic figures -- those that cannot be identified as human or animal. PRS murals are distinct by their scale and execution, their renderings being extraordinarily complex. Some are over 100m long and contain hundreds of figures (Boyd and Busby 2022:24; Boyd and Cox 2016:17). Boyd and Cox state that PRS murals are “not a random collection of images painted over the course of time but, rather, compositionally intricate, highly patterned, and rule-governed visual texts” (2016:21). The author of this thesis worked as a graduate research assistant under Carolyn Boyd for two years. Using a microscope, photographs were taken at specific locations on PRS murals to examine and determine the paints stratigraphy -- the exact order of paint layers. Hundreds of locations from multiple sites were analyzed and conclusively showed a distinct pattern. Artists applied black pigments first, followed by red, then yellow, and lastly white. Compositions often involve an intricate weaving of elements from one figure into the next, creating an incredibly sophisticated network of relationships through the application of pigments

(Boyd and Busby 2022:24). These relationships likely mirror associations conveyed in the iconography, doubling the interrelations in both the art and Lower Pecos myths.

As noted before, the notion of art in a Western sense does not readily apply to Native American perspectives. The people of the Lower Pecos would have had radically different philosophies, organizational systems, and experiences in relation to artworks than the West or Old World. However, through a Western art historical lens, PRS depicts deliberately planned compositions in incredibly deft execution. Compositions can include heraldic scale, foreshortening, implied motion, and use of negative space. Significantly, the convention of speech-breath appears quite ubiquitously across PRS, with particular brushstrokes, color, size, and arrangement all deliberately chosen to convey meaning to the viewer (Boyd and Busby 2022:27). The artists were no doubt masters of their craft, implementing conventions specific to their culture with incredible skill. In particular, the artist's actions in the painting process are vital to much of its understanding. The direction of brushstrokes and the forcefulness of their application help to emphasize the messages in the produced motifs and artwork (Boyd and Busby 2022:27-28). It is important to acknowledge that for Native Americans the action of creating art has just as much significance as what is successively created. Art in this light is not a noun, but a verb involved with the process of creating and maintaining life-giving relationships (Gill 1987:44).

The Navajo employ many actions in their rituals that express and channel multitudes of meaning. Their sand paintings are incredibly complex and ornate artworks to themselves, admired by those who are able to see them. They allude to mythic events

in their stories, but are also projections of the essential pattern of order in the Navajo world (Gill 1987:55). Songs and medicine are incorporated into their sand-painting rite, with the patient seated at the center of the work. The individual being treated becomes the main integrative element in the overall composition. All the colors, motifs, and directionality of the sand painting have specific meaning to place the person at the center of the universe. Once they reintegrate themselves as one with the spiritual powers imbued in this world and all others, the sand-painting becomes a part of them. They are healed and the sand-painting in the natural world is no longer needed, thusly it is destroyed (Gill 1987:56-57). This is not to say PRS and Navajo sand-paintings are directly analogous, but that the processes and actions in Native American art typically have exceptional significance.

We view art in terms of a distinctive end goal or as a finished product; a material representative signifying intentional symbolic meaning. But for Native American practices this differs, the creative process itself is instituted into the overall final piece. Additionally, a concurrence of mediums is taken as a totality. Oftentimes, multiple mediums of art are included into a ritual or the operations that produce a singular material piece of art -- like the Navajo sand-paintings. Singing, dancing, music, reenactments, and oral recitations are all happening at once with the visual medium to reinforce multiple or dialectical meanings. When analyzing New World forms of art a multi-medium approach should be considered -- that is the art evokes more than just one singular sense.

Carolyn Boyd has spent more than 25 years researching the rock art of the Lower Pecos. Over this time she has detected many patterns and similarities between PRS

iconography and Mesoamerican symbolism. In Mesoamerica there is evidence to support deep rooted and long withstanding ideologies and belief systems -- such as themes previously mentioned in the Flower World. These beliefs represent an archaic core, many are connected to widespread shamanistic principles proposed by Eliade, but are also worldviews unique to Indigenous Americans. It is suggested that several core principles in Mesoamerican beliefs are undoubtedly seen in the Archaic period and may actually be enduring values brought by the first migrants into the Americas thousands of years ago (Rice 2020:10; Boyd and Cox 2016:49-50; Taube 2004a; Reilly 1994). Due to longevity of these beliefs and views in Mesoamerica, remnants are reasonable to suppose in the antiquity of PRS paintings.

Boyd has identified imagery in PRS art that is analogous to myths and rituals of Uto-Aztecan speakers, particularly the Aztec and Huichol. Boyd and Cox's masterfull interpretation of the White Shaman mural understands the composition as the birth of the sun and the establishment of time through the frame of Aztec and Huichol narratives (2016). The original ancestors of the Aztec were the nomadic Chichimeca people -- archaic hunter gatherers. They were believed to have migrated from the north, pointing to somewhere in the extended Southwest Culture area (Pohl 2001). The Archaic period rock art in the Lower Pecos may consequently contain the "oldest surviving and documented graphic expressions" of longstanding Mesoamerican themes. Thus, Pecos River Style perhaps represents the oldest artwork of any North American belief systems and their perceptions of the universe (Boyd and Busby 2022:26).

White Shaman

Boyd and Cox contend that the White Shaman mural depicts ancient variants of the Huichol peyote pilgrimage and myths of creation, vestiges of the archaic Chichimec Desert culture (2016:56-96; Boyd 2002:74). Previously mentioned in the Huichol chapter, the myths involving the birth of peyote and the creation of the sun have related or coinciding themes. These stories involve acts of sacrifice to create the living world of today in Huichol understanding. The two life giving entities put an end to the unceasing chaos, disorder, and darkness that occurred during primordial time. These myths include the concepts of replication, complementary dualism, a cosmic mountain where life emerges, and essential life sustaining forces. In essence the sun and peyote are responsible for the fundamental institutions in Huichol cosmology, providing light, life, laws, and time itself (Boyd and Cox 2016:57-58). These stories that uphold their institutions must be re-enacted and carried out in ritual each year, otherwise the world would fall into apocalypse and catastrophe. Many of these stories and rituals are similar throughout Mesoamerica and especially in Uto-Aztecan groups.

In the iconography at the White Shaman mural (Figure 18), five principle anthropomorphs are believed to be comparable to *jicareros*, or peyote pilgrims. During the Huichol peyote hunt five pilgrims are chosen to represent and stand in for the primordial ancestors from their creation narrative. To the Huichol they are not “re-creating” the First Hunt, but actively entering into mythical time and becoming the ancestors. Boyd and Cox assert that each of the *jicareros* at White Shaman are tied to particular heroes, spirits, places, and events in the Lower Pecos cultures' own

mythologies -- ostensibly older archaic versions of the present Huichols stories. The iconography and its likeness are remarkably noticeable and convincingly correlating to modern day Huichol practices and narratives. All of the *jicareros* at White Shaman are connected to or interwoven through the painting process to other figures and scenes, binding them together literally and metaphorically. Consequently, each *jicarero* corresponds to their respective avatars and the stories that they are affiliated with.

For example, the first anthropomorphic figure relates to the Fire God -- *Tatewari* to the Huichol -- who emerges from the Eastern cosmic mountain; the flowery destination where the sun and peyote are created via autosacrifice (Boyd and Cox 2016:69-70). This portion of the mural contains motifs believed to reference the sun, fire, and peyote. One of the peyote motifs involves impaled dots pierced by arrows. Deer and peyote have multivalent meanings that are synonymous with one another -- in the Huichol semantic system they are one and the same. On the First Hunt the ancestors tracked the sacred peyote-deer to kill it. This is why the Huichol "ritually hunt" peyote on their way to *Wirikuta* (Boyd and Cox 2016:75-78). Furthermore, peyote has been found in archaeological contexts at the Shumla Caves in the Lower Pecos, not far away from White Shaman Shelter. The excavated peyote has been dated with a weighted mean of 5195 ± 20 years BP, calibrated to 4045-3960 BC (Terry et al. 2006:4; Boyd 2002:82). The four remaining *jicareros* correspond to the events and avatars of the Guardian of the Deer (*Maxa Kwaxi*), the Earth and Creator Goddess (*Takutsi Nakawé*), the Moon Goddess (*Kiewimuka*), and a Nocturnal spirit (*Kiéri*).

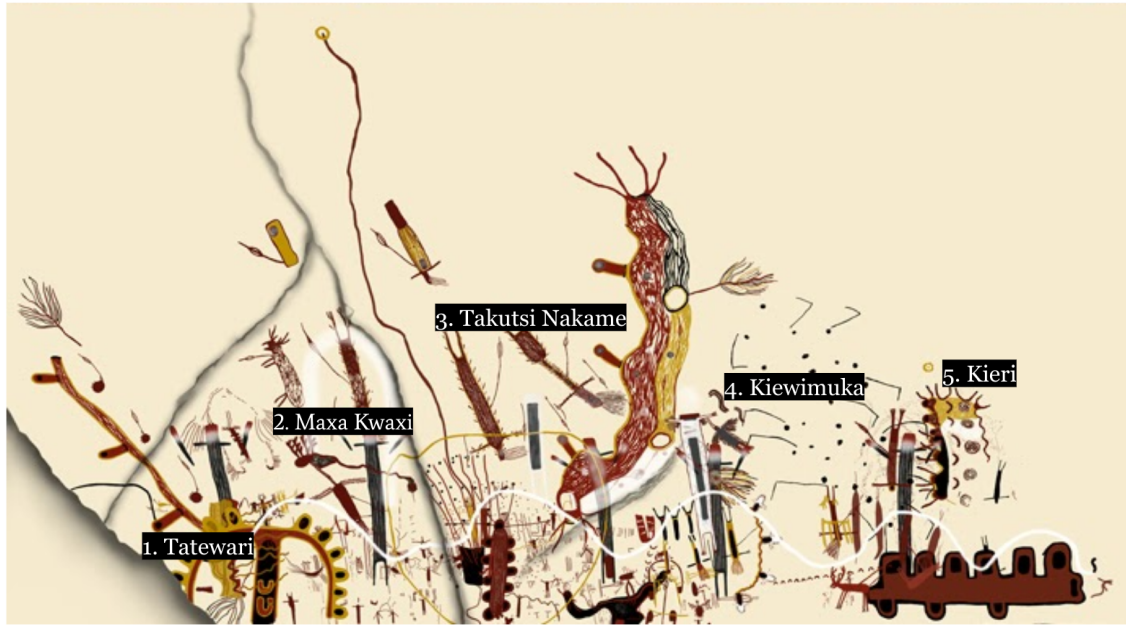


Figure 18. White Shaman Mural with five *jicareros* and their supernatural counterparts related to Huichol mythology: 1.) *Tatewari*, who corresponds to the Fire God. 2.) *Maxa Kwaxi*, the Guardian of the Deer. 3.) *Takutsi Nakame*, The Earth and Creator Goddess. 4.) *Kiewimuka*, Moon Goddess. 5.) *Kieri*, a nocturnal spirit (Adapted from Boyd and Cox 2016:41)

The Huichol concept of cosmic dualism affects all facets of life, likewise the White Shaman mural exhibits copious amounts of dualistic imagery throughout its composition (Aedo 2011; Boyd and Cox 2016). On one side of the mural is the Fire God and the cosmic Flower Mountain. This section contains motifs and associations with order, the east, peyote, red, daytime, and Morning Star. The opposite end of the composition conveys the Underworld, with its many aspects and allied characters. This end has associations with disorder, the west, *kiéri*, black, nighttime, and Evening Star (Boyd and Cox 2016:94). In the Huichol creation narrative the caterpillar *Kawi* helps lead the ancestors from the Underworld in the West to Dawn Mountain of the East. The last of the anthropomorphic *jicarero* characters is affiliated with a caterpillar-like figure believed

to be representative of not just *Kawi*, but the nefarious power of *Kiéri* (Boyd and Cox 2016:70, 94-96). Mentioned in the Huichol section, *kiéri* is not just a powerful force and spirit, but also a system of related psychotropic plants -- one of which being *datura* (Aedo 2011; Yasumoto 1996). *Datura* is known to grow throughout the Lower Pecos Canyonlands and even grows just below the White Shaman Shelter. The caterpillar-like figure at White Shaman has eight pairs of legs and five concentric circles on its body. Because of the many relationships established between *kiéri*, *datura*, and hawk moths, Boyd and Cox suggest a five-spotted hawk moth caterpillar (*Manduca quinquemaculata*) may be depicted (2016:95). This is substantiated through the fact that *Manduca*'s are common hawk moths found in the Southwest and Lower Pecos that pollinate *datura* (Grant 1983a:281; Riffle and Alarcón 2013). Furthermore, other Lower Pecos pictographs appear to also incorporate hawk moth symbolism (Personal communication with Carolyn Boyd).

Fate Bell Shelter

At Fate Bell Shelter a composition known as the "Triad" (Figure 19) depicts what resembles a New Fire Ceremony (personal communication with Carolyn Boyd). The Nahau held many rituals involving sacrifice and the birth of the sun. These rituals were enacted to keep the world and time in a state of harmony and motion. For the Aztec, a New Fire Ceremony was held every 52 years to renew the cosmos, keeping the world on tract and in its current state (Boyd and Cox 2016; Maffie 2014). The ceremony itself chronicles and reenacts the mythologies of creation; the Aztec narratives are very similar to the Huichols creation stories. According to the Nahau the Sun had been made four

times before its current fifth state. Each age was ruled by a specific deity corresponding to one of the elements. The termination of each sun, its age, and people was brought on by a cosmic battle between Quetzalcoatl and Tezcatlipoca. These two deities are counterparts similarly related to the notions of order and disorder seen in the Huichol. Quetzalcoatl has associations with the east, dawn, light, and life; while Tezcatlipoca has associations with the west, sunset, darkness, and chaos (Boyd and Cox 2016: 98-100). The New Fire Ceremony re-enacted the events of the original creation of fire by Mixcoatl, as well as Nanahuatzans original creation of the Fifth Sun through self-sacrifice. If the people failed to give birth and generate a new cycle of years then the world would shatter and fall back into primordial chaos (Maffie 2014:294).

The "Triad" mural depicts four figures encircling a central character, designating five characters in a quincunx -- a design of five elements; like a five on a die. In a Nahua New Fire Ceremony four priests representing deities hold down a sacrificial victim while a fifth priest removes the victim's heart. Thereafter a fire is started in the victim's chest cavity, starting a new fire to be used throughout the land (Maffie 2014: 294-295). Each of the four priests correspond to one of the cardinal directions, while also being manifestations of the gods who took part in the original creation of the sun. The central figure in the "Triad" thus appears to represent the fifth cardinal point, or the center. To the Nahua, in a New Fire Ceremony this signified their fire god, Xiuhtecuhtli (Boyd and Cox 2016:102). Iconographically the central figure is similar to the Fire God motif seen at White Shaman. However, it has an additional set of outstretched wings.



Figure 19. The “Triad” at Fate Bell Shelter; the central figure depicts the Fire God figure with extended moth-like wings (Personal photo)

It is possible that the central figure in the “Triad” is a composite, expressing dual natures that are similar to Quetzalcoatl and Tezcatlipoca. In this sense it would simultaneously represent the two dualities seen at either end of the White Shaman mural. An integration of the two would be necessary in a New Fire Ceremony to restart the cosmos and bring harmony or balance to the world. It can be proposed that the multicolored wings exhibit *kiéri* and its related aspects of disorder, the west, nighttime, and Evening Star. Therefore it is this thesis’ contention that the wings are representative of a hawk moth, in particular a white-lined sphinx moth (*Hyles lineata*). The white-lined sphinx moth is another hawk moth that is found in the Southwest and Lower Pecos.

Additionally, it is known to pollinate *datura* (Grant 1983a:281). The coloration of the anthropomorphic figure's extended wings have a similar composition to those seen on the dorsal side of a white-lined sphinx moth's hindwing. They are commonly black with a pink or orange band, resembling flames. The moth appears as if it is touched by fire itself, reinforcing the depicted cosmic dualism seen in the art.

Power-bundles

Datura motifs and representations are not solitarily seen at White Shaman and Fate Bell, but all throughout PRS sites and shelters (Boyd 2002; Boyd and Dering 1996). A frequent motif seen in PRS pictography is that of the "power-bundle" (also known as dart-headed figures), typically a circular or ovoid shape with spiny protrusions that is attached to the distal end of long lines. The proximal end of the lines are connected to a perpendicular staff-like object that is generally held in the left hand of an anthropomorph (Boyd and Busby 2022:38). However, some power-bundles are independent or freestanding, that is they are not associated with an anthropomorph (Harrison 2011). The power-bundle has proven to be an auspicious and confounding motif and through the years many interpretations of what they are have been put forth.

Thomas N. Campbell originally proposed that the people of the Lower Pecos utilized mescal beans (1958). He believed much of the PRS regalia was analogous to historic era mescal bean cults reported on in ethnographic research. Campbell therefore supposed that the power-bundle was equivalent to a staff and gourd rattle used by leaders in mescal bean ceremonies. Mescal beans (*Sophora secundiflora*) grow in the Lower Pecos ubiquitously and have been found in archaeological contexts, however, societies

that utilize the beans do not ingest them to reach altered states of consciousness. They are primarily used for their purgative and emetic effects, or even more so as a part of ritual regalia or costumes. Therefore their use in shamanic ritual is unlikely to be a leading psychoactive agent. Today mescal beans are markedly tied to peyote paraphernalia (Boyd and Dering 1996:261-266).

W.W. Newcomb first identified the anthropomorphs donned in various regalia as shamans, believing them to be in the act of ritual performance (Kirkland and Newcomb 1967). This interpretation has become the dominant view through the years by archaeologists (Turpin 1994,2004; Boyd and Dering 1996; Boyd and Cox 2016). Newcomb reinterpreted the distal end of the power-bundle as a prickly-pear pouch, due to its many spiny protrusions. Prickly pears are abundant in the Lower Pecos and constituted much of the Archaic diet (Dering 1999). Additionally, Newcomb identified over 167 anthropomorphs as shamans, noting more than half of them engaged with the power-bundle motif.

Boyd and Dering argue for a third interpretation of the power-bundle, they contend that the distal ends are pictorial representations of the spiny *datura* fruit or seed pod (1996:266). *Datura* grows throughout the Lower Pecos in dry washes and riverbanks, but as stated before, it rarely shows up in the archaeological record. However, Phil Dering recovered five *datura* seeds at Hinds Cave in the Lower Pecos radiocarbon dating to 4510 ± 70 b.p. and 4990 ± 70 b.p. (Boyd and Dering 1996: 267). The seeds are therefore temporally contemporaneous with PRS rock art. *Daturas'* uses for medicine, ritual, and spiritual contact throughout the Native American world has already been well established

in this thesis, elucidating its significance in the cultures that use it. Due to the seeds presence in Hinds Cave it can be inferred that the archaic people of the Lower Pecos had at least some of the same views as other Indigenous Americans on *datura*. But to what extent?

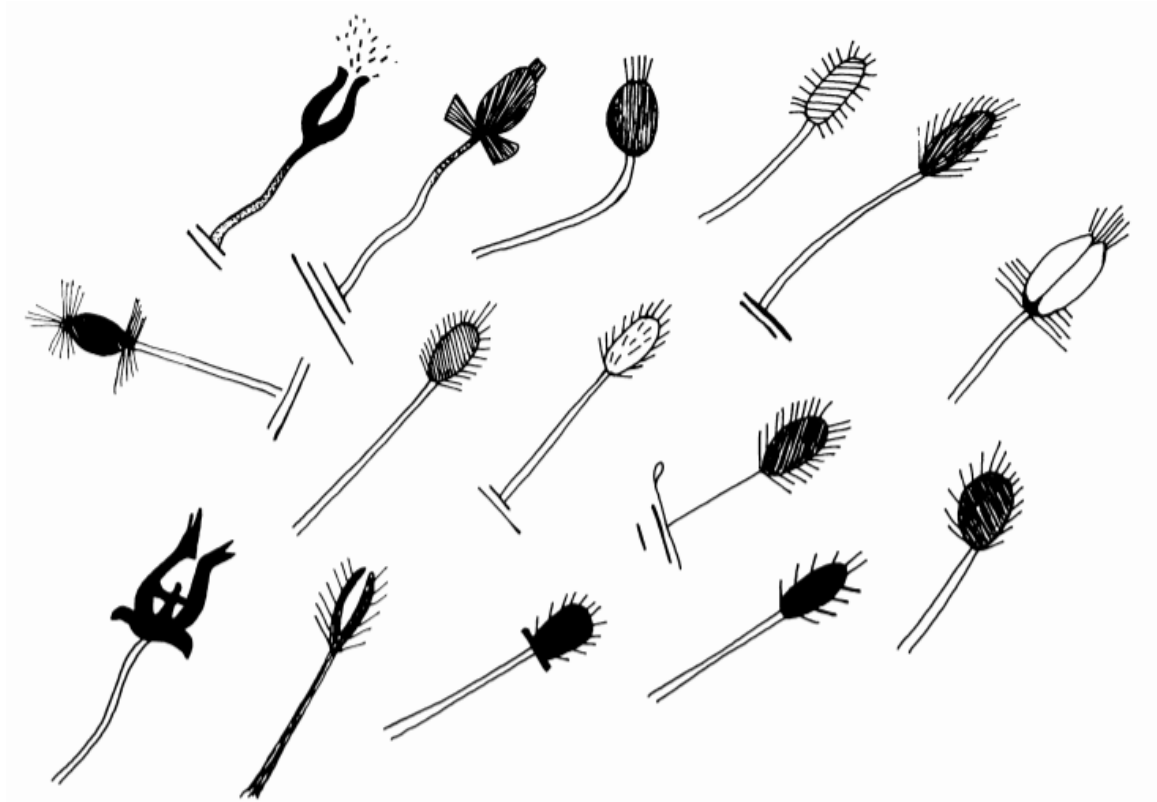


Figure 20. Pecos River Style depictions of power-bundle motifs in association with anthropomorphic figures identified as shamans (Boyd and Dering 1996:268)

A great number of power-bundles appear as remarkably realistic expressions of *datura* pods (Figure 20), including its stem and calyx (Boyd and Dering 1996:269). Many ovular shapes present themselves as more stylized renditions than realistic copies and there are even some outliers that exhibit little to no likeness to *datura* at all. However, it should be noted that in PRS iconography even though “images may bear some

resemblance to what they signify, they are not realistic reproductions of things perceived by sight” (Boyd and Busby 2022:24-25). PRS appears to primarily depict things that happen in myth and narratives, which in turn become the subsequent actions of shamanistic rituals or ceremonies as evinced before. Lots of the images being conveyed do not happen in the “natural” or “seeing” world, but invoke spirits, supernatural places, and other dimensions.

Oftentimes art expresses intangible or ephemeral things. Therefore artistic conventions, motifs, and symbols are created to transmit notions of abstract ideas. Like speech-breath identified by Boyd and Busby in PRS; it is an intangible thing represented by conventional artistic elements, however, its essence is enveloped in a vast tangled network of worldviews and philosophies (2021). A motif can have natural or "real world" cognates, but denotes semantically complex symbolic meanings. This section attempts to briefly unravel the power-bundle's significance in Lower Pecos art, following the *datura* distinction made by Boyd and Dering. While additionally recognizing the past observances on power-bundles (Kirkland and Newcomb 1967; Campbell 1958; Boyd and Dering 1996; Harrison 2011).

Datura is well known to be utilized by shamans or religious practitioners as an aid to connect with supernatural forces. Through recognizing *datura* and other solanaceous plants association with predators around the world, Boyd has identified a relationship between canids and felines to *datura* motifs in PRS rock art (2003:95). The association of large cats, wolves, or coyotes with *datura* is seen in other Native American cultures. Blackburn identified Coyote as the first *paha*, or shaman, to administer *datura* in

Chumash oral narrative -- he is their principle shaman and trickster (1975). In Huichol wolf-shamanism *yerba de lobo* -- herb of the wolf-- is believed to be one of the plants in the *kiéri* complex; it is a fundamental element needed in wolf-shamanism to carry out transformation into a “were-wolf” -- a person shifting into a canid persona. Turpin (1994) initially suggested the presence of were-cougars in PRS rock art. Boyd followed up on this identification and indicated that power-bundles are often seen with anthropomorphs and feline-like figures (Figure 21), possibly suggesting their aid in were-animal transformation (2003:95-99).



Figure 21. A large “were-panther” is adorned in regalia and engages with a power-bundle motif in its left hand at the site of Panther Cave (Photo courtesy of Carolyn Boyd 2022)

The Aztec *nagual* and Maya *way* -- akin to tutelary spirits of other Native American cultures -- are Mesoamerican conceptions that believe in human to animal

shapeshifting. Individuals may access their "co-essence" and ultimately transform into it through the right processes and actions. The Formative Olmec are believed to be the oldest Mesoamerican tradition to incorporate this religious aspect (Taube 2004b; Furst 1968; Reilly III 1989). Temporally PRS and Olmec iconography begin to overlap around 1500 BC, this suggests transformation beliefs in Native American systems extend at least multiple millennia ago in other regions. Olmec art has long been involved with jaguar themes, many archaeologists promoting a were-jaguar complex embedded in Olmec religion (Taube 2004b; Furst 1968; Reilly III 1989). Jaguars were not the only gods or supernatural entities in the Olmec world; there were crocodile supernaturals, bird supernaturals, a maize god, and wind and rain deities to name a few (Joralemon 1971). All of these spirits as symbols exhibited certain aspects of power. But in most regards jaguars appear to portray shamans in supernatural trance or figures engaging with the sacred and otherworldly (Taube 2004b:34).

The transformation from a shaman to a were-animal in PRS pictography is certainly feasible and in some cases very likely. The use of *datura* as an agent aiding in this transformation is also a very conceivable hypothesis. However, this author does not believe that a power-bundle is singularly tied to were-animal transformation; furthermore not every power-bundle needs to only specifically depict *datura*. It is this thesis' contention that the power-bundle motif incorporates stylistic representations of sacred bundles and their contents which are used in conjunction with a prayer staff (and/or prayer sticks/arrows) to supplicate spirits or supernaturals. They are materials that beseech, interact, and at the same time embody particular spirits or supernatural beings.

The sacred bundle and prayer staff/stick are of utmost importance in many rituals throughout Native American cultures (Stevenson 1915; Lofton 1986; VanPool and VanPool 2021; Hudson and Blackburn 1978; Stenzel 1970; Hall 1997; Guernsey and Reilly 2006). They work cooperatively to interact with the sacred. While they are objects of sacred paraphernalia, they are also animate entities.

Many Native American cultures utilize prayer staffs or sticks, however, the following ethnographic examples are also cultures known to interact with *datura*. When a Zuni rain priest gathers the *datura* plant, they prepare four plume offerings for the plant's spirit and their ancestors. These plume offerings consist of feathers from different birds that correlate to the six directions and other principle Zuni beliefs (Stevenson 1915:89). Similarly the Hopi create *paavaho*, or prayer sticks. Different prayer sticks are made by different Hopi at different times for different purposes. They are made up of sticks with varying lengths attached to assorted grass, feathers, seeds, cornmeal, and pollen. Their contents vary depending on the particular blessing or force they are petitioning (Lofton 1986:188-189). These objects, sacred bundles and prayer sticks or staffs, are themselves often other-than-human entities once created. They are animated agents that work to negotiate between humans and the spiritual forces they were intended to commune with. The prayer sticks of the Pueblos are created through the combinations of specific elements, color, and material; each with their own meaning and symbolism. Like words in a sentence, these different combinations of elements in prayer sticks create or convey a specific spiritual message. The artisan or shaman is thus creating a new other-than-human being to aid in interacting with the other previously existing beings in the cosmos

(VanPool and VanPool 2021:9). Yet they embody and constitute the whole countenance of a spirit through their entire arrangement. VanPool and VanPool state the creation of art through shamanism serves two purposes: "it is a means by which they create spirit helpers imbued with the necessary characteristics, and it can record aspects of the spirit world, thereby making the intangible visible" (2021:10).

Hudson and Blackburn (1978) also identify sticks, wands, and staffs carried by various Southern California tribes in the *Chinigchinich* cult. This widespread ceremonial complex was part of the Southern Cult known to incorporate *datura* into their practices (Kroeber 1925). The sticks were said to be carried from community to community during rituals or during exchanges of food. The Kitanemuk and Tubatulabal ceremonial objects were painted various colors, inlaid with shell, and tipped with crystals. The Tubatulabal *kakait* were two foot long peeled yucca stalks with intervals of quail topknots and eagle down on one end. These items were kept carefully stored away from other ritual gear in a large basket. Hudson and Blackburn analyze two *Chinigchnich* terms for shaman, *Pura* and *Si'hivit*; one informant suggested that *Si'hivit* actually was the name of a deity as powerful as *Chingichnich* himself-- the individual the complex is named after. However Hudson and Blackburn concluded the terms refer to ritual objects and personnel that are associated with the "southern" *Chinigchinich* complex, rather than to mythological figures (1978:229). This would appear to be an oversight when put into context with Pueblo prayer sticks and plumes -- and sacred bundles discussed below. The *Chinigichnich* staffs are presumably needed to interact with supernaturals and deities, acting as other-than-human beings themselves -- conduits of sorts. Spiritual substances

are manifested through various forms and rhythms in the cosmos; they can only be interacted with through proper ritual, actions, materials, and "good heart" (Lofton 1986:22). The material world is therefore simultaneously related to the spiritual (Lofton 1986:186). Ritual paraphernalia is all at once an object, a representative, and an animate figure with power. Similarly the Chumash '*atiswin*' promotes this view, it is a tutelary spirit as well as a physical talisman.

Sacred bundles have long been an important component in Native American beliefs and ritual activity throughout the American continents, from the past to the present. In the cultures of the Plains, the Southwest, and Mesoamerica they are considered most valuable items to their people (Stenzel 1970; Hall 1997; Zedeño 2008; Guernsey and Reilly III 2006; Maffie 2014: 512). Bundles may be made up of many different items -- human or animal bones, pipes, effigies, gems, pigment, ashes, fibers, sticks, plants, etc. -- that are all wrapped to conceal the enclosed contents (Stenzel 1970; Zedeño 2008). These intentional coverings are constructed to encase sacredotal paraphernalia that hold secret and all powerful energy. They are often tied to deities, ancestors, supernatural powers, and mythological stories (Stenzel 1970; Guernsey and Reilly 2006). Bundles may be categorized as one of two types: an institutional bundle and an individual bundle. The former is possessed by a tribe, village, or ceremonial group; it is usually connected to ancestors or myths regarding the origins of creation. The latter are typically owned by an individual and were acquired during an initiation rite providing its owner with success or aiding in healing (Stenzel 1970). Bundles usually have their beginnings in a person's vision or dreams, which instructs them how and what items are

needed to be procured. These items individually have their own relations to the cosmic world, but combined they constitute an incredibly awesome power. Bundles can be seen as biographies, they tell the story of an actual person, supernatural power, or entity. Their contents acknowledge different aspects or episodes in an overarching narrative (Zedeño 2008:363-364). The opening of a bundle usually constitutes a major ritual event or at least a highly governed act or ceremony (Guernsey and Reilly III 2006:vi). They in some sense act similar to Bibles, a sourcebook of stories for a particular belief system; but they are also their own powerful being. Each bundle has its own life history, personality, and position in society (Zedeño 2008:362). Ritual bundles can be understood as an act of bridging the gap between the natural and supernatural realms (Reilly III 2006:9). In short, their main purpose is to channel the cosmic powers of the universe.

In Mesoamerica bundles are quite common in contexts of art, as they appear iconographically in many mediums across time and cultures. Bundling appears iconographically in codices, murals, monuments, and architecture (Guernsey and Reilly III 2006). Reilly asserts that the practice of bundling in Mesoamerica extends as far back as the Middle Formative Period; with Olmec art presenting themes of ropes, cordage, and knots into stone artworks of colossal heads, altar-thrones, and stelae (2006). Mixtec supernaturals and culture heroes are often depicted with sacred bundles and staffs of authority (Maffie 2014:293). To the Aztec bundles were known as *Tlaquimilolli*, "something wrapped or bundled" (Stenzel 1970; Maffie 2014). The bundle concept was so intrinsic in Aztec thought that the complete calendar round of 52 years -- between New Fire Ceremonies -- was known as *xiuhmolpilli*, or "bundle of years" (Maffie 2014: 293).

Maffie states that to the Aztecs bundles “served as receptacles of sacred power, materializations of sacred presence, instruments for communicating with the ‘gods’ , and symbols of political power and authority” (2014:512).

It is proposed here that the ovoid end with protrusions on a power-bundle motif represents in some capacity that of a sacred bundle; either the object contained within the bundle or the material encasing it¹. Nonetheless, the iconographic convention is meant to convey the aura of supernatural power that the artists, viewer, physical creators, and the manipulators believed were contained in it -- a *datura* pod could be one plausible motif expressing these sentiments. The line connecting the “bundle” to the staff-like object appears as an artistic convention that denotes they are together, but separate -- two distinct entities working jointly. Perhaps the staff-like object represents a prayer staff or wand that is used with the contents of the sacred bundle to allow the communion with the supernatural. They could have been conceivably kept separate, like the wands in California (Hudson and Blackburn 1978). But the two together would enact or invoke a particular supernatural or distinct power.

For example, at the site of Halo Shelter there is an intriguing and peculiar figure (Figure 22). It has an asymmetrical ovular head, outstretched limbs, and two feathered antennae. It has no particular objects in its hands or distinguishable regalia. Interestingly, it is painted directly over the spiny distal end of a power-bundle motif outlined in red with red spiny protrusions, the interior is filled in with black paint. The lines from the

¹ This idea was first put forth to me on my first trip to the Lower Pecos by Jerod Roberts, a fellow graduate student at Texas State and longtime Lower Pecos rock art researcher. The many conversations throughout our Masters program (2020-2022) led to this new position; his guidance was formidable in helping to form this hypothesis.

power-bundle extend to a multi-pronged staff-like element on the proximal side, connecting it with an anthropomorph. In Huichol worldviews motifs that employ geometric figures and obvious symmetry are generally attributed to peyote, or *hikuri*. However, iconography that uses asymmetry is typically associated with sorcery and aspects of *kieri* (Aedo 2011:138). The feathery antennae on the possible *kiéri* figure appear iconographically similar to a Southwestern character seen on a sikyatki-style vessel. Paul T. Kay attributes the Southwestern character to a hawk moth motif (2006:6). It too has a very stylized and irregular shaped head, with feathery antennae. Boyd believes the figure at Halo Shelter also has the antennae of a hawk moth (personal communication 2021), which presumes to be acceptable through Aedos ethnographic research (2011:138,227). This figure Halo Shelter suggests that it was called forth or in some intercourse with the power-bundle motif, while also reinforcing the many connections between power-bundles, *datura*, *kiéri*, and hawk moth symbolism. However, not all power-bundles and their associations are as easy to distinguish or analyze.

Harrison expresses all enigmatic figures in PRS indicate: 1.) That each is a salient figure from the iconography and would have been grasped by some or all of its constituents. 2.) They are preternatural in character 3.) They are animate beings 4.) They have differing roles and characters in the belief system as depicted in the art (2011:80). Harrison attributes all these characteristics to dart-headed figures, his preferred



Figure 22. Anthropomorphic moth figure at Halo Shelter (Photos courtesy of Carolyn Boyd)

terminology for power-bundles. He states that the substitutions of power-bundles for anthropomorphs in core motifs exhibits that they are “animate figures with the power to act” (2011:86). Lastly, he acknowledges that if the anthropomorphs are indeed shamans then the associated power-bundles “might be interpreted as a form of familiar spirit, spirit companion, or manipulated supernatural being” (2011:89). This thesis concurs with Harrison’s research. However, ethnographic evidence, artistic depictions, and the beliefs of the indigenous people from both Mesoamerica and North America leads this author to believe that the power-bundle motif is directly analogous to a sacred bundle and some sort of prayer staff, stick, or arrow. Harrison’s interpretation of familiar spirit, spirit companion, or manipulated supernatural being still fits within this new hypothesis.

This new interpretation also does not discredit the notion of *datura* being depicted or used by the people of the Lower Pecos, but allows for a more open analysis. Just as a prayer stick or staff is made up of many different elements, so are sacred bundles. This would suggest that not every staff or bundle would be constituted wholly of *datura* -- or even at all. The various elements that they are composed of would be highly dependent on what spirit or power is being evoked. Power-bundles likely are associated with either a shaman character, a mythological figure, and a particular supernatural force -- or possibly all at once. Sacred bundles have the ability to connect all of them together. Perhaps going forward this distinction may be used as a diagnostic tool, for each power-bundle or staff could represent or commune with a different supernatural entity.

The Lower Pecos has already had an incredible amount of research carried out in the region over the years. However, archaeologists' knowledge of the many pictographs is still extremely limited. The people of the Lower Pecos were no doubt extraordinary, with extremely complex worldviews and practices. Through this analysis it is reasonable to assume that knowledge of *datura* and practices involving it were reasonably recognized. Hawk moth iconography appears at multiple sites, reinforcing its important relationships to the plants and to the people of the Lower Pecos. The insects are known to be essential pollinators for *Agave* and *datura* -- staple plants of the arid desert (Riffell and Alcoran 2013). This relationship would have been readily recognized by the Lower Pecos people and integrated into their views of the world. Subsequently the moth to these Archaic hunter-gatherers appears to reference a notion similar to the Huichol conception of *kiéri*.

Assuming Power-bundles clearly have associations with transformation and communication to the supernatural world, *datura* would have been an essential aid; but not necessarily the only one. Bundles, like prayer staffs and sticks are all made up of different material based upon what they are intended to interact with. The culture of the Lower Pecos Canyonlands can be presentably supported as the oldest known Native American people to handle *datura* due to: the number of power-bundle motifs in PRS artwork that convincingly look like *datura*, archaeological evidence of *datura* seeds in the record, semantically similar notions of a peyote / *datura* complex, and hawk moth symbolism.

It should be finally noted that Pecos River Style artworks uniformly depict shamanism. However, not in the vein of Whitley and others' perspective; which often believes that the images are painted as self-portraits of shamans or fellow practitioners experiencing an ASC. Instead PRS details a prototypical shaman dressed in regalia of a particular supernatural or mythological entity, likely in the act of ritual. This individual is not just dressed as a supernatural, but they are becoming the being itself. The murals tell the stories of the Lower Pecos peoples' religion and beliefs which must be carried out to keep the world in balance and in its current or natural state. In this way, a shaman or practitioner is represented, but so is a mythological referent, its (origin) story, and the living spirit itself -- all combined into the active agentive art. Figures can certainly be a cognate for a shaman, however, it should be stressed that when in the act of ritual the individual enters into mythical time and the supernatural planes. They become the spirits themselves or an avatar of them. Lower Pecos rock art should not be viewed in binary

terms, that it must be illustrating either shamanism or mythologies. It is much more multivalenced, it is both, and it is much more.

XI. SOUTHEASTERN CEREMONIAL COMPLEX

Datura and accompanying sphinx moth imagery have previously been discussed in Western and Southwestern areas of America -- with additional discourse including parts of Mexico. This next section will catalog the remaining Eastern portion of the United States, which is admittedly a very large area. *Datura*, *datura* related imagery, and sphinx moth imagery have all been identified in central and southeastern parts of the country (King et al. 2018; Parker and Simon 2018; Knight and Franke 2007; Lankford 2012,2014). This vast region extends from the deep south along a "corridor" to the Mississippi River in Illinois -- colloquially known as the American Bottom. It also includes parts of Louisiana, Arkansas, Oklahoma, and Texas. The area falls under the Mississippian domain, which is a time period (AD 900-1600), as well as a set of related traits, practices, and ideologies shared amongst many distinct ethnic and cultural groups.

During this prolific period various objects were created by Native American artists and craftspeople. These ornate pieces were markedly created out of copper, shell, stone and clay (Reilly III and Garber 2007, 2011). This artistic tradition and its iconography are better known as the Southeastern Ceremonial Complex (SECC); previously deemed the "Southern Cult" -- also referred to as the Mississippian Ideological Interaction Sphere (MIIS) (Waring and Holder 1945; Reilly III and Garber 2007). Many debates have ensued since the term SECC has been coined, particularly whether it is applicable to the cultures that are seen as part of its organizational system (King 2007;

Muller 2007). For the purpose of this study SECC will be the primary term used, due to its deep-seated prevalence in literature. Within the corpus of this overall artistic style are some of the most overt and confounding images of moth iconography in the Americas (Knight and Franke 2007; Reilly III and Garber 2011; King and Reilly III 2011; Lankford 2014). Extravagant moth motifs appear at the sites of Etowah, Moundville, and Spiro. Furthermore, new archaeological investigations -- such as mass spectrometry analysis -- have identified residue from *daturas* chemical makeup in a number of pottery and shell vessels spanning the southern region of America (King et al. 2018).

The SECC was first coined by Waring and Holder (1945) in "A Prehistoric Ceremonial Complex in the Southeastern United States"; it attempted to unify the phenomenon of the "Southern Cult" across eastern America -- seen as one massive complex that rapidly moved through the Southeast. This new designation emerged out of an even larger and ongoing debate that began in the 1930s, regarding the use of the word "cult"; its application, definition, and overall implications (Williams 1968; King 2007; Lankford 2011a). Waring and Holder's SECC hypothesis consolidated the artistic productions from three major prehistoric sites: Etowah in Georgia, Moundville in Alabama, and Spiro in Oklahoma. It unified these disparate objects under one artistic core that shared a set of motifs, god-animal representations, ceremonial objects, and items of costume (Waring and Holder 1945; Knight 2006). Since its inception the SECC has been riddled with dispute, objections, confusion, and concern about what it is and how its being defined. In essence the term is misleading (Lankford 2011a:12; Knight 2006; Galloway 1989; Muller 2007).

In many regards the art and iconography contains similar themes and motifs, however they are conveyed in many different styles. Many of the sites and artifacts express regionalization -- they were specific to their locale; but the SECC lumped everything together. The Mississippian period lasted from somewhere around AD 900 to 1540, and it is typically applied to cultures in a greater interaction sphere of the Mississippi River Valley and everything eastward -- predominantly coalescing in the Southeast of the United States. However, the SECC does not comprise all cultures, art, or ethnicities in the vast region during this time. It is just one central and far-reaching episode in an enduring period of events amid the Mississippian Period (Muller 2007:30).

The second half of the 20th century saw confidence in the SECC dwindle, which led to a number of changes in perceptions and how its research was conducted. James Howards (1968) study of the Muskogee Creeks incorporated ethnography in relation to the SECC, which presented the first major compelling model for interpreting the images through a regional approach (Lankford 2007a:7-8). Philips and Brown (1978) carried out a massive survey on engraved shells at Spiro discovering a number of artistic styles in the SECC through structural and stylistic analysis (Lankford 2011a:10). The Cottonlandia Conference was a milestone in beginning to unravel the SECC iconography through its focus on "regional manifestations" (Galloway 1989; Lankford 2011a:12). Following the conference, V.J. Knight (1986) solidified the importance of recognizing the diversity of religious artworks with their separate meanings and functions across the Mississippian world. In accordance with Knight's views, Mississippian religion should not be seen as

monolithic, but rather composed of several different types of institutions and ritual traditions amongst its people (Lankford 2011a:13).

The last few decades of research determined SECC artworks are represented in multiple styles, which are tied to specific geographic locales where communities were made up of various ethnic and linguistic groups (Lankford 2011a:16; Reilly III and Garber 2007; Reilly III, Garber, and Lankford 2011; Galloway 1989). Style is defined as the traits within an artwork that relate it to another piece of art. These images and artifacts denote local variations in beliefs, worldviews, rituals, practices, and societal positioning. However, the artworks appear to amass at major sites, where the multiple divergent styles were brought under one roof. The images and motifs appear to have had a considerably long life, consequently changing their meaning over time. Even still, it should be noted that there are many shared cosmological and ideological beliefs between Mississippian people and regions. The SECC should be seen as a number of regional complexes that interacted within a greater Mississippian world (Figure 22), rising and falling throughout an extended period of time (Lankford 2011a:16).



Figure 23. Mississippian archaeological sites across the Greater Mississippian Interaction Sphere (Reilly III, Garber, and Lankford 2011:xii)

Cahokia, BBB Motor Site, & Other Sterling Phase Sites

The Mississippian tradition emerged from the earlier Woodland Period (500 B.C. - AD 500), which notably began the practice of constructing large mounds in the Midwest and South (Reilly III and Garber 2007:2; Milner 2004). By the Late Woodland period the forests, hills, grasslands, prairies, and river bottoms that swept through the eastern woodlands were partitioned off by various settlements of horticulturalist groups (Alt and Pauketat 2018:52). The Woodland Period endured some spectacular traditions, such as the Adena and Hopewell -- both refer to sites (mounds and earthworks) as well as unique

artifact assemblages during a particular cultural florescence (Milner 2004:56). The Hopewell engaged in extraordinary earthworks, such as the octagonal mound at the Newark site in Ohio. The entire site encompasses over four square miles, with the octagon alone encircling 50 acres. The unique site is believed to correspond to the moon's metonic cycle and beliefs involving the afterlife, like the path of souls (personal communication with F. Kent Reilly III 2021). The Hopewell art style is partially identified by its naturalistic depictions of birds and animals with other composite zoomorphs; some appearing as dragon-like creatures (Reilly III and Garber 2007:1-2). The Hopewell era represents just one of the many Woodland traditions that the Mississippian people grew out of and were certainly influenced by.

The earliest archaeological sites that originate as decidedly Mississippian are in and around Cahokia, near St. Louis in the “American Bottom” (Emerson and Pauketat 2008:173; Pauketat 2004; Alt 2012; Reilly et al. 2011). Cahokia is the largest archaeological site in North America, stretching over 12 square kilometers (Alt 2012). It contains Monks Mound -- which is one of the four largest pyramids in the world --, 120 additional mounds, thousands of wooden-pole and thatched-roofed buildings, various temples and shrines, and at least one “woodhenge” (Pauketat 2004:69; Alt 2012). Cahokia is recognized as North America's first city outside of Mexico, founded around AD 1050 (Alt 2012,2022; Pauketat 2004).

At the beginning of the 11th century Cahokia was a relatively large Late Woodland site reaching almost one thousand people. By its initial founding or “big bang” in AD 1050 it held somewhere between 10,000-30,000 residents (Alt 2004:500; Alt

2022:194). Archaeologists now believe the city became urbanized through an enormous religious movement that drew people from far and wide into the religious center of the American Bottom; creating the expansive city of Cahokia (Alt 2022:186; Alt and Pauketat 2018). It is proclaimed that at least one third of the city was constituted of immigrants from smaller Woodland communities (Alt 2022:183). This new religious complex focused heavily on the moon, water, and nighttime -- elements often associated with themes of femininity, agriculture/fertility, and the Underworld in Mississippian ideology (Alt 2018,2022; Alt and Pauketat 2018; Emerson 2003).

Some of the most notable artifacts to come out of Cahokia are a number of red stone effigy figurines. These figures were crafted from local flint clay found at Cahokia in the 12th century, during the apex of the city's supremacy. Other figurines have been discovered from Wisconsin to Alabama. Among the stone effigies are multiple female figurines that include serpent and vegetative motifs (Emerson 2003:138). This Cahokia female theme is argued to be a representation of the widely known and dispersed mythological character of Earth-Mother -- also known as “Old Woman Who Never Dies”. In various Native American mythologies Earth-Mother is linked to fertility, regeneration, agriculture (often corn), water, serpents, the underwater panther, the moon, and the Underworld (Emerson 2003:141; Alt 2022:189-190).

At the BBB Motor site, a secondary ceremonial site of Cahokia, two “Old Woman” figurines were found -- The Birger figurine and the Keller figurine (Emerson and Jackson 1984:254-260). The Keller figurine was found in a shrine/temple complex or ceremonial structure dating to the Stirling phase (AD 1100-1200) (Emerson and Jackson

1984; Alt and Pauketat 2018). The archaeological materials found in similar structures suggest these compounds were used for multifaceted purposes, such as communal ceremonies held by priests, storage facilities for ritual paraphernalia, or even residences for elites (Parker and Simon 2018:130). The structure that held the Keller figurine revealed a number of exotic materials and large amounts of red cedar in its assemblage; red cedar is often found in Mississippian ritual contexts, frequently acting as an axis mundi or world tree (Emerson and Jackson 1984; Parker and Simon 2018:120). Relevant to this research, two carbonized seeds of *Datura stramonium* were also recovered from the same archaeological feature as the Keller figurine (Emerson and Jackson 1984:328).

Datura has been found in a few other American Bottom sites: one seed was recovered at Halliday, two seeds were found at Knoebel Community, and ICT II revealed three seeds. Three of the four sites where *datura* was retrieved date to the Lohman (AD 1050-1100) or Stirling phases (AD 1100-1200) -- notably when Cahokia was at its height (Parker and Simon 2018:123-129; Emerson and Jackson 1984). Additionally, a number of other ritual plants can be tied to the Cahokia ceremonial complex: tobacco (*Nicotiana rustica*), morning glory (*Ipomoea sp.*), and holly (*Ilex*) (Parker and Simon 2018; Emerson 2003). While *datura* remains are sparse, their context and known employment in ritual across Native American cultures suggest a likely usage for reaching ASC or communing with spirits in the American Bottom. Unfortunately, their contexts do not provide any indication of how the seeds or plant would have been utilized.

Cahokia maintained an expansive interaction network throughout America, it included societies in the Gulf Coast, Southeast, Southern Mississippi Valley, Eastern

plains, and Great Lakes region (Crown et al. 2012). This vast network is evident through the presence of Cahokia made artifacts showing up across the Mississippian world and by many non-local materials appearing in the archaeology of Cahokia. For example, one non-local material is yaupon holly (*Ilex vomitoria* Ait.), which has been known to be used by Native Americans from Florida to Texas since early explorers arrived (Crown et al. 2012:1; Dye 2007:155). *I. vomitoria* contains caffeine and is brewed into a tea commonly called Black Drink, it is still utilized by many Native American cultures today -- such as the Muskogee Creek (personal communication with F. Kent Reilly III and Dan Penton). It is typically employed for ritual cleansing as it can cause the consumer to vomit and purge. For the cultures that use yaupon holly, it is an important and necessary drink for any ritual ceremony -- especially those before going to battle or war (Crown et al. 2012:4; Dye 2007:155,156).

Crown et al. (2012) carried out liquid chromatography–mass spectrometry/mass spectrometry (LC-MS/MS) analysis on special ceramic beakers from Cahokia, assumed to be used in ritual or political settings. They tested specifically for biomarkers present in *Ilex* -- theobromine, caffeine, and ursolic acid. The test samples confirmed the presence of *Ilex* biomarkers, revealing Black Drink was consumed in these specific containers at Cahokia. The samples also date to the Lohman and Sterling phases, the oldest date around AD 1050. Crown et al. 's findings are significant because Cahokia is out of yaupon holly's natural range; it's typically found along the Gulf Coastal states. The presence of yaupon holly not only suggests a long distance trade with Southeastern cultures at the beginning of the Mississippian period, but indicates the two areas were

involved with one another's religious developments (Crown et al 2012:5). This is significant because exchange networks not only trade materials, but ideas as well -- such as mythologies and stories, but importantly different avenues to contact the spirit world or ways to attain power. Subsequently, if *Ilex* was involved in a long distance trade network, it is not unreasonable to suggest that *datura* might be another resource exchanged amongst Native American groups.

Braiden Style & Etowah

The SECC has a number of “styles” that appear throughout the immense corpus of artworks. In the beginning they were all attributed to one overall artistic system, but a plentiful number of analyses involving engraved shell cups and shell gorgets over the years have disproved the one style hypothesis (Philips and Brown 1978,1984; Brain and Philips 1996; Brown 2007b). In the case of the SECC what is termed as style is shaped by time, place, and ethnicity -- as well as the comprehensive understanding of themes (Brown 2007b:216). Seen in this light an artwork is shaped by its history and its geography (where it was made and where it was found), which help to identify a particular ethnicity that can be tied to the artifact. Once the appropriate culture -- or analogous culture -- is identified then the iconography can be considered through the pertaining culture's myths; subsequently the artworks general meaning may be assessed through these contexts (Brown 2007b:216). Of the many local and regional variations of artworks, the Braden style is considered to be the oldest in the SECC. Through stylistic analysis across diverse art forms, it is now generally accepted that the Braden style originated at Cahokia -- dating as early as the Lohman/Stirling phase (Brown

2007b:214,223-224,241). This is significant because Braden in some ways constitutes an overall “mother style” -- that is, many of the subsequent SECC styles are variously influenced by it (Brown 2007b:241).

At the site of Etowah in northern Georgia various collections of copper and marine shells were excavated, the assemblages emblematic of SECC artifacts. The most famous of the pieces are the Rogan plates, which many consider to be the model of SECC artistic representation. These copper repousse plates were found in grave contexts at Mound C and are Classic Braden style; they date to the Wilbanks phase (Early AD 1250-1325 and Late AD 1325-1375) when Etowah experienced a quick rise to regional dominance (King 2003,2011:289). The Rogan plates depict a human with raptor-like elements of wings, a tail, a hooked beak, and a forked eye surround (King and Reilly III 2011:313). Raptors -- hawks, falcons, eagles, osprey -- and anthropomorphic raptor figures are prevalent images recurring throughout Mississippian iconography; they also appear in a vast corpus of different mediums (King and Reilly III 2011; Lankford 2011b). Birds of prey play an extremely important role in many Native American cultures, they are often significant characters in mythology. The anthropomorphic raptor in SECC imagery is commonly referred to as “Birdman”, a premier figure and supernatural in a number of Native American groups mythology and founding -- specifically those in the Midwest and Southeast (Lankford 2011b; Brown 2007b). Birdman is connected to the Upper or Sky world and has heavy connotations with warfare, regeneration, and fertility; he is also regarded as the Morning Star (Brown 2007a).

The Rogan plates are incredibly intriguing because of their provenance. Before and directly after the Wilbanks phase at Etowah the site was abandoned; revealing that Etowah was episodically occupied during the Mississippian period (Brown 2007b:227; King 2003,2011). One of these episodes occurred during the Wilbanks phase, where Etowah rose to regional political prominence. It is generally believed that the Rogan plates were manufactured in the American Bottom, likely at Cahokia. Classic Braden style appears to originate in the American Bottom in the 12th and 13th centuries -- presumably amongst the Souian speakers of the region. This places the style originally outside of the Muskogean traditions of the Southeast (Brown 2007b:241). Copper plate practices peaked during the 13th century in the Eastern prairies, however, the Rogan plates were found deposited in Georgia well over a hundred years later. The presence of the plates at Etowah may represent a migrating community from Cahokia after its collapse, voyaging to a new premier polity in the Southeast. In this way the Rogan plates can be seen as objects of prestige, heirlooms that helped to establish the new elites at Etowah; they allude to a new power structure introduced from a foreign region influencing political, social, and religious life (King and Reilly III 2011; King 2011). After the Rogan plates introduction, the Braden style became incorporated into the various areas of the Southeast and developed into many “regionalized” styles; Braden’s form, content, and motifs were integrated into the ideologies and art of the local people.

Birdman imagery -- originating from the Rogan plates and the American Bottom -- is also seen on a number of shell gorgets found at Etowah and throughout the Tennessee River Valley. The arrival of this new imagery points to the advent of a foreign

and elite cult; the bearers of this cult implementing a new politico/religious system into the area. It can be surmised through the surviving artifacts that the imported Birdman ideology became the primary path to power in the region and especially at the new Etowah chiefdom (King and Reilly III 2011:314-315).

Mothra & Moth Imagery

Shell gorgets exhibiting Birdman are crafted in the Hightower art style -- comprising the geographic areas of northwestern Georgia and eastern Tennessee (King 2011). This style has gone through a considerable number of name changes and temporal designations. The first of these objects was unearthed at Toqua Mound in Tennessee, giving the engraved shells the namesake of the Big Toco style -- another early designation was "Mound C style". However, the Hightower designation will be used in this discussion (Brain and Philips 1996; Reilly III and Garber 2011).

The Hightower style shows naturalistic compositions in the vein of Greater Braden, but is regionalized to this specific Southeastern area. Engraved marine shells are a long standing tradition in this region, before the introduction of the Braden form; the early Mississippian period commonly depicted themes of a cross-in-circle, turkey cocks, and spiders (King 2011:280; Brain and Philips 1996). After AD 1250 an anthropomorphic theme grew to prominence in the Hightower region and iconography, this theme almost always features Birdman. The majority of these "human figural" shell gorgets were found at Etowah in Mound C -- more than half of the 28 gorgets recovered (Brain and Philips 1996:49). The Hightower Birdman is likely the same supernatural or character portrayed in the Rogan plates -- their style, motifs, and regalia are virtually

identical (King 2011; Reilly III and Garber 2011). Reilly proposes that a *taller* or workshop was located at Etowah, where craftspersons manufactured these specific shell engravings -- the center of this newly found Birdman complex (King 2011:290-291; Reilly III and Garber 2011:297).

Brain and Philips (1996:44) categorized the anthropomorphic gorgets into four themes: 1. “Buddha”, a seated figure 2. “Headsman,” a dancing figure wielding a knife 3. “Morning Star,” an unarmed standing figure 4. “Mortal combat,” two knife wielding figures reaching for one another's throats. Unfortunately, Brain and Philips did not attempt to elaborate on what these themes conveyed, nor did they attempt to understand them. In 2001 the Mississippian Iconographic Workshop at Texas State University-San Marcos investigated the theme and content of the gorgets found in Mound C at Etowah. They proposed that each individual gorget represents a scene in the overall narrative of Birdman (Reilly III and Garber 2011; Knight and Frank 2007:141). Their new thematic designations are not dissimilar to Brain and Philips, however, one is very significant: “Dances with Mothra”.

An insect supernatural has been identified in the SECC, bringing to light a character otherwise forgotten by archaeologists and anthropologists in America (Knight and Franke 2007). “Mothra” -- as it's been deemed -- is depicted alongside Birdman in multiple shell gorgets (Figure 24), suggesting it was an extensively known figure in the SECC pantheon of supernatural beings (Reilly III 2020). Its depiction would have been recognizable to its viewers, likely an established character in the time period's mythology



Figure 24. Moth gorgets. Dances with Mothra theme: a.) Ga-Brt-E12, Etowah Mound C. b.) Ga-Brt-E11, Etowah Mound C. Morning Star theme: c.) Mo-Py-SM2, Saint Mary's site (Adapted from Lankford 2014:58)

(Lankford 2014:56). Three Dances with Mothra gorgets were found in Mound C at Etowah -- with an additional moth-related gorget labeled with the “Morning Star” theme. The Mothra motif depicts an insect with sharp fan-like wings bordered by circles and dots, a curling proboscis, and a forked-tale (Knight and Franke 2007; Reilly III and Garber 2011). The Dances with Mothra theme details a Birdman figure brandishing a Dover Flint sword in its left hand, while in its right hand it grasps the proboscis of the supernatural insect (Reilly III and Garber 2011; Marceaux and Dye 2007). Reilly and Garber interpret Dances with Mothra as a relationship of hostility, with Birdman triumphing over the moth (2011:301).

Another theme in the Mound C gorgets is “Morning Star”; it illustrates a figure wearing the same regalia as Birdman in other gorgets, but this humanoid lacks the characteristic wings and loincloth. The Morning Star theme has been discovered once elsewhere, in St. Marys, Missouri. The Mound C gorget is only partially intact, but the St. Mary's gorget remains in one piece. In these gorgets the “Morning Star” figure clutches

the proboscis of a Mothra in both hands -- again the supernatural insect has characteristic sharp wings bordered by a band of circles and dots and a long pronounced proboscis. Another similar Morning Star figure is seen on an additional gorget, however, it holds snakes instead of moths (Reilly III and Garber 2011:305-309).

Lastly, the “Seated” theme is a dramatic departure from the other Mound C shell gorgets. This figure is seated cross-legged exhibiting the same antlerline and raccoon headdress with a beaded forelock seen on Birdman. The Seated figure has wings, though they are reminiscent of Mothra’s -- fan-like with dotted circles. It has additional bird-like talons and split tail elements that when combined form a spiderweb motif (Reilly III and Garber 2011:303; Knight and Franke 2007:141). In all, the figure appears to be a composite of multiple supernatural figures -- Birdman, Mothra, and perhaps a spider. Knight and Frank (2007) suggest this gorget shows the transformation of Birdman into Mothra -- a complementary opposition or alter ego of Birdman (Knight and Franke 2007:142-143). It appears as a conglomeration of Morning Star and Evening Star, the diurnal bird and nocturnal moth. It should be noted that tomato hornworms (*Manduca quinquemaculata*) have white abdominal markings replicating Birdman’s “forked eye surround” seen in SECC iconography (Knight and Franke 2007:144-145; Reilly III 2020; Cranshaw 2004:69).

In all cases the shell gorgets that involved Mothra were recovered in burial contexts with human remains. The Mothra gorgets were exclusively buried with adult females -- indicating them as specific grave goods for a particular sex (Reilly and Garber 2011:299). Birdman is considered to be affiliated with male or masculine domains and

Morning Star; it appears the Mothra is a supernatural with feminine connotations or even a representative of Evening Star.

Moth imagery is not remote to the Hightower region in SECC iconography, nor is it solely unique to shell gorgets. In fact, the Mothra motif was originally identified in the Willoughby disk from Moundville, Alabama (Knight and Franke 2007). Stone palettes are found regularly in the elite material culture at Moundville, but they rarely carry figurative art (Knight and Franke 2007:136). The Willoughby disk yields a number of motifs seen in Mississippian art, notably specific representations frequently seen at the site of Moundville.

As stated before Mississippian art has similarities across sites but is now inherently viewed as a number of distinct local styles that focus on different themes and subject matter in various media (Knight and Steponaitis 2011). The art of Moundville is categorized in the Hemphill style -- the main corpus of images coming from the Alabama site (Knight and Steponaitis 2011; Brown 2007b). Moundville themes include the winged serpent, crested birds, raptors, trophies (skulls, scalp locks, and bones), and center-symbols-and-bands -- commonly the hand in eye motif (Knight and Steponaitis 2011). All of these themes at Moundville appear to be exclusively associated with the Beneath or Under world. They frequently involve symbols of death, the path of souls -- the Milky Way in the natural world --, and the swirl cross locative in their artworks (Lankford 2007b, 2011b, 2011c; Knight and Steponaitis 2011). It is evident that people at Moundville had a special relationship with the Beneath World and its powers (Lankford 2011c:272).

Stone palettes were used to grind or mix substances on their working surface, the opposite sides sometimes carried images. On the Willoughby disk (Figure 25) a twisted column decorated with skulls vertically splits the palette. The right side contains two hand in eye motifs and the bilobed arrow motif. The left side depicts what Philips and Brown (1978) identified as a “phantasmagoria” -- an unintelligible surrealistic design they called “skillful doodling” (143). However, this “doodle” has remarkably similar characteristics to the supernatural insect in the Hightower gorgets. It too has sharp pointed fan-like wings decorated with dotted circles, a long curled proboscis, and a split tail (Knight and Franke 2007:139). The wings on the Willoughby Mothra are also noticeably similar to those seen on the Mothmen of Pottery Mound in the Southwest.



Figure 25. Willoughby Disk from Moundville, Alabama (Knight and Franke 2007:137)

Reilly (2020) interprets the Willoughby disk to represent death imagery, more precisely forms of communing with past souls and the land of the dead. The skull column can be interpreted as a sacred bundle, a knotted object identified with the bones contained inside the bundle. The bilobed arrow is a motif conveying deer lungs and an arrow, this is believed to signify the soul. The hand and eye are symbols for the Milky Way or the path of souls. Mothra is likely an Underworld spirit and possibly even a motif for Evening Star -- the altar ego of Birdman (Knight and Franke 2007:148). The moth can also be read as a representative of *datura* or tobacco, by way of being their main pollinator. Both plants are used to interact with the otherworld as offerings, messengers, and entheogens that place the user in another realm. Through this conceptual framework practitioners or individuals would utilize one of the entheogens to place them in the spiritual plane to confer with ancestors from the sacred bundle. The souls of the dead ancestors would be contacted on their lodges in the Milky Way, where they reside. Because Moundville has so much death-related imagery, the site itself is believed to act as a portal to the Path of Souls or Milky Way (Lankford 2007b). All the symbols are labels to the actions, people, places, and things involved in the ceremonies and rituals that would take place with the Willoughby disk (Reilly III 2020).

A few bottles found at Moundville also appear to exhibit moth elements and imagery (Figure 26). In Mound C at Moundville three bottles were found executed in the Nashville Negative Painted style. They display designs of semi-circular pendants, followed by dots, and bordered with a fringe element. Between this composition is a long rayed spiral (Knight and Franke 2007: 148-149). It has been suggested that the spirals are

analogous to the proboscis on the Hightower gorgets and the Willoughby disk, while the other design is characteristically identical to the wings of Mothra. The moth motifs on these long necked bottles act as a *pars pro toto* -- a part equalling the whole. The wings and proboscis are representative of the entire moth and all accompanying connotations the people at Moundville had with it (Knight and Franke 2007:149-150; King and Reilly III 2011:318; Reilly III 2020). Several sherds found at Moundville have since been identified to carry these *pars pro toto* representations and a bottle decorated with moth imagery produced in the Nashville Negative Painted style has additionally been found in Scott County, Missouri (King and Reilly III 2011).



Figure 26. Nashville Negative Painted Style bottle from Moundville, Alabama (Photo courtesy F. Kent Reilly III)

Lastly, moth iconography appears in a few other occasions at the Spiro site in Oklahoma. Spiro contained the largest assemblage of engraved, embossed, and carved Mississippian artifacts ever recovered (Singleton and Reilly III 2020). The majority of these objects were found in the Craig Mound, a hollow chamber known as the Great

Mortuary -- due to the many burials found in the chamber. It is thought to have been constructed to “restart” the world during the most strenuous part of the Mississippian period. In essence it is a cosmological layout of the stars and the story of creation; for this reason Reilly interprets it as a lasting Spirit Lodge (personal communication). Objects were positioned side by side in the chamber representing the various beings that reside across the celestial world (Singleton and Reilly III 2020:11; personal communication with F. Kent Reilly III 2020). Spiro contains objects in numerous styles and from various cultures across all of North America, but specifically crafts in the Craig style -- thought to be originally Caddoan (personal communication with F. Kent Reilly III 2021). Many of the objects and their iconography represent cultures from the American Southeast, Great Plains, Southwest, and possibly Mesoamerica (Singleton and Reilly III 2020:12).

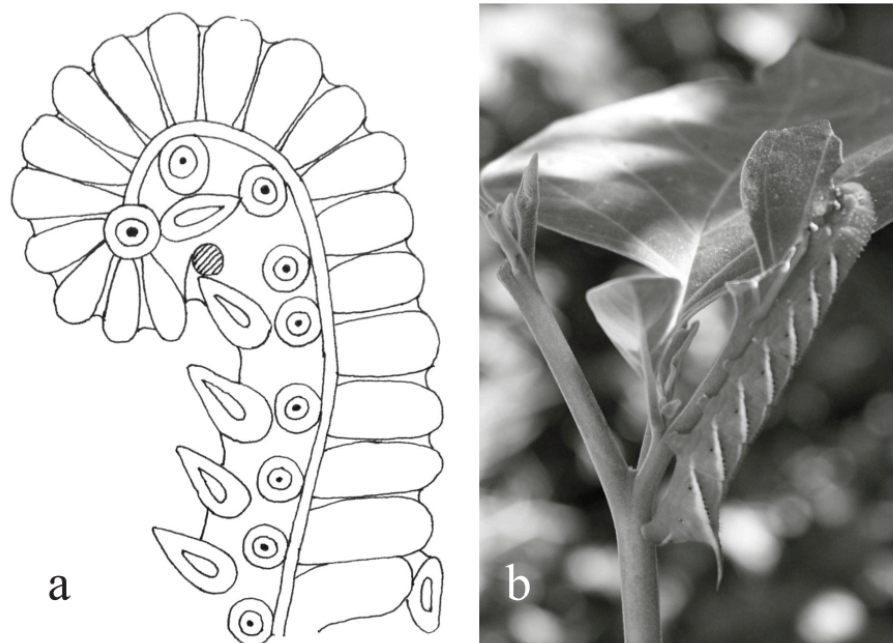


Figure 27. a.) Spiro caterpillar engraved on marine shell. b.) Sphinx moth caterpillar (hornworm) (Adapted from Lankford 2014:53)

Within the large collection of artifacts, two engraved shell plaques depict caterpillars (Figure 27); the plaques are categorized into the Craig A style (Philips and Brown 1984:145). They rear up in the characteristic hornworm posture -- the designation Sphinx moth was given because this posture is similar to the one of the Great Sphinx in Egypt -- and one is depicted with a snake-like face (Knight and Franke 2007:147). A few quartz crystal boatstones were also found in the Craig Mound. Boatstones were used as weights to balance atlatls before the introduction of the bow and arrow; these crystals were probably repurposed as heirloom objects. Of these crystals one of them was crafted as an effigy of a sphinx moth pupa, carved out in refined detail (Trubitt 2020:216).

Datura Residue Analysis

Over the last two decades moth iconography has been established and analyzed in the Mississippian world, but it was only recently that *datura* residue analysis was carried out in the complex. Adam King and associates (2017) performed a liquid chromatography mass spectrometry analysis on 73 vessels from the Thomas Gilcrease Institute of American History and Art in Tulsa, Oklahoma. The study tested vessels for atropine and scopolamine, the two signature alkaloids in *datura*. King et al. sampled 18 shell and 55 pottery vessels for their investigation. Thirty one of the pottery vessels were from various Mississippian and Caddoan Mississippian sites in Arkansas dating from AD 1400-1700; the remaining 24 ceramics were from Western Mexico dating between the Early Formative (1400–1000 BC) and Early Postclassic (AD 900–1250) periods (King et al. 2017: 316).

Six of the vessels from Mexico tested positive for atropine. The vast range of dates for these ceramics suggest a long tradition of *datura* utilization in the area; from the Terminal Early Formative (1400–1000 BC) to the Postclassic (AD 900–1500) (King et al. 2017: 317). Vessels testing positive for *datura* included bowls, a bottle, and *molcajetes* revealing that *datura* was crushed or pounded, as well as consumed as a beverage in this region of Mexico (King et al. 2017: 317, 320). Two of these bowls were painted with designs that simulate *datura* seed pods (King et al. 2017:322).

Shell cups and fragments yielded positive results for atropine in 14 of the 18 samples, well over two thirds of the specimens. All of these shell vessels were found at Spiro, Oklahoma. These objects are known in the ethnographic record to be used in ritual settings for the consumption of Black Drink made from yaupon holly (King et al. 2017:316; Crown et al. 2012). It can now be affirmed that *datura* beverages were also served or consumed from these shell objects as well.

Seven of the Mississippian ceramics produced positive results for atropine (King et al 2017: 314-316, 319). The Mississippian ceramics that contained atropine alkaloids all contained iconographic motifs that relate to the Underworld or Beneath World. As mentioned previously, this realm is associated with the dead, water, and growth in the natural world. One bottle was incised with images of the Great Serpent and Underwater Panther -- considered to be the “Lord” of the Beneath World (Lankford 2007b). Two ceramics were created as frog or frog-related effigies, common water spirits. Intriguingly, an effigy of a female figure also contained atropine. This figure is presumed to be akin to the Old-Woman-Who-Never-Dies character that is prominent in Mississippian mythology

(King et al. 2017:321). The positive results for *datura* residue in an Old-Woman effigy from Arkansas helps to substantiate the *datura* seeds found near the Keller figurine in Cahokia. The plant can justifiably be connected to rituals or ceremonial actions involved with this motif and character.

These findings are significant, because they show direct demonstrable evidence of *datura* usage -- not just iconographic referents that are interpreted to mean a culture utilized the plant. It can plainly be stated that *datura* was used by Native American cultures in Arkansas during the Middle Mississippian period (AD 1350–1450) and in Oklahoma during the Protohistoric period (AD 1500–1700) (King et al. 2017:325). Presumably, it was utilized across the larger Mississippian interaction sphere. *Datura* is already known to be associated with nighttime, contacting the dead, and the Underworld in other cultures; these associations can now be added and solidified in parts of the Mississippian world.

XII. DISCUSSION AND THE DATURA COMPLEX

The culture studies presented above involve indigenous North American groups from California to Florida and the many places in between. In some of these areas *datura* constituted one of the fundamental components in a culture's ceremonial or shamanistic tool kits, which can be seen similarly in function to the longstanding and revered tobacco. Both are Solanaceae plants, contain hallucinogenic properties (prehistoric *Nicotiana rustica* was much more potent than common tobacco), are consumed in rituals (smoked, chewed, drank, etc.) to commune with spirits or supernatural zones, and have the same pollinators (sphinx moths) (Wilbert 1987; Lankford 2014). Clearly, *datura*'s employment was much more extreme and dangerous, containing different compositions of psychotropic alkaloids. This expressed different utilizations between the two medicines' practices.

Tobacco is ubiquitously handled across nearly all Native American societies; exploited in North America, the Caribbean, and South America (Wilbert 1987). New research indicates that tobacco practices extend as far back as 12,000 years ago (Duke et al. 2022). While *datura* does not have evidence for such a deep time at this point, Litzinger (1981) initially proposed that *datura* use was "part of the Archaic tradition which prior to 3000 B.C. apparently extended over much of North America" (71). Investigations into the Lower Pecos substantiate Litzingers statement, revealing through carbonized seeds that *datura* was utilized by Native Americans nearly five thousand

years into the past (Boyd and Dering 1996). This thesis does not suggest that *datura* is interchangeable with tobacco, but should be viewed in a similar regard to both its antiquity and indispensable functions. No longer should *datura* be placed on the wayside or deemed a menial plant of importance for many American cultures. Its powers, both medicinally and ritually, were well known by a great number of Indigenous people and for an extraordinarily long period of time (Benítez et al. 2018:141-145; Applegate 1975a; Aedo 2011; Stevenson 1915). King et al.'s samples show hard empirical evidence for *datura* utilization as early as the from the Terminal Early Formative (1400–1000 BC) in West Mexico -- indicating at least a minimum of 3,000 years of ritual practices on the North American continent (2017:322).

It is unknown whether the plant was widely distributed across the Americas before its peopling, or if it was spread over the two continents entirely by human intervention. New phylogenetic research contends that Mexico and the American Southwest have been established as the main center of origin and evolution of the genus (Benítez et al. 2018; Luna-Cavazos et al. 2009). In particular, the Balsas River Basin in Mexico has the greatest richness of species; it is considered to be the center of diversity for the genus *datura* (Luna-Cavazos and Bye 2011). How and why it dispersed throughout the Americas is still a matter of conjecture and unproven hypotheses. However, it should be noted that *datura* grows in nitrogen-rich soils and disturbed habitats; typically those that are irritated by human activity (Benítez et al. 2018:134). By the Historic Period and after the Columbian Exchange, *datura* became widely domesticated and subsequently grown throughout the world as an ornamental flower --

having its own rich history in the New World and Old World alike (Benítez et al. 2018; Geeta and Gharaibeh 2007).

It can be asserted that *datura* practices in the region of the United States begin to show up in the archaeological record quite noticeably after the 12th century (Parker and Simon 2018; Berlant et al 2017; Litzinger 1979; Lankford 2012; King et al. 2017; VanPool 2009). It has been proposed that a widespread *datura* complex or cult emerged during the Prehistoric era through interactions involving Mississippian societies, Caddoan polities, Southwestern cultures, and Mesoamerican civilizations (Lankford 2012, 2014; Litzinger 1978; Huckell and VanPool 2006). This theory has been suggested due to a number of spiny or “spiked” ceramics that appear from “El Salvador to southwestern Colorado” and eastward into the Central Mississippi Valley (Litzinger 1978:154; Lankford 2012).

Joseph Litzinger was the first person to suggest a large spread *datura* cult across the Southern United States and Mexico (1978, 1981). He noted that ethnographically it is established that the Aztec kept *datura* seeds in special containers called *petaquillas*; but Litzinger wondered where they were in the archaeological record (1978:150). A number of ceramics with “spiked surface treatments” -- also called “knobs” or “nodes” -- appear across a very large geographic range displaying a variety of types and forms (Litzinger 1978:152). The vessels may appear as bowls, lidded jars, or *incensarios* (Figure 28). These knobby pots express a remarkable likeness to *datura* seed pods -- the artificially crafted nodes or protrusions on the ceramics resemble the spines of the plant's fruit (Litzinger 1978; Lankford 2012,2014; Huckell and VanPool 2006). Oftentimes vessel

form is related to its function, an unmistakable label to the ceramics intended use (Litzinger 1978:152; King et al 2017:322). Litzinger (1978) and others believed that these ceramics were *datura* effigies and thus likely were containers for the plant -- parallel to the Aztec *petaquillas* foretold in literature. Litzinger's survey found that the majority of these *datura* effigy ceramics were from central and southern Mexico; an area with various ethnographic documentation of *datura* practices over many years and the center of diversity for the genus (Litzinger 1978:154; Benítez et al. 2018; Luna-Cavazos and Bye 2011). But the survey also found many of these vessels appeared in northern Mexico and a sparse scattering in the American Southwest.

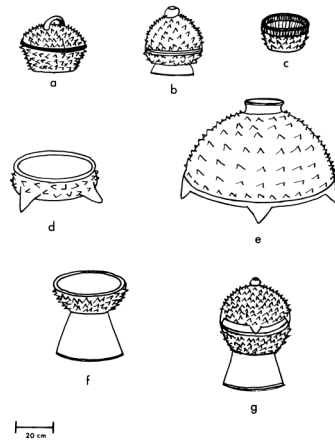


Figure 28. Most common forms of spiked ceramic vessels in Mexico and the American Southwest (Litzinger 1978:153)

A few decades later, Huckell and VanPool (2006) delved in depth into *datura* religion and ritual in Prehistoric Southwestern shamanism. They carried out an inspection inquiring into these Southwestern *datura* effigy ceramics (Figure 29), following Litzingers identification and initial survey. Their assemblage included 150 vessels from

the Southwest and Mexico. It contained ceramics from Southwestern cultures of the Anasazi, Mogollon, Western Pueblo, Mimbres, Sinagua, Prescott Culture, Hohokam, and Salado (Huckell and Vanpool 2006:152-154). The artifacts dated from Basketmaker III (AD 500-750) to the Historic Period; as noted before, *datura* seeds have been found in Pueblo ruins as far back as the era of Basketmaker III (Huckell and Vanpool 2006; Yarnell 1959, 1965). The assemblage had considerable variation amongst size, form, and knob or spine treatment. Jars made up the majority of the specimens, holding true to the ethnographic record of storage containers for the hallucinogenic plant. The vessels were found in a wide array of contexts: in burials, caves, trash deposits, and both domestic and ritual settings (Huckell and VanPool 2006:152-153). Huckell and VanPool established that these apparent *datura* ceramics appeared relatively consistent in the Southwestern culture region.

This decorative ceramic style continues to turn up over an incredibly large geographical area (Figure 30). Lankford has carried out multiple investigations and forms of research into Southwestern influences in the Central Mississippi Valley (CMV) and SECC. One trail he followed was on that of the noded ceramics in the CMV (Figure 31)



Figure 29. Map of Southwestern noded vessel locations (Huckell and VanPool 2006:154)

(Lankford 2012). Lankford compiled a survey with 32 spikey ceramics found east of the American Southwest; identifying vessels in Texas, Arkansas, Louisiana, Missouri, Tennessee, Alabama, and Georgia (2012:66-68) His research showed that most sites only carried one or two of the *datura* effigy ceramics; of the 32 specimens 21 were found at different archaeological sites. This suggests that the vessels are rare but consistent in the archaeological record, signifying an interesting distribution. Lankford inferred that the use of these ceramics must have been restricted to only a few owners (Lankford 2012: 53-54). It has been established ethnographically that in the Southwest and California only specific practitioners were permitted to handle *datura* in ritual settings (Applegate 1975a; Blackburn 1975; Hayden 2018; Stevenson 1915). It can be suggested that this would have been similar in the Caddoan and Mississippian societies.



Figure 30. Map of Mesoamerica, Southwestern United States, ArkLaTex, and CMV showing regions with noded vessels (Lankford 2014:57; adapted from Litzinger 1981)

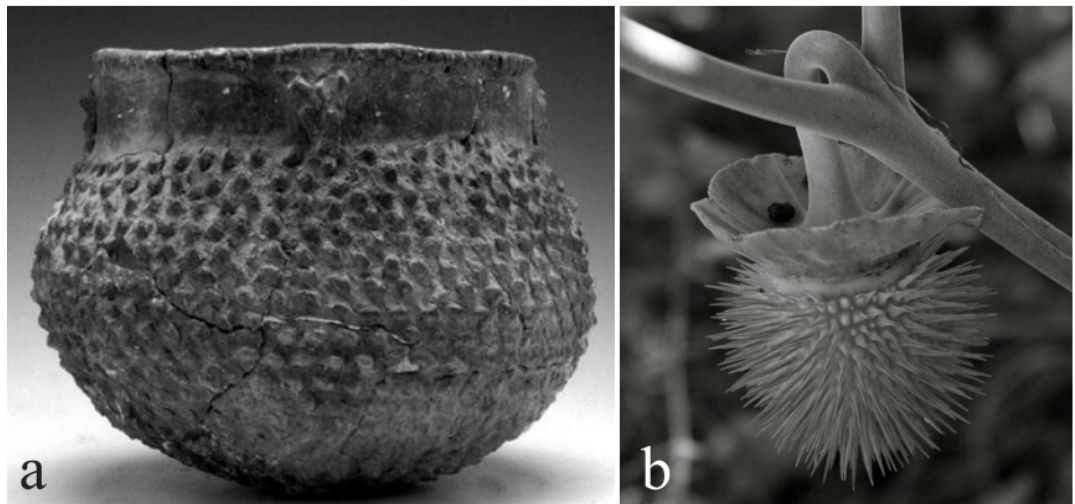


Figure 31. a.) Fortune Noded vessel from the Friend Mound site (3MS65). b.) *Datura* seed pod (Lankford 2014:51)

The *datura* effigy ceramics in the Caddoan region -- Texas, Arkansas, and Louisiana -- appear stylistically the most similar to those found in the Southwest and

Mesoamerica. Lankford (2012) hypothesized that these spike decorated ceramics were all connected; diffused from Mesoamerica into the Southwest, then to the Caddoan regions, next the Central Mississippi Valley, and finally into the American Southeast. The ceramics in this way act as footprints for *datura* shamanistic traditions, wherever they are found (Lankford 2012). Lankford (2014) and Huckell and VanPool's (2006) surveys maintain the supposition of a far-reaching *datura* complex was well established in the extended Southern United states by the Mississippian period.

In this complex noded containers would have been functionally decorated to display what they contained. Due to the plant's dangerous nature, only a few adept practitioners would have handled it; explaining why they represent such a small percent of overall ceramics in the archaeological record (Lankford 2012). Ethnographically, *datura* is recognized to be used all over the Southwest and archaeologically it can be inferred as far back as Basketmaker III (AD 500-750). Following King et al.'s (2017) residue analysis, *datura* is confirmed in ceremonial use by the Middle Mississippian period (AD 1350-1450) and archaeologically it can be connected to the Early Mississippian during the Lohman/Stirling Phases at Cahokia (AD 1050-1200). The effigy ceramics can be used to link the disparate regions to a shared religious / ritual practice.

This hypothesis of a large-scale interaction sphere can be substantiated by the fact that noded or spiked *datura* effigy ceramics appear throughout the Prehistoric period and the geographical expanse of the southern United States and Southwest. Though they are always in small numbers, noded ceramics have been found as far east as the Tennessee River Valley and the site of Etowah in Georgia -- both regions with Mothra

shell gorgets (Lankford 2012). Moth iconography clearly has great importance in this area, as it is depicted with Birdman. The presence of *datura* effigy ceramics aid in tying *datura* practices to these specific areas. Is Mothra also tied to these ceramics and *datura* practices? Perhaps, it surely seems conceivable. It can at least be surmised that *datura* drinking ceremonies were prevalent in other Mississippian sites like Spiro (King et al. 2017). There, *datura* was consumed much in the same way as Black Drink -- in shell cups. This signifies an assimilation of *datura* practices into already existing forms of ritual in Mississippian cultures. F. Kent Reilly has even proclaimed that an extensive hallucinogenic trade network may have endured through this period of time and overall area; pointing to the Caddoan site of George C. Davis in Texas as a potential locus or distribution center (personal communication 2021).

In the 14th and 15th centuries -- during the Middle Mississippian Period and Pueblo IV Phase -- sphinx moth iconography was at its most abundant. This era saw the production of the Pottery Mound Kiva murals -- “mosquito man” and the “jimsonweed maidens” --, the Hightower style anthropomorphic shell gorgets, and the Willoughby disk. In this thesis’ earlier iconographic breakdown, it is suggested that all of these Mothra figures are depicted in a somewhat similar vein. The curled proboscis element is highly prevalent in the “mosquito man”, shell gorgets, and Willoughby disk -- which admittedly could be caused by independent artistic invention based on the natural physiological characteristics of the sphinx moth. But more directly, the sharp fan-like wings appear stylistically similar in the Kiva murals and SECC iconography -- not likely to be independent invention. In the Willoughby Disk and “mosquito man” the wings end

in triangular elements each dotted with a circle -- very specific and strikingly similar renderings. Similarly, it appears that there are distinctive designs on the central part of the wings for both figures that were created in separate locales. Again, these other wing designs are decorated with circle or dot elements. The circle designs could be interpreted as portals, as the moth can be related to paths to the supernatural worlds. Or perhaps they are related to the stars in the night sky -- the moth, distinguished as a well-known creature of the night.

It is possible that there was interaction amongst the Mississippian and Southwestern groups during this time -- if so by way of diffusion through the Caddo (Lankford 2012, 2014; personal communication with F. Kent Reilly). Perhaps similar stories, mythologies, or beliefs involving the moth and *datura* were shared amongst these people. It is not uncommon for groups to revere a similar process or supernatural entity that allows access to power -- such as *datura* rituals. The Mississippian iconography seems to align *datura* usage -- in some way -- to the Old-Woman or Earth Mother figure. In the Southwest there are many connotations of *datura* with females, growth, and the Underworld -- such as the *tsimonmana* or “jimsonweed maiden” and women wearing *datura* blossoms in their hair. Reasonably, *datura* has many core associations cross-culturally, such as nighttime and Beneath world relations -- by way of being a nocturnal flower. Additionally, the psychotropic alkaloids of the plant would have been treasured to allow access to the supernatural realms. These foundational associations are generally known and imbued in each culture, but are integrated differently into the many

different mythologies, religions, and belief systems. Each requires its own in depth exploration.

The sphinx or hawk moth is commonly associated with *datura* and tobacco in Native American art, mythology, and ontological systems because it is both plants' principal pollinator. Moths and butterflies also have their own unique position in cosmologies and belief systems throughout Native American cultures -- particularly because of their ability to transform from a caterpillar to a butterfly (Lankford 2014; VanPool 2009; Guernsey 2011). In the case of the Oglala Sioux, moth cocoons are even admired as sacred bundles; the caterpillar / moth is seen as a powerful entity being able to create its own bundle and emerge out of it in an entirely new form (Brown 1983). The act of metamorphosis would have been esteemed by shamans, who constantly employ acts of transformation.

Additionally, the fact that both hawk moth caterpillars and adult moths feed off the toxic plants of *datura* and tobacco would place them as venerated beings -- by their ability to not overdose and die. Thus the moth would act as a spirit guide for *datura* / tobacco practices, guiding shamans and patients through their spiritual journeys and protecting them from a lethal dose (Lankford 2014:55). In symbolic manners, all of these concepts and associations would have been recognized by viewers when seeing sphinx moth iconography. Even today the Muskogee Creek consider the "night hummingbird" -- a colloquialism for sphinx moths -- to be the protector and premier shaman of the highly revered nightshades (personal communication with Dan Penton).

XIII. CONCLUSION

Datura has been suggested to have been utilized for thousands of years (Litzinger 1981). Physical *datura* remains reveal that the plant was handled by Native Americans as far as 5,000 years ago and *datura* residue samples validate its use in ritual at least 3,000 years ago (Boyd and Dering 1996). Its employment was first documented by early Spanish explorers in Mexico during the 16th century, notably by the renowned Aztecs (Emmart 1935; Benítez et al. 2018). Its chemical make-up of tropane alkaloids -- atropine, hyoscyamine, and scopolamine -- designate it a major plant of significance for medicine and ritual. In the medical field some of these compounds present in *datura* are used for: antispasmodics, antiepileptics, antitussives, medicine for head and ear pain, antiasthmatics, antirheumatics, antimicrobials, antifungals, anti-inflammatories, pupil dilation, and Parkinson's treatment (Benítez et al. 2018: 134; Mohammed et al. 2016:388). Current ethnobotanical uses in Mexico detail 82 medicinal practices for just six species of *datura*. Cross culturally it is commonly used by Indigenous Americans as a pain-reliever or anti-inflammatory, a poultice for wounds, ulcers, or boils, an anti-asthmatic, and an anesthetic (Benítez et al. 2018:134; Applegate 1975a; Baker 1994; Gayton 1928; Stevenson 1915). The alkaloid compounds are also psychotropic, making the *datura* plant famous for being used by Indigenous cultures in spiritual or entheogenic practices. It is an essential aid in shamanistic traditions, a tool used by Native American belief systems allowing them to access supernatural, cosmic, and spiritual realms or

entities. (Benítez et al. 2018; Aedo 2011; Applegate 1975a; Baker 1994; Gayton 1928; Hayden 2018; Aedo 2011; Yasumoto 1996; VanPool 2009; Stevenson 1915). Across the Indigenous cultures that employed *datura* for ritualistic purposes it was used for: inducing visions or dreams with other-than-human beings, diagnosing disease, granting luck in hunting, love-magic, perceiving the future, and detecting lost souls or objects (Benítez et al. 2018; Aedo 2011; Yasumoto 1996; Applegate 1975a; Stevenson 1915). It could also be used to help elevate the status of an individual by allowing them to commune with the supernatural zones and acquire further power (Hayden 2018). In some cases these actions are used more malevolently for witchcraft or sorcery, making it an auspicious but oftentimes feared plant (Aedo 2011; Yasumoto 1996).

Datura is most regularly consumed through acts of smoking, drinking, or chewing. However, there could be an infinite number of ways to allow *datura* into the bloodstream. Smoke may be inhaled through *incensarios* and not pipes or cigarettes; liquids may be poured over the body and not drunk; powders can be rubbed into the eyes and not wounds; and substances may be passed through enemas and not the mouth (Litzinger 1978; Lankford 2012,2014; Stevenson 195; de Smet and Hellmuth 1986; Personal communication with James F. Garber 2021).

Mythologically and semantically *datura* is broadly connected to elements of the nighttime, the moon, the underworld, madness, eroticism, fertility, wind, and death (Yasumoto 1996; Aedo 2011; Milbrath 2000). As a general whole, *datura* has connotations with the Underworld and whatever symbolism is involved with it in a given culture's beliefs. In the Southwest and Mesoamerica it is further tied into the Flower

World complex and its many tangles of associations. The Beneath World elements and associations can often be mistaken with the Western notion of Hell or a place of nefarious horrors. However, to the Native American worldview, the Beneath or Under World is the place of primordial beginnings, disorder, water, growth, and ancestors. It is a necessary component actively needed in the cycle of life -- like the seasons. The realm in this sense acts as a dialectic to the Above World, an unavoidable and valid opposite contingent to the balance of the universe. The powers of *datura* are not seen as inherently evil, however, they can easily be used to inflict it.

The sphinx moth is a characteristic symbol of Solanaceous plants, particularly tobacco and *datura*. The entire moth's life can revolve around these plants, from caterpillar to adult moth. In mythologies and belief systems it can be seen as both the creator and protector of the highly regarded plants. They act as the premier shaman and ward of the plant and its powers. Symbolically, the caterpillar to moth metamorphosis is intrinsic to its understanding as a symbol. Particularly, the hawk moth creates its own bundle -- a hardened pupa -- and buries itself in the ground. It forces itself out of its confines and emerges reborn, in a new state entirely. This process is highly esteemed by Native Americans and particularly shamans, from past to present.

Iconographic imagery of the sphinx moth may very well go back thousands of years in the Lower Pecos rock art. PRS imagery depicts what appear to be moth-like characters, who in context present themselves in a similar manner to the Huichol antagonist *Kieri Tewiyari* -- a nefarious winged entity still a part of current *Wixarika* mythology. The fluorescence of known Mothra images in Native American artworks

occur in the 14th and 15th centuries, from New Mexico to Georgia; they align with noded ceramics which point in the direction of a widespread *datura* complex during this period. The moth would not have had exact symbolic continuity between all cultures, but would have been integrated into the systems of beliefs and religions in each particular culture.

Grievously, after the Historic period many Native American beliefs and rituals were suppressed by European conquests and missionization. The use of hallucinogenic plants was one of the many cultural practices extinguished by Westerners. As the use of *datura* was eradicated over the centuries, its practices were lost. Because it is extremely dangerous to handle, only certain practitioners knew how to handle the plant without causing fatalities. This knowledge would cease to be passed down in most areas, especially those outside of the plants natural range. Additionally, the widespread use of peyote in the Native American Church became dominant in the 19th and 20th centuries; an overdose on peyote does not cause fatalities, eliminating the need of potentially lethal medicines. During these years the significance of the sphinx moth's meaning became lost and misplaced. But to many Native Americans the beliefs and knowledge surrounding these moths remained ingrained in their stories and ontologies. To them, its powers and eminence remain; a relationship they still have managed to maintain despite the many disasters and catastrophes over the boundless decades.

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