Integrating Mythological, Archaeological, and Linguistic Approaches to Understand Complementary Oppositional Structures of the *Spondylus* Exchange System

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Abstract

This paper attempts to integrate mythological, archaeological, and linguistic evidence to understand complementary oppositional structures of the *Spondylus* exchange system. The warm-water bivalve, *Spondylus,* was a prestige item involved in a complex system of exchange that included the Ecuadorian and Peruvian coastal and highland areas throughout pre-Columbian history, gradually losing its significance with the Spanish conquest. Roy Wagner's technique of obviation was applied to the Andean myth of Paria Caca of *The Huarochirí Manuscript* [1991 (1600)]. The obviation diagram of the myth was used to interpret archaeological and linguistic material surrounding *Spondylus* and the exchange system that it was involved in, and the synthesis of material led to the discovery that the structural transformations in the myth of Paria Caca parallel the transformations of the *Spondylus* exchange system. In conclusion, this paper argues that the mythological, archaeological, and linguistic evidence on the *Spondylus* exchange system supports Gary Urton's assertion that "social and political relations within Andean communities tend overwhelmingly to operate on the basis of complementary asymmetric dualism," a dualism that is "grounded in complementary oppositions" (2012: 323, 324).

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Spondylus princeps

Poppe, Guido T., and Philippe Poppe. *Spondylus Princeps*. 2015. Conchology, INC. Web. <http://www.conchology.be/?t=68&u=281107&g=f0a135100fc3447d5fe894689f4d8487&q=3444c9c9ed82c5794e588ab4a9dc98e5>.

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Chapter 1: Introduction

Introduction

Anthropological fields are often kept distinct and are engaged with separately instead of enhancing each other. Taking a cross-disciplinary approach is informative, and the different perspectives may confirm ideas or contradict others, leading to new discoveries. This paper recognizes the value in integrating anthropological fields and attempts to synthesize mythological, archaeological, and linguistic data to understand complementary oppositional structures of the *Spondylus* exchange system.

Spondylus is a warm-water bivalve that was involved in a complex system of exchange that included the Ecuadorian and Peruvian coastal and highland regions throughout pre-Columbian history, gradually losing its value with the 16th-century Spanish conquest. This chapter describes the Andean ecological landscape that *Spondylus* became entrenched in, provides a background on *Spondylus,* and introduces the anthropological concept of complementary oppositional structures. The second chapter, "The Obviation of the Andean Myth of Paria Caca," presents structural approaches to mythology: Gary Urton's *mytho*historical approach (1990) and Roy Wagner's symbolic obviation technique (1978). The Andean myth of Paria Caca of *The Huarochirí Manuscript* [1991 (1600)] is summarized and then obviated.

In the third and fourth chapters, the obviation model of the myth of Paria Caca is respectively used to interpret archaeological and linguistic evidence on the *Spondylus* exchange system, supporting Urton's assertion that "social and political relations within Andean communities tend overwhelmingly to operate on the basis of complementary asymmetric dualism," a dualism that is "grounded in complementary oppositions" (2012: 323, 324). The synthesis further reveals that the myth parallels the *Spondylus* exchange system in many ways.

Understanding the Andean Ecological Landscape

The Andean ecological landscape includes the coastal, highland, and tropical lowland regions that run parallel to each other. The coastal region extends along the western-most portion of South America and ranges in width from 20 to 100 kilometers (McEwan 2006: 20). The Humboldt Current provides bountiful marine life to the coastal region but is also responsible for turning it into one of the world's driest deserts (McEwan 2006: 20). The Humboldt Current begins in Antarctica and flows north along the Chilean and Peruvian coastal waters. When the current reaches the northern-most portion of Perú, it diverges from Ecuador to flow west towards the equator. The earth's rotation and the southeast trade winds cause cold-water upwelling that enhances primary productivity and that allows for the rich marine biodiversity.

Chicama, Perú

Lima, Perú

The Humboldt Current cools the air overlying the Peruvian coastal waters, and the cold-water upwelling events maintain the cold air temperature. Little evaporation occurs since the cold air is incapable of holding very much moisture (McEwan 2006: 20). The cold air overlying the coastal waters travels towards lower-pressure, warmer air over the coastal region, creating onshore winds. The cold air warms as it moves inland. The air's ability to hold moisture increases, and this causes the air to retain the small amount of moisture that it carries. This

results in nearly no precipitation over the coastal region. Clouds form as the air increases in elevation and reaches the colder, higher altitudes. The skies are overcast from June to November when these cold clouds become trapped beneath a mass of warmer, high-altitude air (2006: 20). The warm air above the clouds cools from December to May, and the cooling events allow the clouds to increase in elevation and precipitate as rain over the Andes (2006: 20).

El Niño is an irregular climatic occurrence that usually appears in December and that greatly affects the Humboldt Current. The trade winds normally push warm ocean waters towards the western Pacific, and the interactions between the Humboldt Current and the trade winds allow for cold-water upwelling in the Peruvian coastal waters. However, during an event of El Niño, the trade winds weaken, and warm water flows east towards South America and prevents the cold-water upwelling. The warming events disrupt the abundance in marine life and lead to heavy rainfall along the coast (McEwan 2006: 21). Sandweiss (2015) describes El Niño as both an irregular and patterned process. He writes:

> "The interval between events isn't fixed, and even the average frequency varies over the millennia. But in other ways, it is very much a patterned process. When El Niño happens, certain things tend to occur—the Southern Oscillation reverses; sea level rises in the eastern Pacific and drops in the west; sea surface temperatures increase along the equator and in the eastern Pacific; rains fall on the desert coast of Ecuador, Peru and Chile while drought plagues Australia, Indonesia, and the highlands of southern Peru and Bolivia" (Sandweiss 2015: 10).

The highland zone is located roughly 50 kilometers inland from the coastal zone. Most of the rivers that originate in the Andean highlands stream east into the Amazon River. However, rivers do flow west towards the coastal desert and form "down-valleys" and patchy riverbanks that are located around 1000 meters above sea level (McEwan 2006: 21; Salomon 1991: 46). These valleys have proved substantial for the development of irrigation systems and are an adequate environment for growing coca leaves, avocados, peanuts, beans, squash, gourds, maize, peppers, maniac, and sweet potatoes (McEwan 2006: 21; Salomon 1991: 46). Guavas,

pineapples, cherimoyas, and lúcumas are amongst the various fruits that are grown in the coastal valleys (McEwan 2006: 21). Below is a table from *Neglected Crops: 1492 from a different perspective* (1994) that lists native Andean tubers, roots, grains, legumes, and fruit-trees and the altitudinal and ecological zones that the various foods are grown at.

TABLE 5 **Main food species originating in the Andes**

Crop (common name)	Latin name	Altitude *(m)*	Agro-ecological zone[1]
Tubers			
Mashwa, añu	*Tropaeolum tuberosum*	3 500 - 4 100	Suni, puna
Oca	*Oxalis tuberosa*	2 300 - 4 000	High quechua, suni
Bitter potato	*Solanum x curtilobum*	3 900 - 4 200	Suni, puna
	Solanum x juzepczukii	3 900 - 4 200	Suni, puna
Potato	*Solanum indigenum*	1 000 - 3 900	Yunga, quechua, suni
Ullucu, oca quina	*Ullucus tuberosus*	2 800 - 4 000	High quechua, suni
Roots			
Acira, Queensland arrowroot	*Canna edulis*	1 000 - 2 500	Yunga, low quechua
Arracacha, apio, Peruvian parsnip	*Arracacia xanthorrhiza*	1 000 - 2 800	Yunga, low quechua
Mauka, chago	*Mirabilis expansa*	1 000 - 2 500	Yunga, humid quechua
Maca, pepper grass, pepper weed	*Lepidium meyenii*	3 900 - 4 200	Puna
Leafcup yacón	*Polymnia sonchifolia*	1 000 - 3 000	Yunga, low quechua
Grains			
Love-lies-bleeding, cat-tail, Inca wheat, tumbleweed, kiwicha	*Amaranthus caudatus*	2 000 - 3 000	Quechua
Canihua, qañiwa, cañahua	*Chenopodium pallidicaule*	3 500 - 4 100	Suni, puna
Quinoa, quinua, suba	*Chenopodium quinoa*	2 300 - 3 900	Quechua, suni
Legumes			
Kidney bean, French bean, dwarf bean, string bean...	*Phaseolus vulgaris*	1 500 - 3 500	Yunga, quechua
Basul	*Erythrina edulis*	2 000 - 2 800	Quechua
Andean lupin, South American lupin	*Lupinus mutabilis*	500 - 3 800	Yunga, quechua, suni
Fruit-trees			
Cape gooseberry	*Physalis peruviana*	500 - 2 800	Yunga, quechua
Lucumo	*Pouteria obovata*	0 - 2 700	Yunga, low quechua
Naranjilla, lulo	*Solanum quitoense*	500 - 2 300	Yunga
Mountain papaw, papayuela	*Carica pubescens*	500 - 2 700	Yunga, quechua
Pepino	*Solanum muricatum*	500 - 2 300	Yunga
Tree tomato, tamarillo	*Cyphomandra betacea*	500 - 2 700	Yunga, quechua
Banana passionfruit, tacso, curuba, curuba passionfruit	*Passiflora mollissima*	2 000 - 3 200	Quechua

[1] Altitudes and ecological regions to which a species is best suited; species can also be grown above or below such limits under modified conditions.

Image from: Bermejo, J.E. Hernández, and J. León. 1994. *Neglected Crops: 1492 from a different perspective,* 128. Rome: Food and Agriculture Organization of the United Nations.

The landscape rises dramatically from the coastal valleys to the highland region. The Andean cordillera consists of a volcanic belt formed from the subduction of the Nazca and Antarctic plates below the South American continental plate (Barazangi and Isacks 1976: 686). The Peruvian portion of the belt is located in a volcanic gap, with the most recent volcanic activity occurring 2.7 million years ago (Gutscher et al. 1999: 340). However, earthquakes do occur frequently in the Peruvian seismically active zone.

The Andean ecological landscape may be divided into "vertical tiers" that decrease in temperature with elevation (Salomon 1991: 44). Seasonal precipitation and lakes characterize the upper highland region. The "uppermost" region is between 4300 and 5000 meters above sea level, but the tallest mountains may reach up to 6700 meters in elevation (Salomon 1991: 45; McEwan 2006: 22). Snow and ice accumulate on the mountaintops that are at least 4800 meters high (McEwan 2006: 22). The "very humid páramo" is a high grassland area about 3900 and 4500 meters above sea level, while the "humid woodland" area is between 2300 and 3800 meters above sea level (Salomon 1991: 45).

Although rain falls more frequently in the Andean highland region than it does along the coast, the soil is not very fertile (McEwan 2006: 21). However, Andean farmers have adapted to this vertically complex environment. Agriculture is practiced in the lower highland region, which includes a "montane steppe" and dryer lower levels of "desert scrub" (Salomon 1991: 45). The montane steppe ranges from 3000 to 5000 meters above sea level and is where high-altitude tubers, such as potatoes and ocas, are grown (Salomon 1991: 45). The plant biodiversity is extremely rich. There are roughly 4500 varieties of native potatoes, and most of these varieties exist in the Andes (CIP). Although Andean people have developed irrigation techniques, dry

farming may be practiced in the upper Andean region. However, canal systems are necessary for the levels below the montane steppe, where maize is grown (Salomon 1991: 45).

Andean potato farmers from the village of Q'ero
Q'ero Villagers Farm Potatoes on a Hillside in the Andes. Photograph. 2013. Sacred Land Film Project, Andes, Peru. *Fire and Ice*. By Christopher McLeod. https://standingonsacredground.org/film-series/fire-and-ice/andes-peru, accessed March 25, 2017.

The tropical lowlands are located east of the highlands. This region is an ecotonal zone between the harsh mountainous landscape of the highlands and the rich jungles of the Amazon (McEwan 2006: 24). The tropical lowlands have been less inhabited than the coastal and highland regions, but a few highly regarded products, such as coca leaves and tobacco, have come from the area. The tropical rainforests of the Amazon Basin are located east of the lowlands.

Spondylus

Spondylus is a warm-water bivalve in the *Spondylidae* family found throughout the world's oceans, including Central and South American, Indonesian, Australian, Hawaiian, and Japanese coastal waters and also existing in the Mediterranean Sea (Bauer 2007: 34; Blower 1995: 6). The species *Spondylus princeps* and *Spondylus calcifer* inhabit the Pacific coastal waters off of South America and were both significant to the region.

The various species of *Spondylus* occupy different depths of water, ranging from 6 to 60 meters below sea level (Blower 2000: 12 [Keen 1971: 98, Marcos 1978: 103, and Paulsen 1974: 597]). *Spondylus princeps* is more difficult to collect than *Spondylus calcifer*. Living individually and occupying depths up to 50 meters below sea level (Glowacki 2005: 258), *S. princeps* is of greater ritual significance[1] (Pillsbury 1996: 317 [Keen 1971: 96-98; Marcos 1977-1978: 103; Marcos and Norton 1981: 148; Norton 1986: 133-134]) and is found more frequently in the Andean archaeological record than *S. calcifer* (Glowacki 2005: 258). The valves of *S. princeps* may be coral-red, orange, or pink in color and range from 130-150 mm in size (Bauer 2007: 34). *S. princeps*[2] is often referred to as ostra espinosa, or thorny oyster, because of the spiny protrusions that characterize the shell (Bauer 2007: 34; Blower 1995: 6; Glowacki 2005: 258).

The asymmetrical shells of *Spondylus calcifer* are about 155 mm in size but may grow to 250 mm (Blower 1995: 9, 10; Bauer 2007: 35 [Keen 1971]). The exposed regions of the shells are a combination of red and white, and the inner halves are white with a red to purple color outlining the margin (Glowacki 2005: 258). Although spike-like extensions are present early in

[1] The greater value granted to *princeps* over the value given to *calcifer* is likely correlated to the level of difficulty in harvesting each species.

[2] *S. princeps* is most likely the species of *Spondylus* referred to in the myth of Paria Caca that is introduced in the following chapter.

S. calcifer development, these projections do not characterize the shells of mature *calcifer* species (Blower 1995: 9, 10).

S. princeps
Poppe, Guido T., and Philippe Poppe. Photograph. *Spondylus Princeps*. 2015. Conchology, INC. http://www.conchology.be/?t=68&u=281078&g=f0a135100fc3447d5fe89468f4d8487&q=3444c9c9ed82c5794e588ab4a9dc98e5, accessed April 7, 2017.

S. *calcifer*
Campo, Lorena. Photograph. *Spondylus Calcifer*. 2002. USGS: science for a changing world. https://www.usgs.gov/media/images/spondylus-calcifer-0, accessed April 7, 2017.

The cold waters off of the Peruvian coast are unsuitable for *Spondylus*. However, the mollusk is found in the Peruvian site of the Supe Valley dating as early as 3000 years ago (Paulsen 1974: 601; Blower 1995: 95 [Feldman 1992: 73]). *Spondylus* is found in the warm, intertidal zones off of the Ecuadorian coastal land such as Manabí, where the Humboldt Current flows west towards the equator and away from the continent (Bauer 2007: 41). Ecuadorian archaeological evidence, such as findings of cut *Spondylus* shells at the site of Real Alto (Torre and Striffler 2008: 21), suggests that the bivalves were being worked into beads and pendants beginning in the Valdivia phase, 5000 years ago (Bauer 2007: 34; Bauer and Lunniss 2010: 82). This implies that the mollusk was transported from the Ecuadorian coastal region to the Peruvian coastal region. *Spondylus* has also been found in Ecuadorian and Peruvian highland areas,

hundreds of kilometers away from the coast where it was exchanged for valuables such as copper, obsidian, maize, and cloth (Paulsen 1974: 597; Hornborg 2014: 817)

Complementary Oppositional Structures

Claude Lévi-Strauss claims, "the universe is an object of thought at least as much as it is a means of satisfying needs" (1966: 3, 8). All human thought processes develop from the desire to order the world (1966: 10). In *The Savage Mind,* Lévi-Strauss describes how the human mind "defines, distinguishes, classifies, and opposes" to develop an understanding of the world, and unlike the non-reversible processes of history, the human mind is "timeless" (1966: 245, 262-263).

Opposing categorical constructs of the mind ironically complement each other to create "structure(s) of reproduction" (Sahlins 1985: 81). These "complementary and antithetical relations" are the foundations for social relations and exist in the creation of culture (Sahlins 1985: 81). Isbell (1982: 2) summarizes the opposing yet complementary relations as the following: "1) dynamic oppositions are seen as contradictory yet interdependent; 2) an alternation exists between the two states whereby one opposition reflects the other in a reversible fashion; and 3) the transition from one unit of time (or space) to another occurs in a 'middle ground'…" (Allen 1997: 21 [Isbell 1982: 2]).

In "The Herder-Cultivator Relationship as Paradigm for Archaeological Origins, Linguistic Dispersals, and the Evolution of Record-Keeping in the Andes," Gary Urton (2012) argues that "social and political relations within Andean communities tend overwhelmingly to operate on the basis of complementary asymmetric dualism" and describes how many scholars have argued for these Andean structures of duality ethnohistorically, ethnographically, and linguistically (Urton 2012: 323).

Chapter 2: The Obviation of the Andean Myth of Paria Caca

Introduction

Gary Urton's *mytho*historical approach (1990) takes a structural position in dealing with mythology and is used to examine the Inka origin myth. His *mytho*historical approach may be compared to Roy Wagner's nonlinear, paradigmatic technique of symbolic obviation (1978). In this chapter, I will introduce Urton's *mytho*historical approach and provide a background on Wagner's theory of symbolic obviation. I will describe the obviation model in greater detail and present Wagner's application of the technique to the moral myth of Cinderella (lecture 1/31/2017).

Thorny oyster, or *Spondylus,* is offered as food to the huacas in chapter eight of Frank Salomon and George L. Urioste's Quechua to English translation (1991) of the *The Huarochirí Manuscript* (1600). I will summarize chapter eight, which I refer to as "the myth of Paria Caca." I will then obviate the myth, and the obviation model will be used to interpret the archaeological and linguistic evidence on the *Spondylus* exchange system presented in the third and fourth chapters. The mythological, archaeological, and linguistic evidence reveal complementary oppositional structures of the *Spondylus* exchange system. Finally, the transformations that occur in the myth and that are diagrammed on the axes of the obviation model are paralleled in the exchange system. These parallels become apparent in chapters three and four.

Mythology: Gary Urton on the *Mytho*historical Approach

In *The History of a Myth,* Urton examines the Spanish chroniclers' 16th-century transcriptions of the Inka myth of origin (1990: 1). The cycle of myths describes how the ancestors of the Inkas appeared from a cave located in a mountain called Tampu T'oqo in the area of Pacariqtambo, which translates to "inn of dawn" or "origin" (Urton 1990: 1, 13). When the eight ancestors—four brothers and four sisters—emerged, they organized the people living near Tampu T'oqo into ten groups referred to as ayllus (Urton 1990: 13). The siblings and the ten ayllus then traveled north of Pacariqtambo and tested different soils throughout their journey (Urton 1990: 13). They eventually found a fertile valley and established the city of Cuzco in this area, which would become the capital city of the Inka Empire (Urton 1990: 2, 14).

In the introductory chapter titled "Mythic Dimensions of Inka History" of *The History of a Myth,* Urton informs the reader that his study seeks to investigate the myths from the perspective of the people living in the area thought to be Pacariqtambo (1990: 2). He addresses the "concretization" of the location in the Inka origin place of Pacariqtambo to a town south of Cuzco and works to understand "the political, social, and ideological foundations of the Inka state as expressed in the myth of origin on the basis of a historical and ethnographic study of the town and region of Pacariqtambo" (1990: 2). Urton writes the following:

"By focusing our attention on the place of origin of the ancestors of the Inkas, rather than on the imperial city that they supposedly founded (Cuzco), we have the opportunity of 'reversing,' as it were, the mythical peregrinations of the ancestors in order to resituate and reexamine the structures and events of the formation of the Inka state in the local, provincial context. This strategy of investigation may not only allow us to expose a new level of meaning in the primordial events of the formation of a state, but it should also afford us a unique encounter with the age-old conundrum—the antique hall of mirrors—the relationship between myth and history" (1990: 5).

The Inka Empire had no system of writing that the Europeans could comprehend[3]. Spanish soldiers, chroniclers, and bureaucrats recorded the myths following their arrival in Peru in the beginning of the 1530s, so there are layers of complexity and differences in approaches in working with Indo-European myths. (Urton 1990: 5). Urton cites John H. Row (1945, 1985a, 1985b) and R. Tom Zuidema (1964, 1982c, 1983, 1986) to respectively illustrate the historical (literal) and structural interpretations of these myths (1990: 7).

Row (1945, 1985a, 1985b) has used comparative methods to work through the discrepancies found in the Spanish chronicles to construct an Inka history (Urton 1990: 5, 6). Through this approach, he has created a timeline with absolute dates referring to the reigns of Inka kings, which has allowed for a western approach in creating a "linear series of events built on the chronological foundation of a succession of kings" (Urton 1990: 6). In his publications since the 1960s, Zuidema takes a different approach to mythology and argues that it is unfeasible to discover the historicity of these events. There is no way to escape the levels of interpretation, since no written accounts of Inka history exist before the Spanish arrival. Instead, Zuidema (1964, 1982c, 1983, 1986) examines the chronicles "as containing intentional representations of the organization and structure of the Inka empire that were informed and motivated by various pre-Hispanic and colonial political, social, ritual, and other considerations by both the indigenous informants and the chroniclers themselves" (Urton 1990: 6).

Urton argues that the Spanish failed to acknowledge the "political nature" of the native peoples' stories and instead looked for the chronological significance in the events, and so the

[3] The Inkas used khipus, which involved the twisting and knotting of cords. Recent evidence may confirm Spanish claims that the Inkas "encoded historical narratives, biographies, and epistles" (Hyland 2017 [Conklin 2002: 54-55; Urton 2003]) in the Andean technology (2017: 1). Hyland has examined (2015) two khipus from San Juan de Collata that Indigenous leaders claim are narrative epistles describing warfare. "Analysis of the khipus reveals that they contain 95 different symbols, a quantity within the range of logosyllabic writing systems and notably more symbols than in regional accounting khipus" (Hyland 2017: 1).

Spaniards "historicized what was, at the base of it, an ideology of history that was timeless, repetitive, and fully interchangeable—and integrated—with political, social, and ritual structure" (1990: 8). Urton assumes the structural approach, or what he names the *mytho*historical approach, in the interpretation of Inka myths (1990: 9). Believing that a "true" history exists will lead one to focus on the inconsistencies between the chronicles as opposed to working to apprehend and elucidate why and how the differences in interpretations of the Inka history exist (1990: 9). In addition, the recorded myths depend largely on the memories and the representations of the native informants, and the layers of interpretation increase as the Spaniards recorded the stories, especially when the myths were translated from Quechua to Spanish (1990: 9, 11). It is also significant to consider the positions between the Spanish chroniclers and the native informants and that these individuals were working within a "conquest setting" (1990: 11). Finally, Urton also notes how "hierarchy was a central, organizing principle of relations in virtually all areas of life in pre-Hispanic Andean societies" that was likely present but misinterpreted in the recording of these stories (1990: 11).

Urton adopts the *mytho*historical approach. He directs his attention to Pacariqtambo, or the place of origin, as opposed to focusing on Cuzco, and this reverses the Inka origin myth in a way that "resituates" and "reexamines" the structural features (1990: 5). I suggest that his approach may be likened to Roy Wagner's nonlinear, paradigmatic technique of symbolic obviation.[4]

[4] In the first chapter titled, "The Theory of Symbolic Obviation," in *Lethal Speech,* Roy Wagner explains why he names his technique "obviation." He writes: "The common Latin root, *obvious* (from *obviam*, 'in the way'), which 'obviate' ('to anticipate and dispose of') shares with 'obvious' ('apparent, easily perceived'), suggests a complex analogy" (1978: 31).

Mythology: Roy Wagner on Symbolic Obviation

Wagner defines "culture" as a phenomenon in itself that orders phenomena, so "cultures" result from differences in "experiencing and creating the world" (Wagner 1978: 21). He acknowledges that human beings indirectly interact with the world. The individual works with "semiotic constructions that are experienced as, or, if you will, confused with, reality or the world, and he deals with these through the medium of other semiotic constructions" (Wagner 1978: 21). Keisalo-Galván[5] uses Wagner's *The Invention of Culture* (1981) as her principle theoretical source to understand the Yaqui Easter Ritual and discusses how—according to Wagner—the "dialectic of invention and convention" is the foundation for culture (2011: 4). She summarizes Wagner's (1986: x) definition of "convention" to "what has been established" and his definition of "invention" to "the meaningful use of these elements in new contexts through metaphorical extension" (Keisalo-Galván 2011: 4).

To understand obviation, the concept of the symbol must first be introduced. The term "symbol," or "sign," has been defined as something that "'stands for' its referents," and when standing alone (without its referent), a symbol is thought of as "arbitrary" (Wagner 1978: 22). The "sight and the sound" of the term "cow" are insignificant until used "in reference to its conventionally appropriate referents" within the "English linguistic convention" (Wagner 1978: 22). What is important to understand is that "signs" extend further than Ferdinand de Saussure's contrast (1966) between the sound-image (signifier) and concept (signified) (1988: 122). Weiner (1988: 123) references Ferdinand de Saussure: "…one must also compare it [the sign] with similar values, with other words that stand in opposition to it. Its [the sign's] content is really

[5] In *Cosmic Clowns: Convention, Invention, and Inversion in the Yaqui Easter Ritual,* Keisalo-Galván works to understand how cosmology may be interpreted as "cycles of opposed principles and powers that alternate through dialectic interaction rather than as the function of structural categories existing beyond and behind symbolic action" (2011: 1).

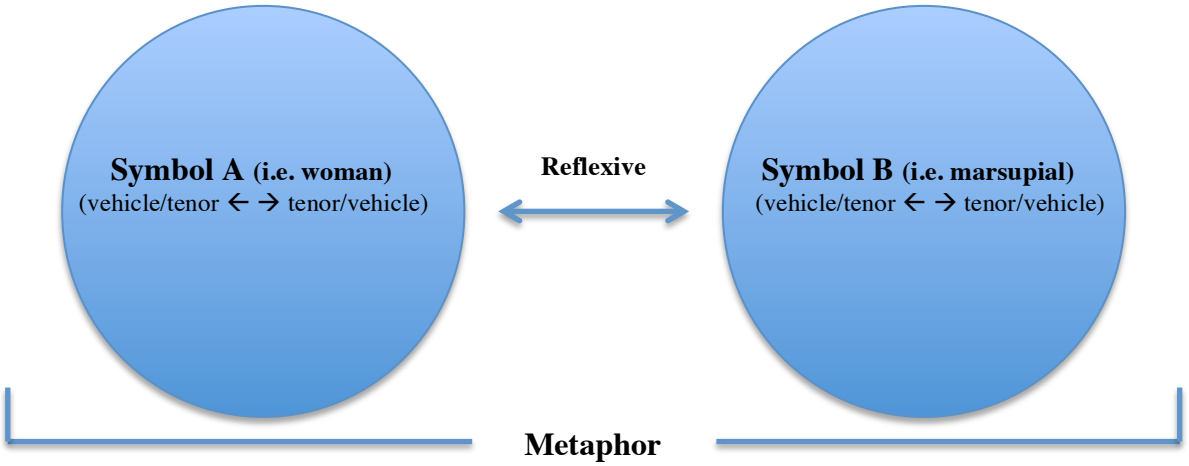
fixed only by the concurrence of everything that exists outside it" (1966: 115, 117). In other words, symbols stand in opposition to their referents, but symbols exist in contrast to other symbols (Weiner 1988: 123, Wagner 1978: 22). The relationship between symbols forms "an ideal 'set' or 'family' amont [*sic*] themselves, one that must necessarily separate and distinguish itself from the phenomenal world" (Wagner 1978: 22).

Wagner argues for an anthropological model that deals with symbols interacting with other symbols as opposed to a model where the anthropologist works to understand the relationships of symbols interacting with the "world." The latter model would only reveal the anthropologist's own cultural understandings, since the individual is dealing with semiotic constructions that may not be stripped from the "world" (Wagner 1978: 21). Wagner further specifies that the model "must show how and why people use symbols in relation to other symbols, what motivates them to do so, and how symbolic constructions persist and change in the course of construction" (1978: 21).

A symbol involves a signifier and a signified but may only exist in relation to other symbols to become meaningful. The term "metaphor," or "trope," is used to capture the relationship between symbols, and so metaphors reveal the structures that are the basis of culture, or the way human beings order phenomena (Weiner 1988: 124; Wagner 1978: 20). Weiner illustrates this understanding of metaphor with an example of how Foi men will say that "women are marsupials" (1988: 124). The term "women" and its referent act as one symbol, while the term "marsupials" and its referent act as another. The metaphor, "women are marsupials," reveals a reflexive relationship between the two signs: "'marsupial' is redefining the conventional significance of 'woman' at the same time that 'woman' is redefining the notion of marsupial" (Weiner 1988: 124).

The reflexive relationship between symbols as opposed to the symbols, themselves, should be the emphasis on how metaphors function (Weiner 1988: 124). "The 'vehicle,' or signifying element of a metaphor, and the 'tenor,' or signified element, actually exist in a relation of mutuality—each metaphorizes the other, transforming and being transformed" (Wagner 1978: 25). Wagner describes how "tropic usage" collapses "symbol and referent into one expression," and so metaphor may be described as a "*symbol that stands for itself,*" or that "it is self-contained" (Wagner 1978: 25; Weiner 1988: 124). Wagner summarizes with the following:

"Thus the symbolic effect of tropic usage opposes or counteracts that of conventional usage in two ways: it assimilates that which it 'symbolizes' within a distinct, unitary expression (collapsing the distinction between symbol and symbolized), and it differentiates that expression from other expressions (rather than articulating it with them)" (1978: 25).



This figure represents the concept of the metaphor. Each symbol (or sign) consists of a vehicle (or signifier) and a tenor (or signified). However, the symbols only function in relation to other symbols, and this relationship between symbols is reflexive as are the elements (vehicle and tenor) that comprise the symbols. In the end, the metaphor acts as a "symbol that stands for itself" (Wagner 1978: 25).

"Metaphor" is the term used to encompass the reflexive interactions between symbols, enabling the anthropologist to enter the cultural domain, and obviation serves as a model of semiotic transformation (Wagner 1978: 30, 31). Wagner defines obviation—which is linked to the notion of "making obvious"—as the result of substituting a "conventional semiotic relation"

with an "innovative and self-contained relation" (Wagner 1978: 31, 32). The obviation sequence becomes a "self-containing dialectic" and takes the shape of two triangles—an outer and inner triangle that face in opposite directions (Wagner 1978: 35, 36).

In lecture, Wagner described how the notion of obviation has been present since ancient periods[6] and how he simply was "someone that got in its [obviation's] way as it was progressing though time" (lecture: 1/24/2017). The workings of Claude Lévi-Strauss and Georg Wilhelm Friedrich Hegel were pertinent to his creation of the obviation diagram. Lévi-Strauss' examinations of oppositions in myth resulted in a bipolar representation (Wagner 1978: 36). Although Wagner argues that "a dialectic that mediates its own oppositions, moving inexorably toward a nondialectical expression, can scarcely be analyzed in clear-cut lexical terms," Lévi-Strauss' work was exceptionally valuable in introducing the notion of mediation in the examinations of myth[7] (1978: 36). Wagner has said that he began much of his work by reversing Levi-Strauss' technique, beginning with the rudimentary oppositions and enclosing them on each other (lecture: 1/24/2017). Hegel introduced the concept of synthesis, or mediation, which works to bring the thesis and antithesis together. However, the Hegelian schema of thesis-antithesis-synthesis results in a bipolar model of antithesis-thesis-antithesis-thesis—etc. similarly to Lévi-Strauss' model (Wagner 1978: 36). Finally, obviation fully develops the notion of mediation since the "closing term" becomes the synthesis of the initial opposition when visualizing the Hegelian model collapsing into a self-closing, ternary shape (Wagner 1978: 36).

[6] The idea of polarizing principles is discovered in Ancient Greece (Wagner 1978: 36), and Wagner has also suggested that the workings of obviation may also be traced to ancient India (lecture: 1/ 24/ 2017).

[7] In chapter 6, "The Structural Study of Myth," of *Structural Anthropology*, Lévi-Strauss writes: "We need only assume that two opposite terms with no intermediary always tend to be replaced by two equivalent terms which admit of a third one as a mediator; then one of the polar terms and the mediator become replaced by a new triad, and so on… Thus we may have mediators of the first order, of the second order, and so on, where each term generates the next double process of opposition and correlation" (1963: 224, 225)

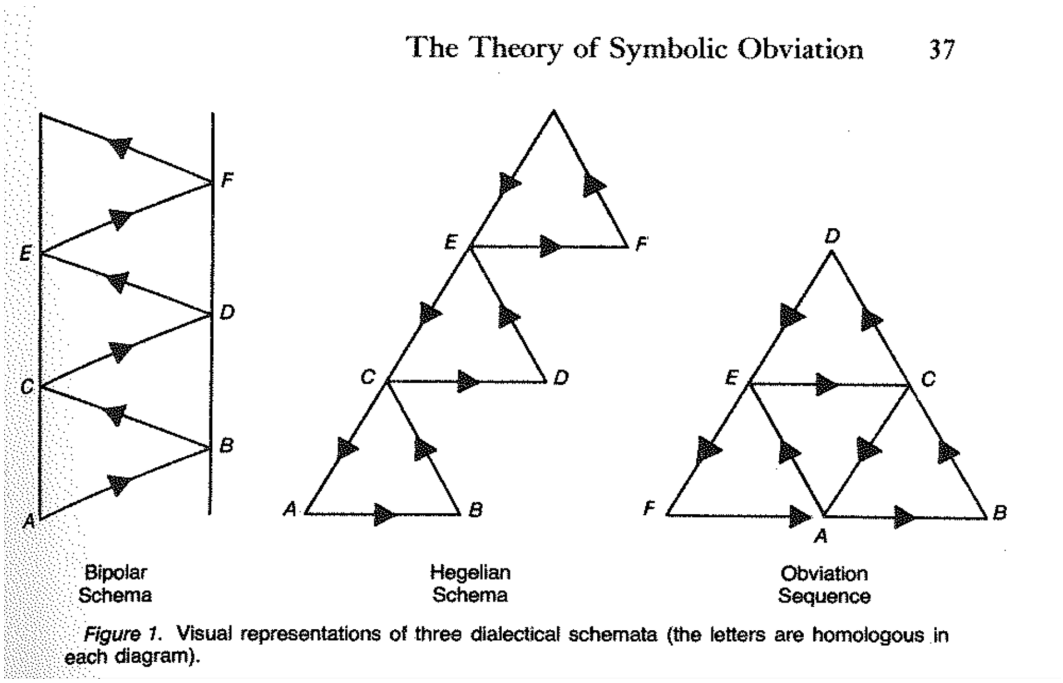


Figure 1. Visual representations of three dialectical schemata (the letters are homologous in each diagram).

Image from: Wagner, Roy. 1978. "Chapter 1: The Theory of Symbolic Obviation." In *Lethal Speech: Daribi myth as symbolic obviation,* 37. Ithaca: Cornell University Press.

Myths stress "substitutions and transformations openly" (Wagner 1978: 35), thus applying obviation to myths is especially suitable (1978: 34). Obviating a myth involves the substitutions of metaphors (Wagner 1978: 32, Keisalo-Galván 2011: 11), and the metaphors are visualized on the points of the obviation model (Keisalo-Galván 2011: 4). The points of the obviation diagram—which Wagner refers to as "self-referential coordinates" (1986: 5)—should not be viewed as separate units (Keisalo-Galván 2011). Instead, the focus should be on the relations between the points that consequently give meaning, exposing the "extensions" and "transformations" of metaphors (Keisalo-Galván 2011: 11). These relations are resembled through the axes of the diagram and may be referred to as "figure-ground reversals[8]." In summary, the events of the mythic plot come together through the relations of consecutive

[8] In the "Reciprocity of Perspectives," Wagner writes: "For a true subject/object shift, or reciprocity of perspective, corresponds directly to a double proportional comparison—the metaphor OF a metaphor, or what I have elsewhere termed (Wagner 1986) 'the second power of trope,' and must do so to qualify for a complete subject/object shift, or transposition of ends and mean (trope and vehicle). METAPHOR X METAPHOR = DOUBLE PROPORTIONAL COMPARATIVE = SUBJECT/OBJECT SHIFT = COPLETE TRANSPOSITION OF ENDS AND MEANS…" (10).

transformations that are made "obvious" through the process obviation (Wagner 1978: 35, Wagner 1986: 40).

Roy Wagner's Obviation Diagram and Its Application

I will now describe the obviation diagram in greater detail, referencing the obviation model found in chapter three, titled "Obviation," of Wagner's *Coyote Anthropology* (2010). As an example, I will present Wagner's obviation of Cinderella (lecture 1/31/2017), a familiar story to western culture.

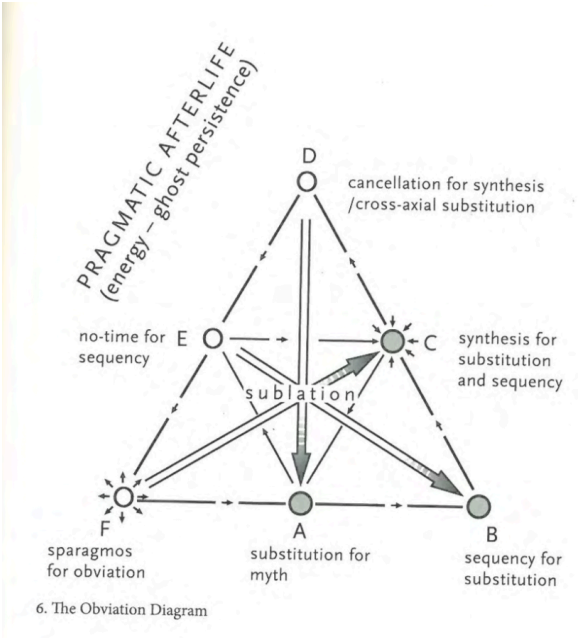


Image from: Wagner, Roy. 2010. "Chapter 3: Obviation." In *Coyote Anthropology,* 107. Lincoln: University of Nebraska Press.

Point A is the first metaphor present in the myth, referred to as "substitution for myth." Point B is the consecutive metaphor following the metaphor at point A and is referred to as the "sequency for substitution." Point C represents the synthesis of points A and B. The addition of point D has multiple effects. The metaphor at point D substitutes and opposes the metaphor at point A. The downward arrow from point D to point A indicates this relationship and is the "axis of cancellation." Point D acts as the antithesis that follows the initial synthesis at point C; but point D also becomes the synthesis of points B and C, "thereby preempting the mediation and

canceling the significance of the initial term at A" (Wagner 1992: 211). (Every third metaphor may serve as the synthesis of the two previous metaphors.) Point E is the metaphor that substitutes and opposes the metaphor at point B, and the arrow from point E to point B is the second "axis of cancellation." Point F is the metaphor that substitutes and opposes the metaphor at point C, and the "third axis of cancellation" from point F to point C designates this relation.

As shown below in Wagner's obviation diagram of reciprocal mediation and closure, the inner and the outer triangles of the model move in opposite directions: the outer triangle moves counterclockwise while the inner triangle moves clockwise. Wagner notes that the opposing movement of the inner triangle motivates the substitutions of the outer triangle (lecture 2/7/2017). The metaphorical substitutions along the outer triangle may be followed counterclockwise from A to G, while the counterclockwise movement of the inner triangle follows the "retroactive implications of the synthesizing closures, GEC" (Wagner 1992: 210). This further illustrates the reflexive tendency of obviation.

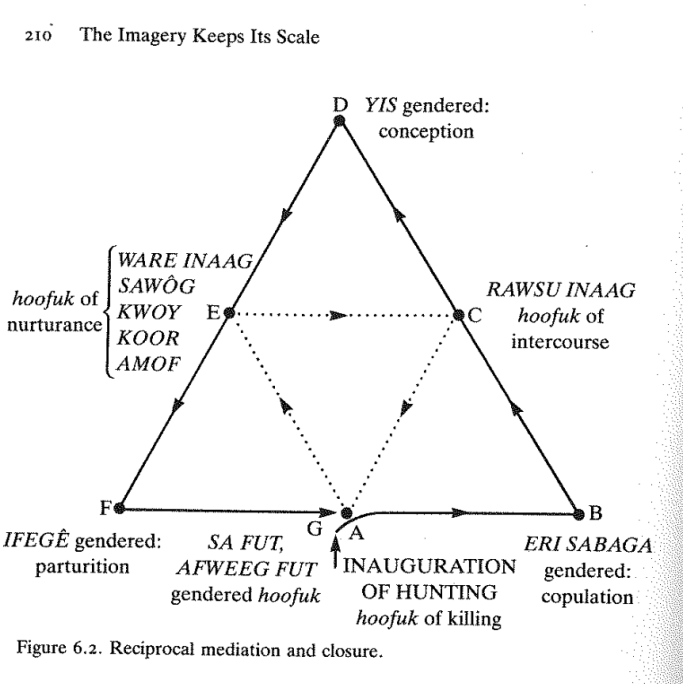
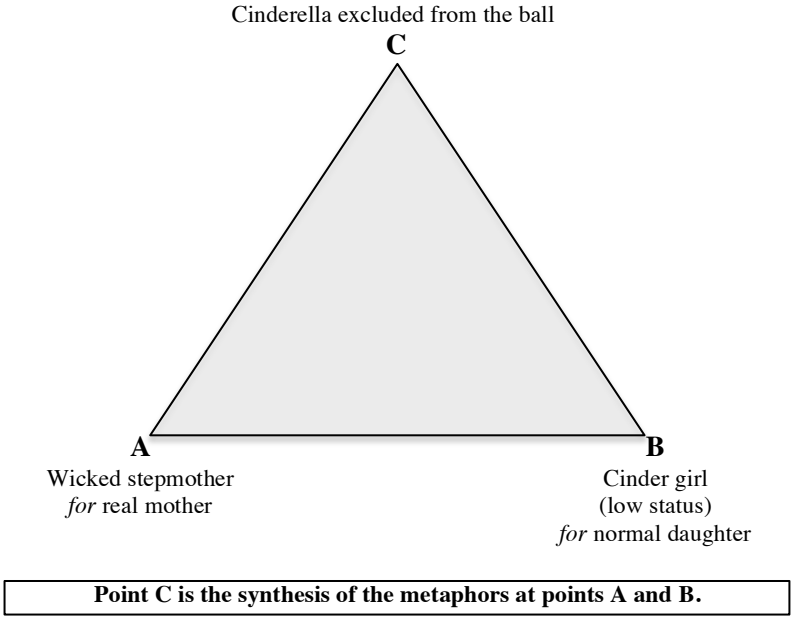
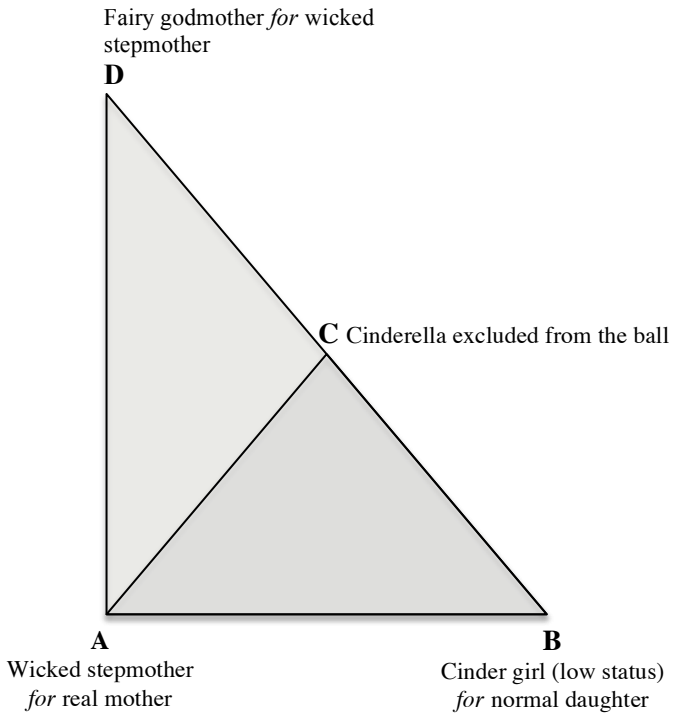


Image from: Wagner, Roy. 1992. "The Imagery Keeps Its Scale: An Obviation Model of the Yafar Yangis." In Juillerat, Bernard's *Shooting the Sun: Ritual and Meaning in West Sepik*, 210. Washington, D.C.: Smithsonian Institution Press.

Wagner's obviation of the Cinderella myth (lecture 1/31/2017) may serve as a useful example. The first metaphor at point A is the "wicked stepmother for real mother," while the consecutive metaphor at point B, or the "sequency for substitution," is "cinder girl for normal daughter." Point C is the synthesis of points A and B. Because of her wicked stepmother (point A) and her low status as a cinder girl (point B), Cinderella is excluded from the ball (point C).

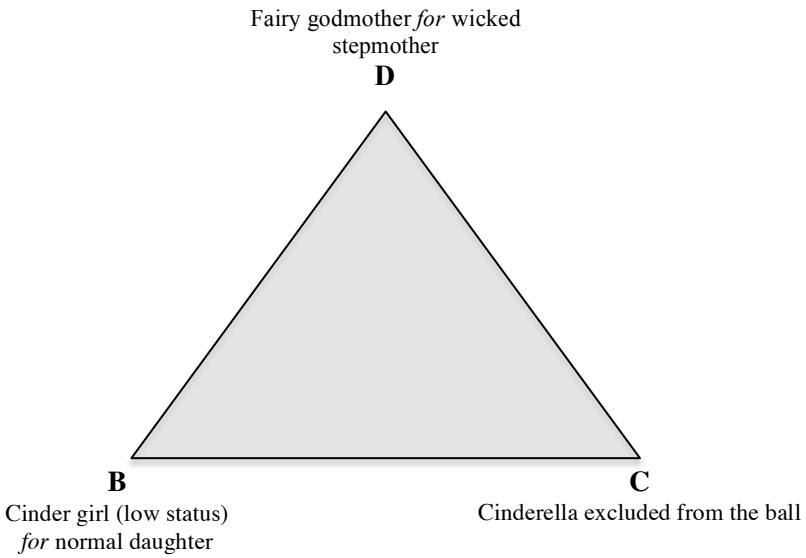


The metaphor at point D, or "fairy godmother for wicked stepmother," substitutes and opposes the metaphor at point A, or "wicked stepmother for real mother." Point D is the antithesis that follows the initial synthesis at point C, or "Cinderella excluded from the ball." In addition, point D also becomes the synthesis of points B, or "cinder girl for normal daughter," and C, "Cinderella excluded from the ball."



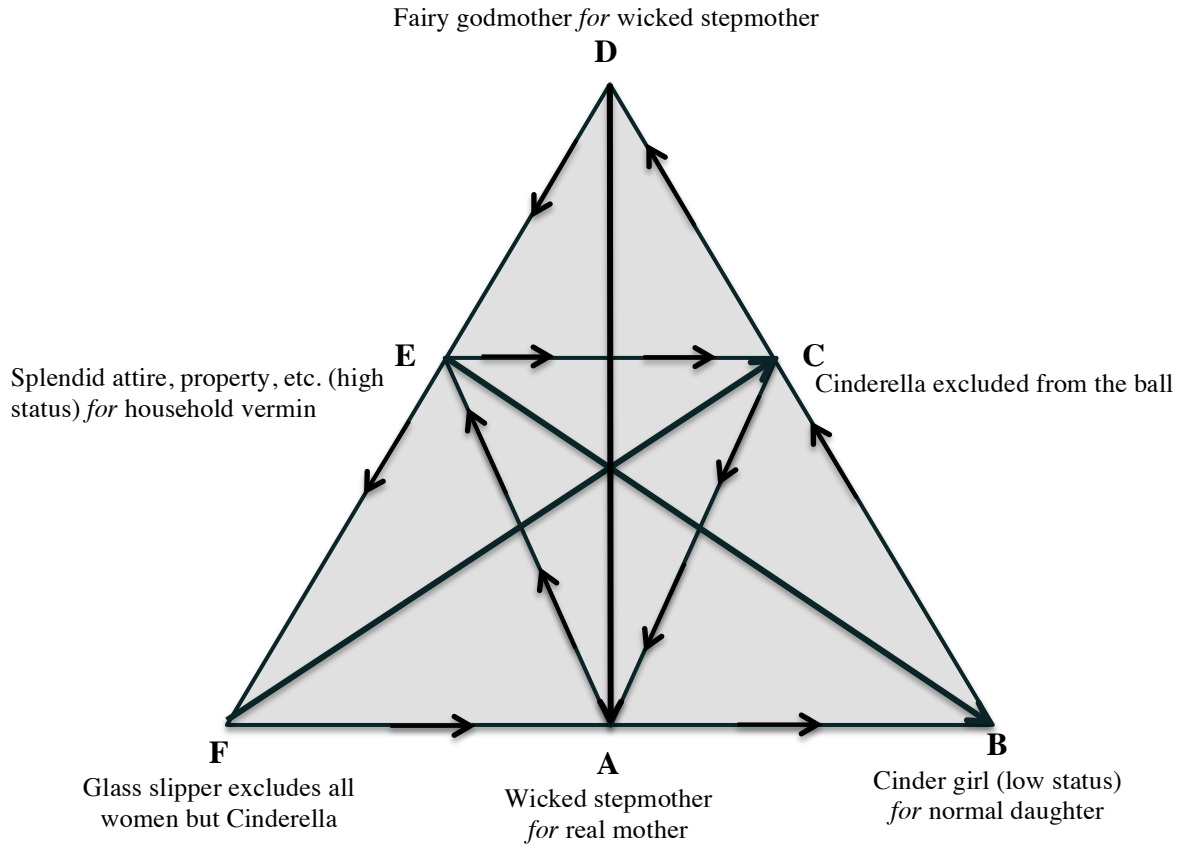
1) The metaphor at point D substitutes the metaphor at point A.

2) Point D is the antithesis of the initial synthesis at point C.



3) Point D is the synthesis of the metaphors at points B and C, "thereby preempting the mediation and canceling the significance of the initial term at A" (Wagner 1992: 211).

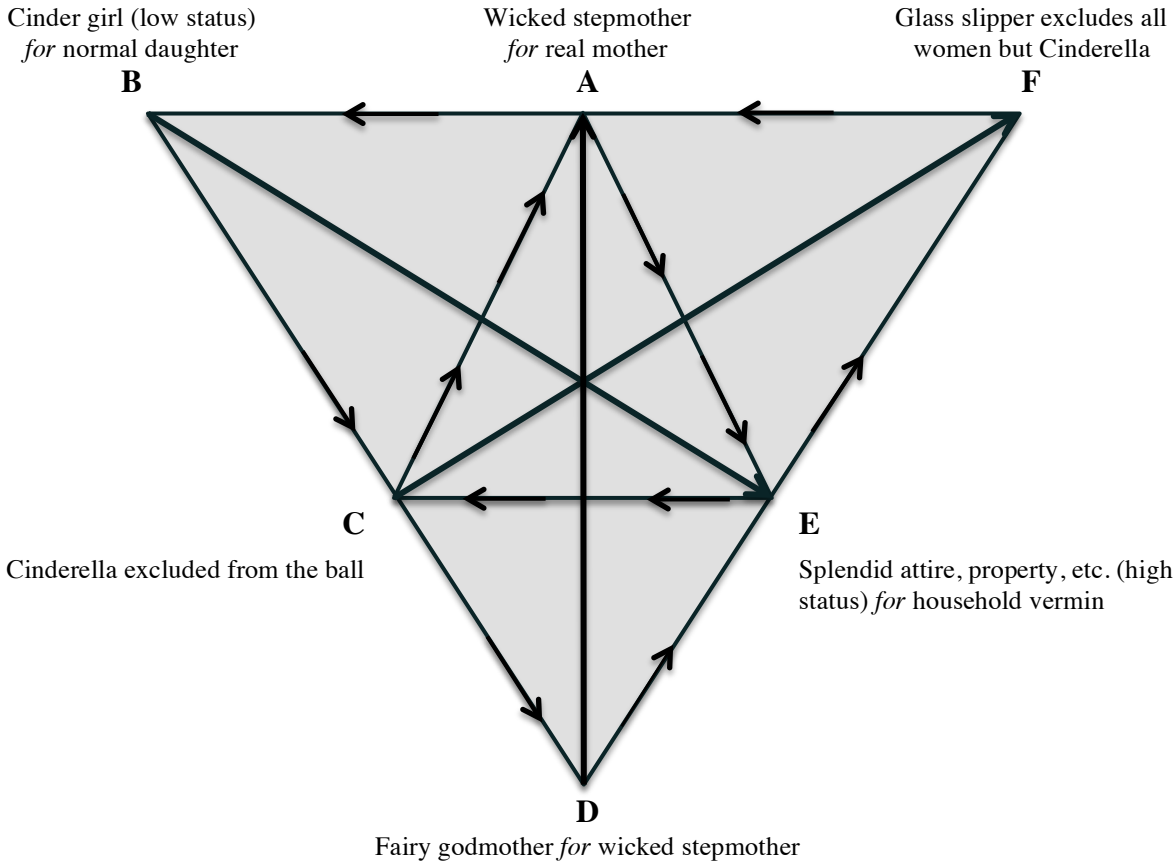
Point E, or "splendid attire, property, etc. (high status) *for* household vermin," is the metaphor that substitutes and opposes the metaphor at point B, "cinder girl excluded from the ball." Point F, or "glass slipper excludes all women but Cinderella," is the metaphor that substitutes and opposes the metaphor at point C, "Cinderella excluded from the ball."



The figure above is the complete obviation diagram of the myth of Cinderella that Wagner presented in lecture on 1/31/2017. The arrows indicate the relations between the metaphors.

Obviating the myth of Cinderella backwards results in the reversal of the story since the interactions between the metaphors of the diagram are reflexive. One way to perform obviation backwards is to invert the antithesis and synthesis (Wagner lecture 1/31/2017) as shown in the diagram below. Starting at point D, the reversal story begins with a fortunate girl who has a fairy

godmother as a mother but who becomes the cinder girl of a wicked stepmother and is in the end, excluded from the ball.



The figure above is an example of obviation performed backwards. The story now begins at the metaphor at point D and moves counterclockwise, ending at point C. This tells the reversal story of Cinderella, revealing the reflexive characteristic of obviation.

The story of Cinderella teaches a lesson to western culture. Moral myths like Cinderella may be contrasted to origin myths. Origin myths are often characterized by demons (personal communication with Wagner 4/12/17) and have a tendency to begin with "recognizable contradictions" that become ordered throughout the myth (personal communication with Damon 4/10/17). Interestingly, obviating the myth of Cinderella backwards results in a "demonized" version of the original story (personal communication with Wagner 4/12/17).

The Huarochirí Manuscript

The Huarochirí Manuscript: A Testament of Ancient and Colonial Andean Religion (1991) consists of Andean mythology that was recorded in A.D. 1600 and translated from Quechua to English by Frank Salomon and George L. Urioste. The myths are organized into a narrative of 31 chapters that give insight into pre-Inka, Andean creation and thought. I will focus on chapter eight, "How Paria Caca Ascended. How One Man Came Back with His Child by Following Paria Caca's Commands, and Finally, How He Struggled with Huallallo Caruincho," although footnotes will refer to other chapters in the manuscript to provide a more comprehensive understanding of the myth.

In his introductory essay, Salomon describes how the setting of *The Huarochirí Manuscript* takes place in a sloping region that stretches and carries ice melt-off from the high mountain tops of the Andean range to the western coastal region (1991: 43). According to Gerald Taylor (1987b: 39), the "mythic landscape" extends around 85 air kilometers from the highest Andean peaks to the ocean and around 120 air kilometers north to south (Salomon 1991: 44). The sloping region consists of winding paths that would have taken people roughly four days to reach the coastal region from the high Andean region (1991: 44). The majority of the settings throughout the manuscript take place near three valleys: the Rímac river valley, the Pachacámac river valley, and the river valley of Huarochirí[9] (1991: 43).

[9] The Rímac river valley includes the upper tributaries of the Chaclla and Mama rivers and the lower banks where the city of Lima is now located. The Pachacámac and the Huarochirí river valleys are currently referred to as Lurín and Mala, respectively (Salomon and Urioste 1991: 43).

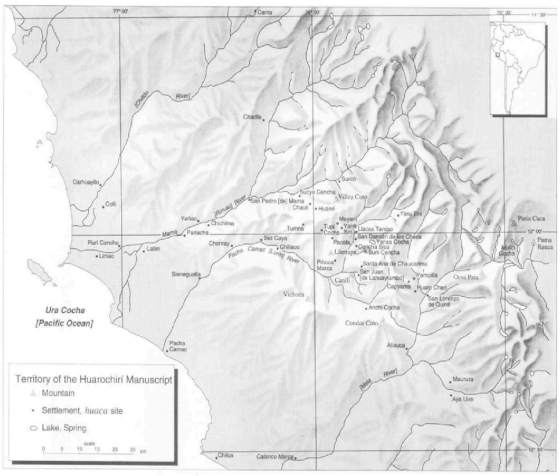


Image from:
Salomon, Frank, and George L. Urioste. 1991 [1600]. *The Huarochirí Manuscript: A Testament of Ancient and Colonial Andean Religion,* 14. Austin: University of Texas Press.

The chapter assumes that the reader knows about the huaca[10], Huallallo Caruincho. Huallallo Caruincho[11] is introduced in the first chapter as a huaca who defeated the ancient huacas, Yana Ñamca and Tuta Ñamca[12]. After his victory, Huallallo Caruincho proclaimed that his people must bear two children and that he would eat the less-favored child of every couple's two children (1991: 119). In the chapter, the reader learns that Huallallo Caruincho lived in the Upper Paria Caca area[13]. Although the original name of Huallallo Caruincho's dwelling is unknown, the dwelling—now a lake—is named Mullo Cocha Lake[14], or Lake of Thorny Oyster Shell (1991: 170).

[10] "Huaca" may be defined as things that are sacred. These "things" range from powerful people to mountain peaks, springs, the union of streams, rock outcrops, ancient ruins, twinned cobs of maize, and trees that are split by lightening (Salomon 1991: 58). Perhaps the most suitable definition for the term "huaca" is "everything that is out of the usual course of nature," encompassing both magnificence and monstrosity (1991: 57). Salomon suggests that we must think of huacas as acting "within" nature as opposed to "over" and "outside" of nature (1991: 63-64). In "Food of the Gods or mere mortals? Hallucinogenic *Spondylus* and its interpretive implications for early Andean society," Mary Glowacki notes that huacas as sacred places often "functioned as portals to supernatural sources to water, with offerings to the ancestors serving to release its flow" (2005: 265).

[11] "Man Eater" and the huaca of fire and volcanoes (Parker 2007: 497)

[12] The name "Ñamca" refers to huacas that often stand in relation to coastal people and the more ancient past. The reader will later be introduced to the huaca Mana Ñamca. The Quechua terms "Yana" and "Tuta" respectively translate to "black" and "night," and so Salomon and Urioste infer that Yana Ñamca and Tuta Ñamca may be the huacas that existed prior to the beginnings of the solar world (1991: 121).

[13] The Upper Paria Caca refers to the high Andean region.

[14] "Cocha" refers to lake. "Mullo" is the Quechua term for *Spondylus*, or thorny oyster. Although this will be discussed in much greater detail in the linguistics portion of the paper, various spellings of "mullo" exist. In his introductory chapter of *The History of a Myth*, Gary Urton addresses how the location in the Inka origin place of Pacariqtambo has been "concretized" to a town south of Cuzco (1990: 2). Mullo Cocha Lake has also been granted a physical location. The present-day name of the lake is Mullucocha and is located 30 km east-northeast of Huarochirí at a height of 4300 meters above sea level (Salomon and Urioste 1991: 175).

A Summary of the Myth of Paria Caca

When Huallallo Caruincho ruled, the region was Yunca[15] a term suggesting that coastal animals and people inhabited this high Andean area[16]. Paria Caca[17] was another huaca made of "five persons" whose enemy was Huallallo Caruincho (1991: 170). While Paria Caca was

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[15] "Yunca, a common term in the manuscript, has a triple sense. It refers to the warm valley region of the Pacific littoral; to the ecology, landscape, and biota typical of such regions, and (capitalized in translation) to the peoples who dwelled there. The Checa and other highlanders thought of Yunca people as aboriginal, in opposition to the invading peoples with whom at least some of the of the narrators identified" (Salomon and Urioste 1991: 121, 122).

[16] In "The Emergence of Complex Societies After Sea Level Stabilization," Day et al. hypothesize that the appearance of early civilizations in coastal regions throughout the globe may be attributed to sea level stabilization that occurred 7000 years ago. (Ice sheets had extended the furthest and global sea level was at its lowest during the Last Glacial Maximum 21,000 years ago. Deglaciation began 18,000 years ago, and sea level rose dramatically until it stabilized around 7,000 years ago.) Global evidence reveals that societies with class distinctions developed along the coastal margins a millennium following the stabilization. Sea level stabilization resulted in an increase of coastal marginal productivity, since habitats along the marginal zones could finally form. In addition, rivers transferred nutrients such as nitrogen into these regions and, therefore, also increased productivity (2007: 169). According to Day et al., the high abundance and constant source of high-nutrient organisms present in the coastal habitats—such as estuaries and lower-flood plains—for human use was substantial for urbanization. In addition, Day et al., argue "following sea level stabilization, a typical trajectory led from coastal villages with nascent social classes to urban societies more distant from shore" (2007: 170). Jeffrey Quilter and Terry Stocker's work, "Subsistence Economies and the Origins of Andean Complex Societies," suggests that people began settling along the Peruvian coastal region 5000 years ago. Quilter and Stocker support Michael E. Moseley's maritime hypothesis (1975), which they summarize as the following: "marine resources provide abundant, localized, and perennially available foods that supported the development of the complex societies of the late Pre-ceramic Period, providing the foundations for later cultural developments" (1983: 546). The setting of chapter eight begins in the high, interior region but with people and an ecology that are "Yunca," or coastal, as opposed to the characteristic Andean ecology. The story may allude to the movements of coastal people towards the interior, Andean region.

Salomon and Urioste acknowledge that the Paria Caca mythology describes human movements, but they refer to María Rostworowski de Diez Canseco (1978: 31-147) interpretations of the narratives as "reflections of a large and gradual prehistoric movement in which pre-Incaic Highlanders of the ethnic group called Yauyo worked their way downward and southwestward, from their early home on the high tundras at the Cañate River headwaters, through various warm irrigated (including the Mala, Lurín, and Rímac valleys, which form the heartland of the mythology), toward the Pacific shore and its rich deltas" (Salomon and Urioste 1991: 29). Salomon and Urioste also site Gentile Lafaille's linguistic studies (1976: 14) on Aymara-like lexical and phonological features present in the myth that support the connection between the Yauyo expansion and Paria Caca's mythology (1991: 30).

Alternatively, the myth appears to be an origin myth, and inversions are characteristic of these myths (personal communication with Damon 4/10/2017).

[17] In *The Extirpation of Idolatry in Perú* ([1621] 1968: 45; Keating's translation), Arriaga claims that the term "paria" may refer to vermilion (bright red color) and writes, "Paria are powders of a vermilion color, brought from the mines of Huancavelica and made from the metal from which mercury is derived, though its appearance is more like that of lead oxide" (Salomon and Urioste 1991: 122). "Caca" in the Quechua language is translated to "cliff" (1991: 122). Paria Caca is a huaca that adopts different forms throughout the Huarochirí narrative. Paria Caca hatches from five eggs and becomes five falcons, eventually transforming into five persons. Paria Caca also becomes rain, hailstorms, and an ice-capped mountain (Salomon 1991: 63-64). Two identical snowcapped peaks that are separated by a depression characterize Pariacaca Mountain (Salomon and Urioste 1991: 122).

training[18] to fight Huallallo Caruincho, he found a father crying and carrying one of his children that he would soon offer to Huallallo Caruincho to eat. In addition to carrying his child, the father also brought thorny oyster shell[19], coca[20], and balls of ticti[21] along with him to give to Huallallo Caruincho. One of the five Paria Cacas asked the father what was wrong, and the father explained that his son would be offered as food for Huallallo Caruincho. Paria Caca told the father to instead give him the thorny oyster shell, coca, and ticti and to carry his son back to the village. Para Caca insisted that the father must return in five days to watch him fight Huallallo Caruincho (1991: 171).

The man questioned Paria Caca's command because he feared Huallallo Caruincho, but Paria Caca said to let Huallallo become angry. Paria Caca explained that nothing would happen to the man and that after his feat, the huacas Ami and Llata would care for males while the huaca Añasi would care for females. As Paria Caca spoke to the man, "his breath came out of his mouth like bluish smoke[22]" (1991: 172). The man became more nervous and gave his offerings to Paria Caca. "The five men ate the thorny oyster shell, making it crunch with a 'Cap cap' sound[23], and all the offerings" (1991: 172). The father then took his son back to the village.

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[18] Paria Caca's five beings trained by swinging hunting bolas, or "weapon(s) made by tying round stones together and hurling them at the legs of prey so that the thongs entangle" (Salomon and Urioste: 1991: 170, 176). While they trained, the area became "intensely cold, and hail fell upon the ground where he played" (1991:171).

[19] Thorny oyster is a common name for *Spondylus*.

[20] Coca leaves are found in the inner valleys, or ecotonal zones, between the coast and the Andes and between the Andes and the Amazon. Andean people brew coca tea and chew on the leaves. In addition to preventing altitude sickness, the leaves act as a stimulant, suppressing hunger and providing individuals with the energy to work their chacras, or farms.

[21] Ticti is the "thick maize residue" that results as a "by-product" in making chicha, a fermented drink made from maíze. It was offered as food to the huacas (Salomon and Urioste 1991: 91).

[22]In section 293 of chapter 23 of the manuscript, Paria Caca's son, Maca Uisa, speaks to an Inka as a "bright greenish-blue color blew from his mouth like smoke" (Salomon and Urioste 1991: 115). In "The Many Facets of Mullu: More than Just a *Spondylus* Shell, David Blower looks at the association between the color turquoise, or bluish-green, to mullu colors of red and yellow and references chapter 23, section 293 of the manuscript (2000: 214). This will be discussed in greater detail in the linguistics section of the paper.

[23] In chapter 23, section 299, Paria Caca's son, Maca Uisa, demands to eat thorny oyster shells, stating, "I am not in the habit of eating stuff like this. Bring me some thorny oyster shells!" After the Inka presents the huaca

The man returned five days later to fulfill the prophecy. Paria Caca and Huallallo Caruincho did fight. Because Paria Caca was "five persons[24]," he rained down—red and yellow[25] rain—in "five directions" to fight against Huallallo Caruincho, who "flamed up in the form of a giant fire reaching almost the heavens…" (1991: 173). The rain filled the lower lake of Ura Cocha. To prevent over-flooding, one of the five persons of Paria Caca named Llacsa Churapa[26] "knocked down a mountain," creating the lake now known as Mullo Cocha.[27] This nearly destroyed Huallallo Caruincho's fire (1991: 173). In addition, Paria Caca continuously flashed lightening bolts at Huallallo Caruincho, finally causing the huaca to escape to the Antis, or the lowlands[28] (1991: 173). One of Paria Caca's children ran after Huallallo Caruincho (1991: 174).

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with thorny oyster shells, Maca Uisa eats them "all at once, making them crunch with a 'Cap cap' sound" (Salomon and Urioste 1991: 116). Both David Blower (2000: 215) and Mary Glowacki (2005: 260) site this passage of the manuscript to infer whether human beings also consumed *Spondylus* or if the mollusk was a food reserved for the gods. This will be discussed in greater detail later in the paper. In addition, I will also suggest that the consumption of *Spondylus* and the crunching along with the emphasis on the "Cap cap" sound may be associated with the practice of crushing *Spondylus* shells for sacrificial and agricultural purposes.

[24] I am still looking for the significance to the number 5, which is a reoccurring number throughout the manuscript. A likely source is Gary Urton's *The Social Life of Numbers: A Quechua Ontology of Numbers and Philosophy of Arithmetic* (1997).

[25] The colors red and yellow are notable. Cristóbal Molina (1989[1575]: 68) defines *mullu* as both red and yellow seashells. Molina writes about how different varieties and colors of corn, such as corn with "red and yellow stripes," are collected with *mollo mollo, or "*various sea shells like *mollo*," "of all the colors that one can have," or *ymaymana mollo* (Blower 2000: 213, 214).

[26] In "The Many Facets of Mullu: More than Just a Spondylus Shell," Blower introduces definitions and translations for the term llacsa. Gonçalez Holguín (1608 [1952]: 207) defines llacsa as "a green powder or stone, like copper oxide," and Arriaga (1968 [1621]: 46) defines the term as "a green powder or stone, like copper oxide" (2000: 214). Blower also notes that in *The Huarochirí Manuscript, "*Llacsa" in Llacsa Churapa's name is understood to mean the "bright greenish-blue color that blew from the mouth of Maca Uisa like smoke as he spoke" (Salomon and Urioste 1991: 115; Blower 2000: 214). This information is further evidence of the mullu colors red and yellow associations to the bluish-green, turquoise colors. The original Quechua term for llacsa is llacça (Blower 2000: 214).

[27] Thorny Oyster Lake

[28] The ecological landscape transforms as Huallallo Caruincho and Paria Caca fight, and in chapter nine, Paria Caca drives the Yunca people out. As a result, the Upper Paria Caca region is no longer ecologically or socially "Yunca." Chapter nine reads, "Paria Caca, as we know, drove these Yunca and all such Yunca groups down to the lowlands. 'It will be my children who'll live in this region,' he ordained" (Salomon and Urioste 1991: 181)

A demon woman named Mana Ñamca[29] had sided with Huallallo Caruincho and lived south of Mama, an area in present-day Lima. After defeating Huallallo Caruincho, Paria Caca left for the lower region to fight Mama Ñamca. She, like Huallallo, had transformed into a burning fire. Although Mama Ñamca damaged Paria Caca's child's foot, Paria Caca defeated Mama Ñamca by "expelling" her into the ocean (1991: 174). Paria Caca's child, Chuqui Huampo, was now injured and so he explained to his father that he could no longer go back with him but would instead stay put and keep watch in case Mama Ñamca were to return. Paria Caca agreed and made arrangements to supply his son with food.

Paria Caca stated, "All the inhabitants of these two valleys must give coca to you first, before any of them may chew it" (1991: 174, 175). In addition, Paria Caca required people to sacrifice a "childless" llama in honor of Chuqui Huampo. Paria Caca then explained to his son that he must eat the llama's ear tips[30] before eating the rest of the animal. People have acknowledged Paria Caca's orders, and every coca producer from Saci Caya, Chontay, Chichima, Mama, Huayo Calla, and Sucya Cancha offer coca to Chuqui Huampo before chewing the leaves, themselves. These commands are still practiced secretly today (1991: 175).

[29] Salomon and Urioste acknowledge that although the relationships between deities are usually complicated, one theme is obvious and that is "the union between invaders and aborigines is ideologized in terms of a fraternal tie between the highest male deity of the invaders and the highest female deity of the aborigines" (Salomon and Urioste 1991: 35).

Mana Ñamca is the "lowland female counterpart to the male highland huaca Huallallo Caruincho," and both Mana Ñamca and Huallallo Caruincho become fiery beings that Paria Caca drives away (Salomon and Urioste 1991: 37). Although she makes no appearance in the eighth chapter, Chaupi Ñamca—the predominant female huaca—is a land and river huaca of the lower Rímac valley and is Paria Caca's female counterpart, who is also made of "five selves" (37). Salomon add Urioste write, "…the ritual and mythical order opens out in a grand sexual complementarity on the pattern Invader : Paria Caca : Male :: Aborigine : Chaupi Ñamca : Female" (37).

[30] Salomon and Urioste (1991: 209) associate this command with a modern Andean practice of slicing "small notches" in llamas' ears at señalasqa festivals to demonstrate ownership (Aranguren Paz 1975: 117).

An Obviation of the Myth of Paria Caca

For clarification purposes, here are the fundamental components in the myth.

Character List: The Huacas

- **Huallallo Caruincho**
  - Initially dwells in the Upper Paria Caca region (highland), but the region is characterized as "Yunca."
  - Offerings made to Huallallo Caruincho:
    - Coca, ticti, *Spondylus* shells
    - Child
  - Transforms into fire to fight Paria Caca

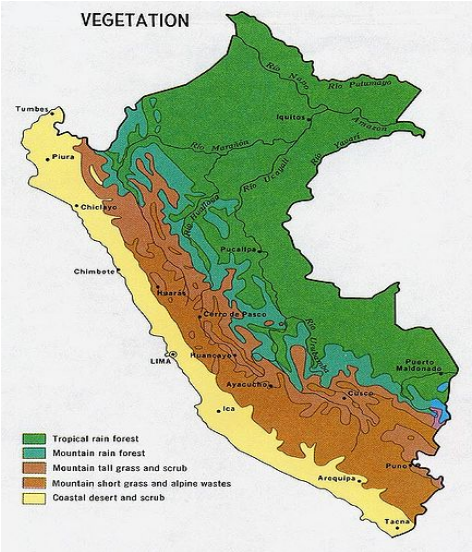
- **Paria Caca**
  - Defeats Huallallo Caruincho, resulting in the creation of Mullo Cocha Lake. This causes Huallallo Caruincho to escape west towards the lowlands. (In a chapter nine, we learn that the people, like the ecology, become characteristically "highland.")
  - Offerings made to Paria Caca:
    - Coca, ticti, *Spondylus* shells
  - Transforms into rain to fight Paria Caca

- **Mana Ñamca**
  - The "lowland female counterpart to the male highland huaca Huallallo Caruincho" (Salomon and Urioste 1991: 37).
  - Paria Caca and Chuqui Huampo defeat Mana Ñamca by expelling her into the ocean.
  - Transforms into fire to fight Paria Caca and Chuqui Huampo.

- **Chuqui Huampo**
  - Paria Caca's son who joins Paria Caca to defeat Mana Ñamca
  - Becomes injured and remains in lowlands to keep watch
  - Offerings made to Chuqui Huampo:
    - Coca, childless llama

The Ecological Landscape

Coastal Zone (Yunca)	Dry, desert region along the Pacific coast When Huallallo Caruincho ruled the highlands, the region was characterized as being "Yunca," referring to coastal people and a coastal ecology.
Inner-valley Zone (Ecotonal zone between coastal and highland regions)	The majority of the settings in *The Huarochirí Manuscript* take place in the sloping region between the coastal and highland regions. Winding paths that greatly increase in elevation approaching the Andean highlands and rivers that stream down from the mountains characterize this inner-valley region. Coca leaves are grown in the valley region, but are also grown in the eastern lowlands, an ecotonal zone between the highlands and the Amazon.
Andean Highlands (Upper Paria Caca area)	This is a complex ecological environment ranging from roughly 2300 to 6000 meters above sea level. Various crops are grown in vertical tiers. For example, potatoes are grown in the high montane steppe between 3000 and 5000 meters above sea level, while maíze is grown in the levels below the montane steppe. In chapter eight, Salomon and Urioste (1991) refer to the Andean region as the "Upper Paria Caca area." Although it is initially characterized as "Yunca," the ecology changes when Paria Caca defeats Huallallo Caruincho and Huallallo Caruincho's original dwelling becomes the location of "Mullo Cocha Lake."



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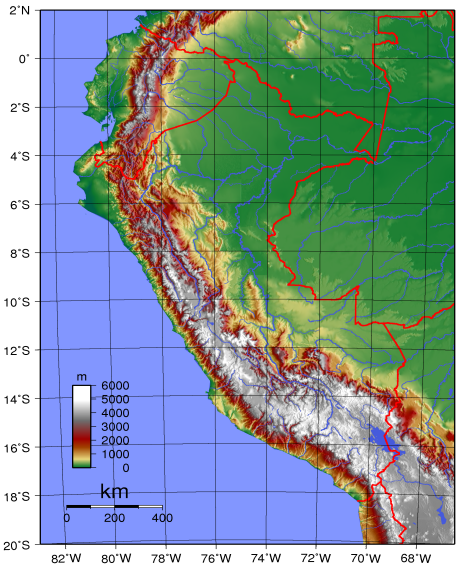

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Offerings[31] to the Huacas:

- **Coca**
  - Grows in two ecotonal zones:
    1) Inner-valley region between the coastal and highland regions
    2) Eastern lowlands between the highlands and Amazon
  - Chewing on the leaves acts as a stimulant and prevents altitude sickness
  - Offering made to Huallallo Caruincho, Paria Caca, and Chuqui Huampo

- **Ticti**
  - Ticti is the "thick maize residue" that results as a "by-product" in making chicha, a fermented drink made from maíze. It was offered as food to the huacas (Salomon and Urioste 1991: 91).
  - Offering made to Huallallo Caruincho and Paria Caca

- ***Spondylus* shells**
  - Also known as mullu and thorny oyster
  - Bivalve found in the intertidal zone off of the Ecuadorian coast
  - Offering made to Huallallo Caruincho and Paria Caca

- **Children**
  - Huallallo Caruincho ate one of every couple's two children

- **Childless llama**
  - Offering made to Chuqui Huampo

[31] It should be noted that many of the offerings presented in the myth are items involved in the *Spondylus* exchange system. This is discussed in the following chapter.

Obviating the origin myth of Paria Caca reveals the power generated in the Peruvian ecology. Chapter eight includes both coastal and highland ecologies, two opposing ecological regions that interact with each other in and out of the myth. The volcanic and mountainous Andean region extends from 2300 to 6000 meters above sea level. The temperature decreases with elevation, and snow and ice accumulate at the mountaintops that are at least 4800 meters above sea level. Rain falls more frequently in the Andean region, and the rivers originating in the Andes flow down into the coastal valleys. The low coastal region is extremely dry and receives very little precipitation as a result of the cold Humboldt Current that flows along the coast.

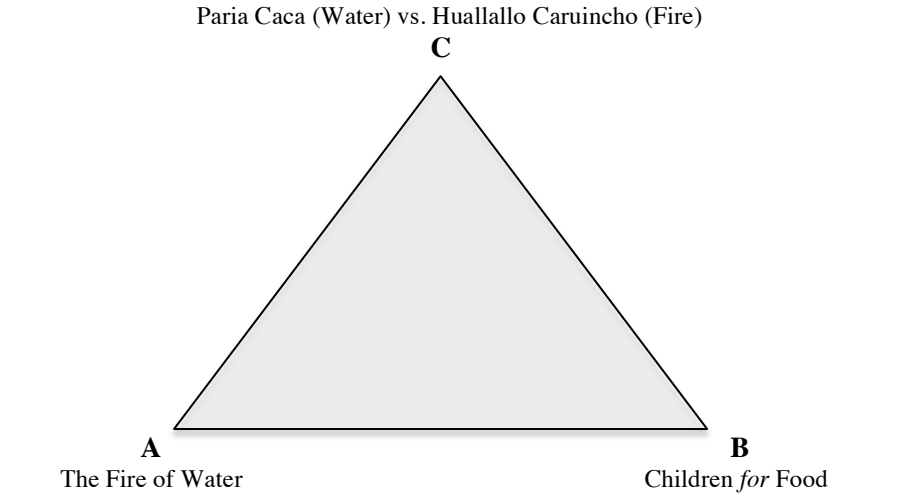
The contrasting features *between* the coastal valleys and the highland regions are obvious: the Andes may be described as "interior," "high," and "cold," while the lowland valleys may be described as "exterior," "low," and "hot." In addition, contradictions *within* each ecological landscape exist. The high Andean region consists of a volcanic belt, so the Andes may be represented as "Fire." However, rain precipitates, snow accumulates, and lakes and glaciers exist in the cold highland region. The contradictions between "fire" (hot) and "water" (cold) within the highland region may be expressed through "containment." The volcanic Andean region contains water (i.e. lake), and this will be represented as "The Water of Fire."

The reversal is true of the coastal region. The low coastal valleys may be represented as "Water." The cold Humboldt Current flows along the coastal desert of Perú, and Andean water and ice run-off flows down into the coastal valleys. However, the coast is hot and dry. Again, contradictions that may be represented as "water" and "fire" exist in the coastal region and may also be expressed through "containment." "The Fire of Water" will serve as the metaphor to express the coastal containment of "fire."

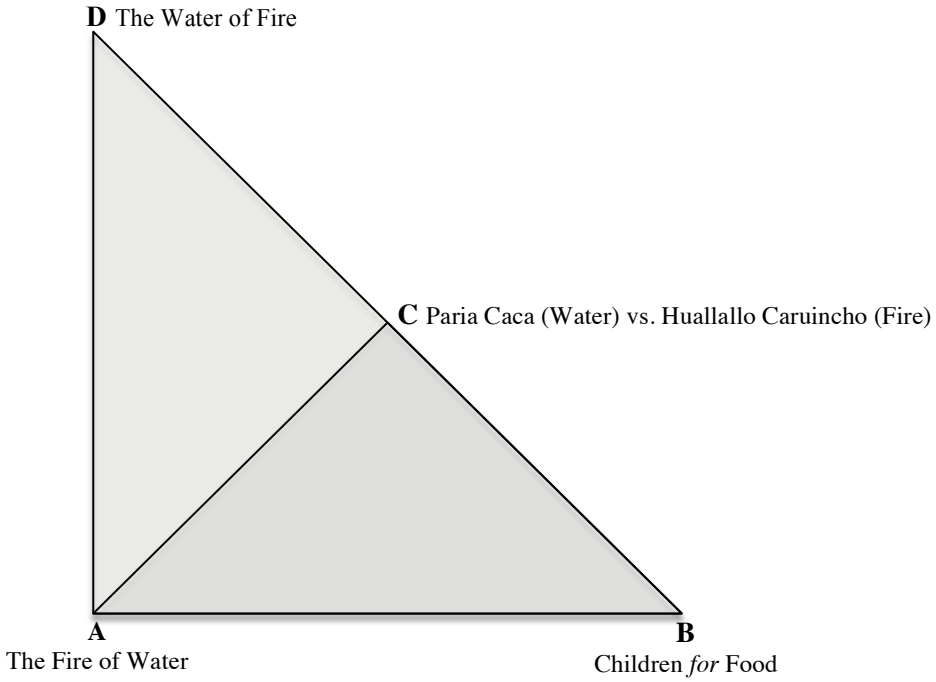
The thorny oyster, or *Spondylus,* offering that Paria Caca consumes in the myth will also be expressed metaphorically. As described in the previous chapter, the cold Humboldt Current that flows along the Peruvian coast creates an unsuitable habitat for the bivalve. However, the current diverges towards the equator, so *Spondylus* inhabits the *warm* coastal waters off of Ecuador. In addition, the color of the *Spondylus* shell is red. I will argue that *Spondylus* may be compared to "fire," and of course, a "fire" that is contained in "water." In addition, Mullo Cocha Lake should also be represented metaphorically. An ecological transformation occurs when Paria Caca fights Huallallo Caruincho, resulting in the creation of Mullo[32] Cocha Lake, or the Lake of Thorny Oyster. This highland "containment of water" may be represented as "The Water of Fire."

The myth begins with the huaca Huallallo Caruincho ruling a region that is characteristically Yunca, or coastal. Point A of the obviation diagram may be labeled with the metaphor, "The Fire of Water." Point B, or the "sequency for substitution," of the obviation diagram may be labeled as "Children *for* Food." The term "food" refers to the offerings of *Spondylus,* coca, and ticti. The metaphor at point B notes how Huallallo Caruincho eats children as an offering, which is not a typical food offering such as *Spondylus,* coca, and ticti. Huallallo Caruincho's behavior is viewed as horrid and classifies him as a "cannibalistic huaca" (1991: 28). I have labeled point C, or the synthesis of points A and B, as "Paria Caca (Water) vs. Huallallo Caruincho (Fire)." Huallallo Caruincho's cannibalistic behavior (point B) as ruler of the Yunca region (point A) upsets Paria Caca. As a result, Paria Caca and Huallallo Caruincho fight. The huacas are transformative beings. Huallallo Caruincho fights as fire, and Paria Caca fights in the form of water.

[32] "Mullo" is the Quechua term for *Spondylus*.

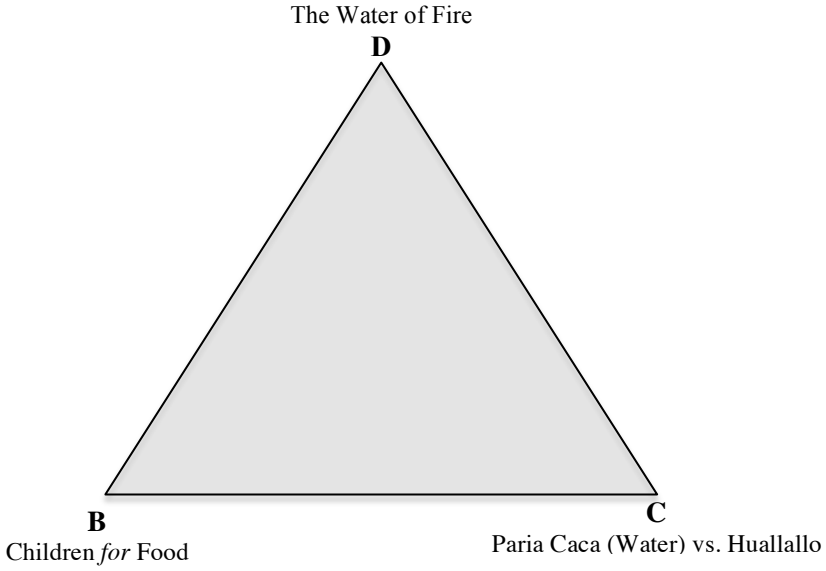


One of Paria Caca's "five persons" transforms Huallallo Caruincho's original dwelling into Mullo Cocha Lake to prevent over-flooding while fighting Huallallo Caruincho. This causes Huallallo Caruincho to flee towards the coastal lowlands. Paria Caca rules what is now known as the "Upper Paria Caca" region. The region is no longer "Yunca," and the people and ecology become characteristically highland. Point D may be labeled with the metaphor, "The Water of Fire," which resembles the containment of water (rain and Mullo Cocha Lake) in the volcanic highland region. The metaphor at point D opposes the metaphor "The Fire of Water" at point A. Point D, representing "containment/order," is also the antithesis that follows the initial synthesis at point C, "Paria Caca (water) vs. Huallallo Caruincho (fire)," or "chaos." Finally, point D becomes the synthesis of points B, or "Children *for* Food," and C, "Paria Caca (Water) vs. Huallallo Caruincho (Fire)."



1) The metaphor at point D substitutes the metaphor at point A.

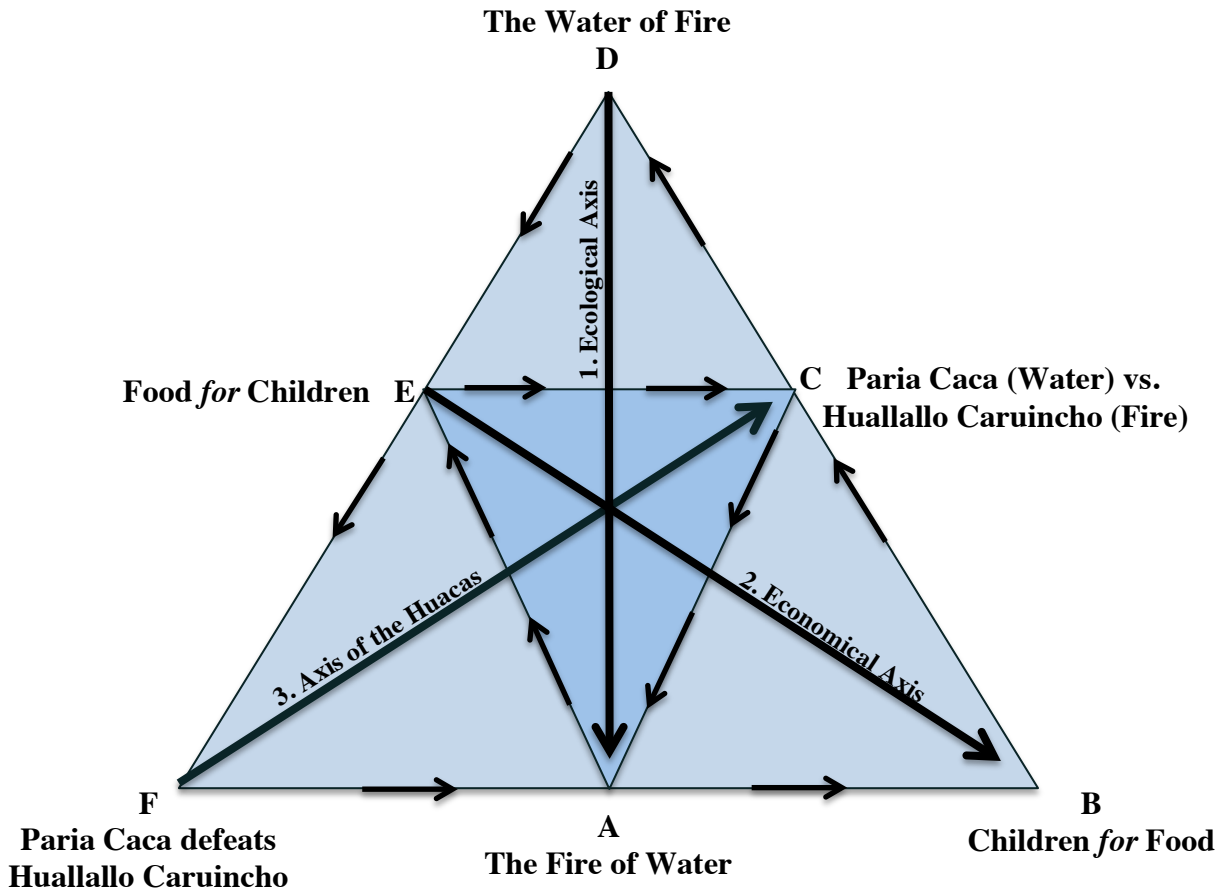
2) Point D, "order," is the antithesis of the initial synthesis at point C, "disorder."



3) Point C is the synthesis of the metaphors at points B and C, "thereby preempting the mediation and canceling the significance of the initial term at A" (Wagner 1992: 211).

Point E is the metaphor that substitutes and opposes the metaphor at point B, "Children *for* Food," so this will be labeled, " Food *for* Children." As mentioned previously, *Spondylus* is found in *warm* Ecuadorian waters and is *red* in color. *Spondylus* represents "The Fire of Water." After Paria Caca ate the food offerings of *Spondylus,* coca, and ticti, he transformed into rain and created Mullo Cocha Lake while fighting Huallallo Caruincho, who fought in the form of fire. The rain and the creation of Mullo Cocha Lake represent "The Water of Fire." Once Huallallo Caruincho flees towards the lowlands, Paria Caca rules the highland region and will not consume children. Finally, point F may be labeled "Paria Caca (Water) defeats Huallallo Caruincho (Fire)," and this metaphor substitutes and opposes the metaphor at point E, "Paria Caca (Water) vs. Huallallo Caruincho (Fire)."

The three axes of the obviation diagram represent the three "double-ground reversals," or the power that generates the transformations between the metaphors. The first axis between points D and A has been labeled the "The Ecological Axis." The second axis between points E and B helps generate the original double-proportional comparison from "The Fire of Water" to "The Water of Fire." The second axis has been labeled "The Economical Axis," since this axis resembles the transformations in ritual offerings from "Children for Food" to "Food for Children." Finally, the third axis of cancellation, or the "Axis of the Huacas" resolves the contradictions. The complete obviation diagram is below.



Ecological and altitudinal features of the coastal and highland regions may be contrasted, and features within each region also oppose each other. "The Water of Fire" represents the containment of water (i.e. rain and Mullo Cocha Lake) in the highland, volcanic region, while "The Fire of Water" represents the containment of fire (i.e. dry, desert) in the coastal region. *Spondylus* is *red* and found in the *warm* Ecuadorian waters, and the huaca Paria Caca eats *Spondylus* and transforms into *red* and *yellow* rain. *Spondylus* represents "The Fire of Water." Paria Caca rains down on Huallallo Caruincho (fire), so Paria Caca may represent "The Water of Fire;" but the red and yellow colors of Paria Caca's rain and the lightening bolts that Paria Caca flashes down on Huallallo Caruincho represent "The Fire of Water."

Obviation may serve as a nonlinear, paradigmatic approach to mythology. Obviating the myth of Paria Caca reveals the power in Peruvian ecology that is generated between oppositions, where "power" refers to the energy needed to create the figure-ground reversals between metaphors and is the symbolic means for interpreting Andean productivity within the cultural domain. *Spondylus* offerings in the highland region and the huacas' consumption of the bivalves generate the transformations in the myth, and the transformations and power behind these changes are paralleled in the archaeological and linguistic evidence of the *Spondylus* exchange system discussed in the third and fourth chapters.

Chapter 3:
Archaeological Evidence of Andean Duality in the *Spondylus* Exchange System

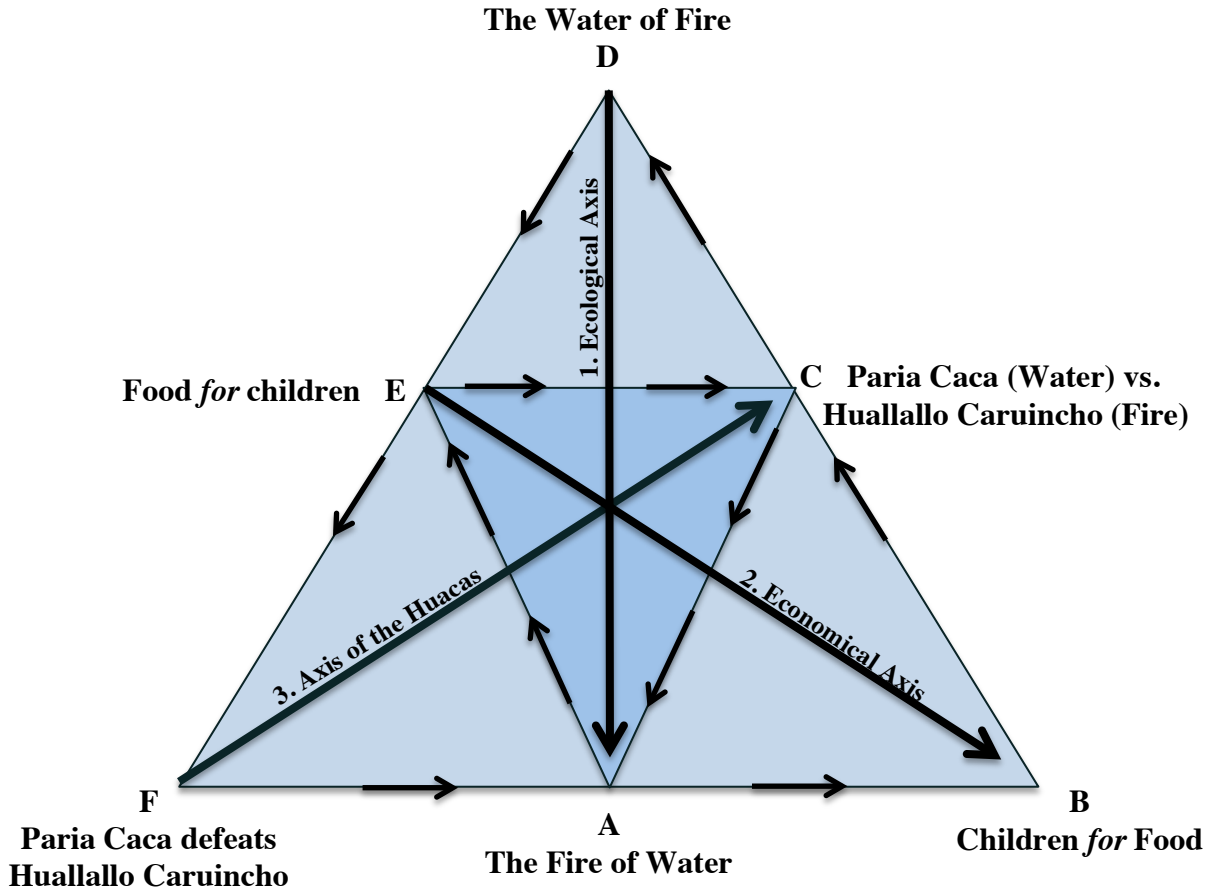
Introduction

The myth[33] of Paria Caca, chapter eight of *The Huarochirí Manuscript* (1991[1600]), was obviated in the previous chapter. The points of the obviation diagram were labeled with opposing metaphors. For example, points A and D of the diagram involved a double-proportional metaphorical comparison. Point A was labeled, "The Water of Fire," representing the containment of *water/cold* in the volcanic, Andean region, while point B was labeled, "The Fire of Water," representing the containment of *fire/hot* in the coastal region. In summary, the nonlinear, paradigmatic approach revealed that the huacas' consumption of *Spondylus* as a food offering in the Andean region is the power generating the transformations, or the figure-ground reversals, between opposing metaphors of the obviation diagram.

Urton argues that "social and political relations within Andean communities tend overwhelmingly to operate on the basis of complementary asymmetric dualism," a dualism that is "grounded in complementary opposition" (2012: 323, 324). This chapter examines the archaeological record concerning the *Spondylus* exchange system. The metaphors and the relations between metaphors of the myth's obviation will be useful in exposing the Andean complementary oppositional structures of the *Spondylus* exchange system. Finally, the myth parallels the *Spondylus* exchange system. *Spondylus*, with its *red* color and its niche in the *warm*

[33] The myth of Paria Caca serves as a form of Gunn's "captured knowledge" (1994). Gunn writes, "Events of capture are probably indicated archaeologically and historically by abrupt changes in conditions and material culture, but the packing of this information may not be particularly visible. The package may consist of a holistic folkloric model that can be maintained by storytelling and ritual. This capture-and-retain process of folklore equips cultures, and the concept of culture, with a dynamic information-growth capacity that extends in time beyond immediate environmental circumstances. It is the cultural equivalent of linguistic displacement. It makes duration an important variable in understanding cultural development and complexity" (Gunn 1994: 89).

Ecuadorian waters, may be represented as the "Fire of Water." The *Spondylus* exchange system involved the shell's transportation into the Andean, highland regions, or "The Water of Fire," in a reciprocating exchange for highland goods. The obviation diagram is below.



The *Spondylus* Exchange System

The Expansive History of *Spondylus*

The *Spondylus* exchange system began around 3000 BC (Blower 1995: 85). In "The Thorny Oyster and the Voice of God: *Spondylus* and *Strombous* in Andean Prehistory," Allison C. Paulsen organizes "geographically heterogeneous evidence" to construct a timeline of three expansive phases that characterize the region involved in the *Spondylus* exchange system (1974: 597). Paulsen's periods[34] are organized in the table below:

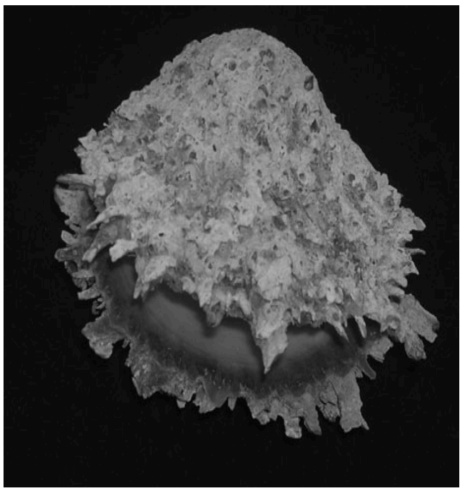
Paulsen's Periods: ***Spondylus*** **Movement**	
Period A: 2800 to 1100 B.C.	"when the shell from coastal Ecuador was traded only as far as the Ecuadorian sierra" (1974: 599).
Period B: 1100 to 100 B.C.	"when the trading area expanded south, and the Ecuadorian shell became entrenched in the culture of the central Andes" (1974: 599).
Period C: 100 B.C. to A.D. 1532	"when the total exchange reached from Quito to Lake Titicaca" (1974: 559)

Map indicating major Ecuadorian and Peruvian sites involved in the exchange system (Paulsen 1974: 600).

Fig. 2. Location of sites in Ecuador and Peru.

Bauer and Lunniss

Figure 1. Spondylus princeps



Bauer and Lunniss 2010: 77

[34] David Blower notes that the first evidence of *Spondylus* in Peru likely predates Paulsen's second phase, from 1100 to 100 BC (1995: 95). Robert Feldman (1992: 73) has discussed findings of *Spondylus* from the Preceramic Period (3000 to 1800 BC) at the central coastal sites of Aspero and La Paloma (Blower 1995: 95).

Period A: 2800 to 1100 BC

The Gulf of Guayaquil, Ecuador is the southernmost extension of *Spondylus*' niche; so Ecuadorian coastal cultures become fundamental to the exchange system, or a "central link in the system" (Torre and Striffler 2008: 20, 21), as the significance of *Spondylus* progresses through time and space. Archaeological findings of worked and unworked *Spondylus* at Ecuadorian coastal sites[35] such as Aspero and La Palomona (Blower 1995: 95 [Feldman 1992: 73]) characterize the Valdivia Phase from 3500 to 1500 BC (Bauer and Lunniss 2010: 82). During this period, finished *Spondylus* products were exclusively ornamental and included beaded bracelets and necklaces, nose rings, and pendants (Paulsen 1974: 599; Bauer and Lunniss 2010: 84).

Ecuadorian divers pried the mollusks from the rocks in the intertidal zones (Torre and Striffler 2008: 20), and the architectural relief called *Los Buceadores* in Chan Chan provides evidence of this, depicting a raft-like structure and human beings that are upside-down and working with instruments (Pillsbury 1996: 328). Daniel Bauer's ethnographic studies demonstrate how the procurement of *Spondylus* remains a fundamental economic activity throughout the year in the Ecuadorian village of Salango, which was a significant center for the collection and craft workings of *Spondylus* throughout Andean prehistory that began 5000 years ago (2007: 35, 41). Contemporary divers continue to free dive depths up to 20 m below sea level off of the Manabí province (Bauer 2007: 42), and many of the tools, such as stone anchors, weights, and hammer-stones, used in the past to pry *Spondylus* from the rocks are still used today (Bauer 2007: 40 [Marcos and Norton 1981; Cordy-Collins 1990]). Bauer claims that the divers

[35] Only one "non-coastal" site dating from the Valdivia Phase has been discovered (Paulsen 1974: 599). Two *Spondylus* nose rings (Norton 1971) and beads (Presley Norton, personal communication with Paulsen) were discovered at the inland site of Loma Alta (Paulsen 1974: 599).

of Salango feel connected with their ancestors through the cultural practice of obtaining *Spondylus* (2007: 47). The diver Mario Valdez explains to Bauer,

"Spondylus is a symbol, a symbol of our community. Salango is full of culture. The people who lived here thousands of years ago lived for *Spondylus*. It was very important. It was a symbol of the Inca Empire during that time and it is still an important symbol for the people of Salango. In actuality, Salango is one of the best known places for *Spondylus* in all of Ecuador if not all of the world" (Bauer 2007: 47 [Mario Valdez, diver]).

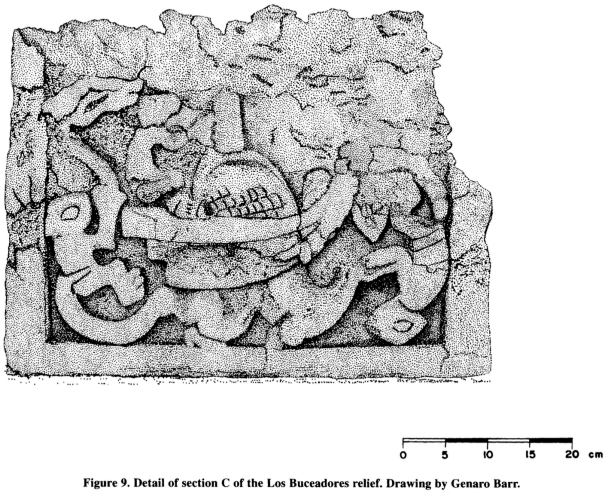


Figure 9. Detail of section C of the Los Buceadores relief. Drawing by Genaro Barr.

Architectural relief: *Los Buceadores* (Pillsbury 1996: 328)

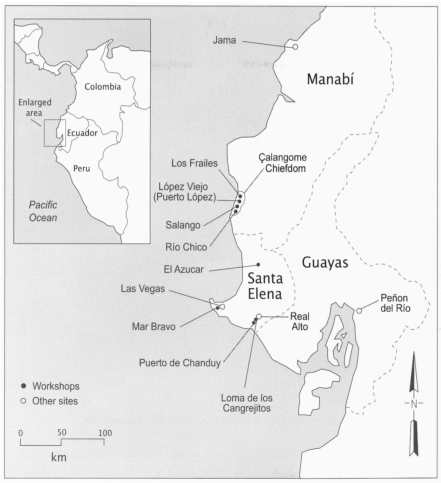


Figure 1 The coast of Ecuador, including shell workshops and other important sites.

Ecuadorian Coastal Workshops (Martín 2010: 41)

Spondylus workshops first appear in the Early Formative Valdivia phase on the Ecuadorian, Manabi coast (Bauer 2007: 38, 86), and the shells most commonly functioned as abraders and polishers or were transformed into beads (Blower 1995: 87). The red margins of the *Spondylus* shells were often cut from the shell and exported, so shells missing the red margins are often found along the Ecuadorian coastal workshop sites. From 2800 to 1100 BC, *Spondylus* became involved in an exchange between the Ecuadorian coastal region and the Ecuadorian highlands, and *Spondylus* workshops appear in the highland region as well (Paulsen 1974: 599; Blower 1995: 87). Great quantities of red, marginal pieces of shells and finished crafts are found in the highland Ecuadorian regions, alluding to "both the preparation and completion of the final

product" at these interior workshop sites (Blower 1995: 87 [Lathrap, Collier and Chandra 1975: 48]).

Many finished crafts made of both *S. princeps* and *S. calcifer* shells are found at the Ecuadorian highland site of Cerro Narrio (Blower 1995: 87) and include figurines, ornaments (1995: 87), chaquiras[36], pendants, collars, earspools, polished rim fragments[37], *Spondylus* shells with their spines removed, and "square and round cuentas" (Blower 1995: 89). The site of Cerro Narrrio is renowned for its human-like figurines uniquely carved from purple calcifer (Blower 1995: 87). Cerro Narrio became a center of exchange, where items such as *Spondylus* and crystal (Blower 1995: 87 [Bruhns 1989]) were sent to the Amazon basin and likely exchanged for coca (Blower 1995: 87 [Lathrap 1975: 48]; Paulsen 1974: 599). Placed here around 1020 BC (Blower 1995: 89), Spondylus-crafted items such as "trapezoids, perforated discs, circular crowns, cylindrical beads, rings, a feline mask and a serpent-bird pendant[38]" have been excavated from Los Tayos, a cave located in a valley east of Cerro Narrio with access to the Amazon (Blower 1995: 89 [Marcos 1977/78: 110, 114; Porras G. 1978: 11]).

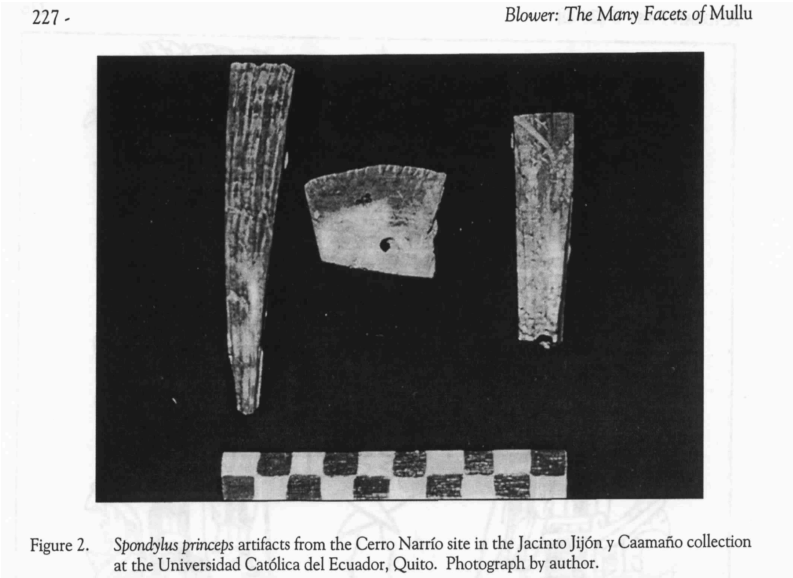


Figure 2. *Spondylus princeps* artifacts from the Cerro Narrío site in the Jacinto Jijón y Caamaño collection at the Universidad Católica del Ecuador, Quito. Photograph by author.

[36] Chaquiras are red and white beads made from the shells of *Spondylus*.

[37] Blower postulates that the polished rim fragments may have served as a form of currency (1995: 89).

[38] Blower notes that the last two items in this list of artifacts may be likened to Mesoamerican mythological creatures, and both are included in the imagery at Chavín in later years (Blower 1995:89 [Porras G. 1978: 37, 70]).

Period B: 1100 to 100 BC

From 1100 to 100 BC, the exchange system expanded (Paulsen 1974: 601, Torre and Striffler 2008: 20), and Ecuadorian coastal *Spondylus* was transported south to the Peruvian coastal region and east to the central Peruvian highlands through the means of land-based trade routes, road systems, and llama caravans (Blower 1995: 58, 86; Glowacki 2005: 264). Moche pottery serves as supporting evidence of this land-based transportation, depicting llamas transporting marine mollusks such as *Strombus*[39], *Conus*[40], and possibly *Spondylus* (Glowacki 2005: 264 [Shimada 1994: 189 and Figure 8.7]).

Images of *Spondylus* and *Strombus* appear at the central Andean ceremonial center of Chavín de Huantar, and both mollusks become associated with a significant divinity of the culture, as apparent in the Tello Obelisk dating from 800 BC (Glowacki 2005: 258; Paulsen 1974: 601). This freestanding stela contains reliefs embodying Chavín cosmology and includes *Strombus* and *Spondylus* shells that are each decorated with mythical features (Paulsen 1974: 601). *Spondylus* and *Strombus* are also depicted on pottery during Early Horizon Perú (Paulsen 1974: 603). A necklace decorated with *Spondylus* pendants shaped in the form of "stylized fish" was found at a burial dating from the Early horizon at the site of Huayurco, one of the main manufacturing and trading centers of the central Andes (Paulsen 1974: 601).

Findings also suggest that items were transported by sea (Blower 1995: 58). Coastal fisherman traveled to nearby villages on balsa rafts along the Peruvian coast, and there is also

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[39] *Strombus* is a conch that that was exported along with *Spondylus*. The mollusk is also native to the tropical coastal waters of Ecuador but inhabits intertidal waters closer to shore than the ecological niche of *Spondylus* (Paulsen 1974: 597). Twenty trumpets made from *Strombus* shells have been found in the underground chambers of Chavín (Brooks 2008: 38) and were most likely used in rituals to create an unearthly noise as people moved through labyrinths (Brooks 2008: 37; Heller 2015: 307).

[40] "Like *Spondylus*, *Conus fergusoni* is only found from Baja, California south to the Santa Elena peninsula of Ecuador. While it can be found intertidally it more commonly occurs in water up to 165 metres in depth" [Blower 1995: 100 (Keen 1971: 667)].

evidence that long-distance maritime trade routes existed. For example, the principal navigator on Francisco Pizarro's second voyage, Bartolomé Ruiz (Torre and Striffler 2008: 21; Sámano 1967: 65-66 [1525]), describes how he came across a native raft with a crew of 20 people off of the coast of Ecuador (Blower 1995: 58, 59 [Guinea 1989: 143 (Sámano 1844); Tello 1967: 22]). He reports[41] of a ship transporting silver and gold adornments, such as crowns, diadems, belts, bracelets, armor, tweezers, bells, cups, and mirrors, heavily decorated and multicolored wool and cotton cloths and clothing, and crystals and stones such as emeralds and chalcedony (Blower 1995: 59). According to Ruiz, all these items were to be traded with the north for white and coral-colored beads made from seashells (Torre and Striffler 2008: 21; Blower 1995: 59).

Period C: 100 BC to AD 1532

The mollusk's importation to the Peruvian northern coastal region increased dramatically during the Middle Horizon period, or from 600 to 1000 AD (Blower 1995: 99 [Cordy-Collins 1990: 408]). The increase in demand may be attributed to the use of *Spondylus* for ritual purposes. *Spondylus* was consumed through sacrifice, accumulation, its conversion to jewelry, and as burial offerings, so "constant need for a consistent flow of new shells helped to maintain a system of trade and manufacture" (Blower 1995: 57, 58 [Marcos 1986: 201]). David Blower offers the following two views of *Spondylus* as a "trade mechanism:" 1) "as a symbolic accompaniment to facilitate the trade in more mundane goods," or 2) "as a commodity in a commercial interchange where its value could be equated with other objects" (1995: 56).

[41] "…trayan muchas pieças de plata y de oro para el adorno de sus personas para hazer rescata con aquellas con quyen yban a contratar en que yntervenyan coronas y dyademas y cintos y puñetes y armaduras como de piernas y petos y tenaçelas y cascaveles y sartes y maços de quentas y rosecleres y espejos goarneçidos de la dicha plata y taças y otras vasijas para veber trayan muchas mantas de lana y de algodon y camisas a aljulas y alcaceres y alermes y otras muchas ropas todo lo mas dello muy labrado de labors muy ricas, de colores de graña y carmesy y hazul y harmillo y de todas otras colores y de diversas maneras de labores e figuras de aves y amymales y pescados y arboledas y trayan unos pesos chiquitos de pesar oro como hechura de romana y otras muchas cosas en algunas sartas de quentas venian algunas piedras y pedaços de cristal y anyme todo esto trayan para rescatar por unas conchas de pescado de que ellos hazen quentas coloradas como corales y blancas que trayan casy el navio cargado dellas" (Blower 1995: 59, 60 [Sámano 1967 (1525):66]).

Spondylus shells were buried with the elite at the site of Cerro Amaru (Glowacki 2005: 258 [Topic & Topic 1992: 172]) and also discovered as burial goods at the site of Pachacamac in the Lurin Valley (Blower 1995: 99 [Uhle 1991 [1903]: 370]). *Spondylus*-crafted items such as necklaces, bracelets, chaquiras, pendants, and zoomorphic forms that are also decorated with mother-of-pearl and even lapis lazuli or sodalite have been found buried with females at the Cemetery of Sacrificed Women (Blower 1995: 99 [Uhle 1991 [1903]: 95]).

Andean people offered *Spondylus* shells as sacrifices to water sources such as springs (Torre and Striffler 2008: 21; Blower 2000: 209 [Murra 1975; Marcos 1986: 197; Davidson 1981: 80]), and the shells have been found buried inside instruments used to hold water (Blower 2000: 210 [Stothert 1995: 144]). Andean people also crushed *Spondylus* shells and sprinkled the fragmented pieces along with *Spondylus* beads onto their fields to ensure agricultural fertility (Blower 2000: 210). During rituals *Spondylus* shells were often sacrificed with children, animals, gold, silver, chicha[42], coca, and feathers (Blower 2000: 210 [Molina 1989 [1575]: 121; Murúa 1987 [1590]: 420; Guaman Poma de Ayala 1980 [1615]: 238 [240]-239[241], p.213; 247[249], p. 221; 251[253], p. 225; 265[267], p.239]).

Large numbers of *Spondylus* and *Conus* shells have been collected at the temples of Cerro Blanco, Huaca el Dragon, Huaca de la Luna, Tacaynamo, and Calvario de los Incas (Blower 1995: 100). The greatest quantity of shells has been discovered at Calvario de los Incas, where many of the shells appear to be incinerated. Blower (1995: 100) suggests that burning the shells along with textiles may have created a "lime source used for coca chewing," while Bourget (1995:3) considers the incineration as "an indication of ritual activity" (Blower 1995: 100). Four different varieties of *Spondylus* are believed to have existed at the sites of Cerro

[42] Chicha is a fermented beverage made from maíze.

Blanco and Huaca El Dragon (Bourget 1995: personal communication with Blower), and Blower notes how "the possible presence of *Spondylus princeps unicolor,* believed to be restricted to the coast of west Mexico, and an association with long-distance trade" (Blower 1995: 101).

The *Spondylus* exchange system spans from Quito to Lake Titicaca from 100 BC to AD 1532 (Paulsen 1974: 559; Blower 1995: 86). There is evidence suggesting that the exchange system may have involved long-distance, maritime trade with Mesoamerica from AD 1000 up until Spanish colonialism (Blower 1995: 74 [Bray 2008]). In "El comercio lejano y la difusión del quechua. El caso de Ecuador," Alfredo Torero describes how *chaquira,* or *Spondylus* beads, were involved in an exchange encompassing an extensive geographic region: from the western coastal zones to the eastern highlands and spanning from the southern most point of Peru up north to Mexico[43] (1984: 374).

Ecuadorian Maneteño traders created rafts made of balsa-wood logs (Blower 1995: 64 [Edwards 1969:8, Norton 1986: 131]) that were used for fishing, diving, and coastal transportation (Blower 1995: 64). Historic records suggest that Peruvians inserted guara boards between the balsa logs, enabling the crew to steer the raft in various directions by raising and lowering the boards (Blower 1995: 65 [Heyerdahal, Sandweiss and Narváez 1995: 27]). Salazar de Villasante's records (1992[1568/71]: 61) describe how Ecuadorians from Puerto Viejo used maritime travel to send wood and planks to Los Reyes, or present-day Lima (Blower 1995: 65), and David Blower notes how the Humboldt Current would have made sea travel from Ecuador to Peru challenging "without a technique such as guara board navigation" (Blower 1995: 65).

[43] "La chaquira se utilizaba en la relación comercial entre costa y sierra, en tanto que el hacha de cobre circulaba a lo largo de las costa del Pacífico sobre una inmensa extensión: desde al menos el sur del Perú, donde las gentes de Chinca menejaban para sus compras y bentas un 'marco de cobre' (Rostworowski, 1970), hasta México…" (Torero 1984: 374).

Perhaps a decreasing supply of *Spondylus* along coastal Ecuador and an increase in demand for *Spondylus* particularly with the Chavin, Huari-Tiahuanaco, and Inka cultures is why trade extended into Mesoamerica (Blower 1995: 74 [Marcos 1977/78: 120]), since the warm Mexican waters provided a suitable habitat for the mollusk. Hosler (1988: 852) argues that Mesoamerican *Spondylus* may have been exchanged for "smelting techniques and fabrication methods related to the production of arsenical copper" despite that Ameca in West Mexico had copper and chrysocolla (Blower 1995: 74). Paulsen also notes that characteristics of Ecuadorian coastal pottery from Guangala phases 1 through 5 may suggest a direct relation with Central America (Paulsen 1974: 602 [Paulsen 1971]). During this time, highland copper items appear on the Ecuadorian coastal region (Paulsen 1974: 602). According to Blower, knowledge of maritime trade south to Zacatula on the Rio Balsas in West Mexico involving the exchange of "'exquisite things' for local goods" suggests that Mesoamerican *Spondylus* may have been traded for finished products (1995: 75).

Andean-like artifacts have been found in Mesoamerica. "Artifacts, ceramic style, technical knowledge of metallurgy and bronze, artistic depictions of chimaera, maize flour, the shaft tomb complex, textile styles and technique have all been identified in West Mexico, Colombia, and lower Central America" (Blower 1995: 73 [Anawalt 1992: 122; Hosler 1988: 832, 843; Marcos 1977/78: 117; Meighan 1969: 13; Paulsen 1977: 141, 153]). The Peruvian presence in Mesoamerica is most notable from AD 1000 to the 16th century (Blower 1995: 74).

The coastal mainland village of Salango and the Isla Salango were important sites involved in sea trade (Blower 1995: 90 [Samano 1967: 66 (1525)]). Obsidian blades and *Spondylus* chisels of the Guangala phase dating from 100 BC to AD 800 have been discovered at Salango, and roughly 29 of the various gastropods and bivalves found at the site were potentially

for consumption (Blower 1995: 90). Numerous *Spondylus* shells with the red, marginal regions removed dating from the Manteño phase have also been excavated at Salango (Blower 1995: 90 [Stahl and Norton 1987: 384]), and "lenses of ash and carbon found in association with fragments of shell and lime often contained by an olla or pot" (Blower 1995: 90 [Allan n.d.: 14]) suggest that the "lime kilns [were] used to reduce the cut-off white calcifer rims to lime used for coca chewing (Blower 1995: 90 [Allan n.d.: 14; Mester 1990: 27]).

More than 600 shells of *Spondylus princeps* have been excavated at the site of Isla de la Plata, located 40 kilometers northwest of Salango (Blower 1995: 91 [Norton 1986: 141]). The valves "had been cleaned and placed faced down in a 4 by 5 metre sealed area" (Blower 1995: 91 [Norton 1986: 141]), suggesting that the island may have stored *Spondylus* to be shipped south (Blower 1995: 91 [Norton 1986: 141]) or may have deliberately positioned the shells for ritual purposes (Blower 1995: 91). Ceramic and stone figurines, cut stones, *Spondylus* beads, and turquoise beads and pendants are amongst the offerings found on the island (Blower 1995: 91).

Located on the south-central coast of Perú, Chincha may have been the center of trade during the Late Horizon period (Blower 1995: 66). Maria Rostworowski's translation of *Aviso de el modo que havía en el gobierno de los Indios en tiempo del Inga y cómo se repartían las tierras y tributos*[44] (1970) reveals that of the 30 thousand taxpayers in Chincas, 10 thousand were fishermen, 12 thousand were farmers, and 6 thousand were merchants (Blower 1995: 66). Knowledge of the 10 thousand fishermen leaves Wallace (1991) to conclude that the "Chincha contribution to an exchange system" was likely a portion of the large quantity of fish[45] caught (Blower 1995: 66 [Wallace (1991b: 261)]). It is also known that the Chincha fisherman and merchants were experienced with balsa rafts (Blower 1995: 66 [Rostworowski 1977b: 137]).

[44] This is an anonymous Spanish manuscript that was likely written sometime from 1570 to 1575 (Blower 1995: 66).
[45] The fish was dried before transportation.

The *Aviso* manuscript describes how copper was used in merchandise (Blower 1995: 66 [Rostworowski 1977: 176]). The presence of copper in Chincha may indicate coastal economic relations with the highlands, where copper originates (Blower 1995: 66; Torre and Striffler 2008: 21). Rostworowski claims (1970) that during the Inca Empire, the merchants from Chincha traveled to Cuzco, Quito, and Puerto Viejo to collect gold, emeralds, and *Spondylus* (Blower 1995: 66 [Rostworowski (1970: 144)]), but Blower notes that there is no mention of *Spondylus* and a closer examination of the manuscript reads "chaquiras of gold and emeralds" as opposed to detailing chaquiras made of *Spondylus* (1995: 66).

Joanne Pillsbury (1996: 315) recognizes the possibility of "state-sponsored long-distance exchange" that may have been "managed via independent, entrepreneurial traders, such as those suggested for the Chincha polity of the Late Horizon period." However, Pillsbury also writes about how the Chimú may have "controlled much of the distribution of the shell on the north coast" through "simple 'down-the-line' exchange (Renfrew 1975; Zeidler 1991)…as it had for millennia" (1996: 315).

The movement of *Spondylus* shells along the coast may have depended on both land-based and maritime-based trade routes, and the movement of the mollusk into the highland regions certainly involved land-based trade routes that extended down from the Andes towards the coastal valleys. In conclusion, Blower writes: "It should not be assumed that a long-distance network of trade was operated by a single group of traders throughout the network. It is entirely possible that the network involved a series of short-distance relationships moving objects from one group to the next one down the line. *Spondylus* could have been involved in several different mechanisms of exchange depending on which stage of the trade network it was travelling through" (1995: 64).

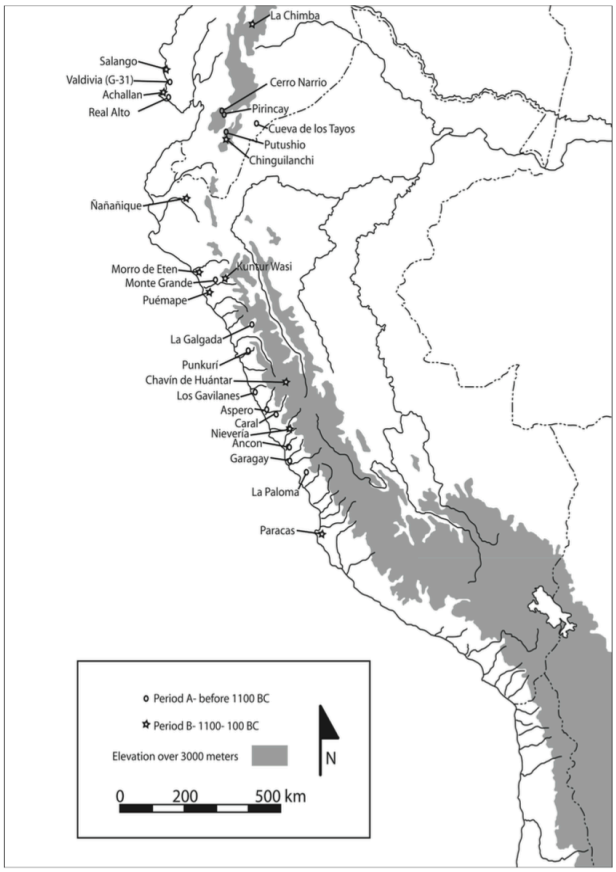

Figure 5. Archaeological sites mentioned in the text from Period A and B
[based upon Moseley 1992: 34]

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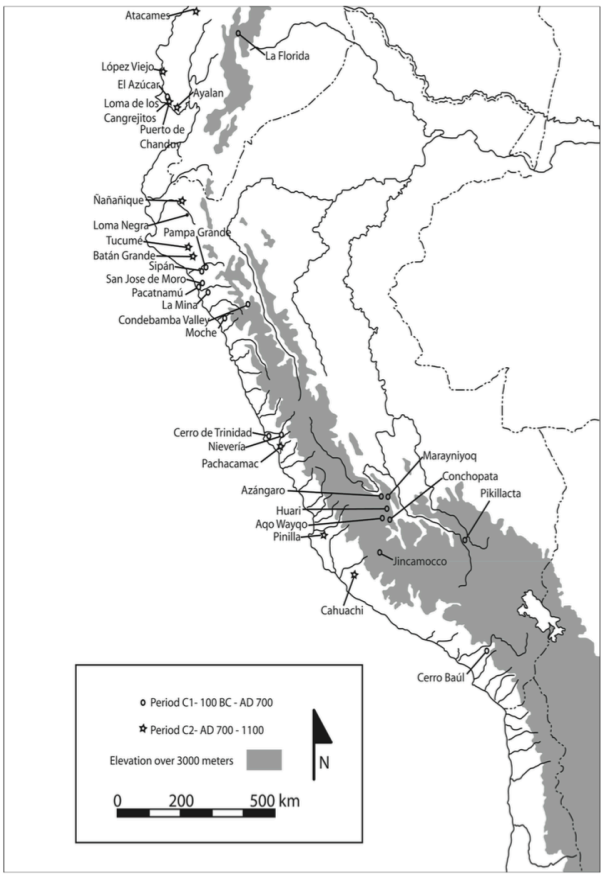

Figure 6. Map of archaeological sites mentioned for Periods C1 and C2
Note that Cerro Juan Diaz is off the map to the north
[based upon Moseley 1992: 34]

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Archeological Sites from Periods A, B, and C

Images from: Carter, Benjamin P. 2011. "Chapter 6: *Spondylus* in South American Prehistory." In *Spondylus in Prehistory*, 70, 72. Oxford: British Archaeological Reports.

The Items Involved in the Exchange System

Spondylus was one of many prestige items involved in the complex system of exchange. Other prestige goods included bone and shell beads, *Strombus,* mother-of-pearl, coca, gold, feathers, woven cloths, maíze, fine ceramics, obsidian, turquoise, green stone, rock crystal, salt, copper, and bronze (Torre and Striffler 2008: 21, 22; Paulsen 1974; Blower 2000: 215; Blower 1995: 84; Hornborg 2014: 815; Browman 1981: 413).

Strombus is a conch also found in the warm Ecuadorian waters that was transported to interior regions along with *Spondylus*. Although "sometimes incised with ritual themes," *Strombus* shells were never modified like *Spondylus* shells were, which appear "whole, carved, ground-up, or cut in pieces" (Paulsen 1974: 603). Allison Paulsen (1974) describes how *Spondylus* and *Strombus* were often found associated together in the central Andean region. The mollusks are both depicted in low relief on the Tello Obelisk, or the stela of the Chavín culture (Paulsen 1974: 60). Ornamental items made of *Spondylus* and *Strombus* trumpets (Paulsen 1974: 601 [Lathrap 1970: 108, Pl. 21]) of the Early Horizon were found together as burial goods at the site of Huayurco, and the two mollusks are depicted together on pottery of this time period as well (Paulsen 1974: 601).

Strombus trumpets

Image from http://www.andes.org.pe/banners/banner-1-v-960-337.jpg

According to Blower (1995), chaquiras, cotton fibers, salt, dried fish, guano, chili, and gourds were transported away from the coast and exchanged for highland items (1995: 57, 68, 70). Chaquiras are red and white *Spondylus* beads that likely functioned as currency especially along the Ecuadorian coast from the Formative period up until the Spanish arrival (Blower 1995: 57 [Galván Garcia and Barriuso Pérez 1986: 63; Marcos 1978: 120; Salomon 1986: 92]). Chaquiras were extremely valuable[46], and Cieza de León (1962[1554]: 151) reports that the beads were sometimes exchanged for large amounts of gold (Blower 1995: 57). Items originating in the highlands and that were exchanged for these coastal goods would have included copper, obsidian, charqui,[47] and textiles (Paulsen 1974: 602; Blower 1995: 57, 68). Pre-Inka archaeological evidence suggests that highland valuables of cloth and chicha, or beer made from maíze, were exchanged for *Spondylus* ornaments (Hornborg 2014: 813).

Items that were not as prestigious were also involved in the exchange system. David Blower (2000) argues that "the value to the trade system may have been due to the value of the opposite exchange items, or the act of piggy-backing other trade goods along with the *Spondylus*" (Blower 1995: 62). Excavations (1984) at the coastal site of Cerro Azul[48] suggest that large shipments of anchovies and sardines were sent inland (Marcus et. al 1999; Mary Glowacki

[46] "The monetary value of *mullu* when used as *chaquira* in the north Andean area differed from region to region. A unit of currency in the Amazon of 1577 consisted of twenty-four bone beads which equaled one day's labour or the right to spend one night with a woman (Salomon 1987b: 66 [Oberem 1971:171]). In the Pasto region a single unit, or *braza,* was worth 'one-sixth the value of a cotton cloak, or one-fourth of the value of a load of red pepper (Salomon 1987b: 66)" (Blower 1995: 57).

[47] Charqui is dried meat (Blower 1995: 68).

[48] One of the tapia buildings excavated at Cerro Azul consisted of 15 rooms, and 7 of these rooms had been used to store dry fish, specifically anchovies and sardines. Drying these small fish most likely involved placing them on beach cobblestones in the hot sun. This was a day's process, and once dried, the fish could then be stored within layers of sand within the rooms of the tapia buildings and later be shipped to agricultural communities by llama caravans (Marcus 1999: 6565). According to Marcus, Cerro Azul practiced economic specialization before the rise of the Inka civilization in A.D. 1470. Tapia compounds housed noble families that oversaw the work of the fishermen. Sardines and anchovies appear to be the only fish that were exported, however at least twenty other species of fish were caught and fed the residents in Cerro Azul. Larger species of fish included grunts, drums, mullet, bonito, flounder, catfish, bennies, sharks, and rays (1999: 6566). The fish in Cerro Azul were given more than an economic value. For example, the dead were often buried with fish and fishing nets (1999: 6567, 6569).

2005: 264 [Marcus et al. 1999]), and fish continued to be a great source of protein throughout the rise of the Incan empire[49] (Quilter and Stocker 1983). In addition to fish, various mollusks and crustaceans were valuable sources of protein in agricultural villages throughout the late prehistoric and early historic ages. Sites in the Norte Chico region suggest that shellfish in "comparable quantities and species diversities to contemporary coastal sites" were transported 23 km inland from 5000 to 4000 years ago (Thomas 2015:162). Algae was also dried along the southern coast and sent to the highlands for consumption (Quilter and Stocker 1983: 553).

Interestingly, the coastal presence of carved dolls made of Amazonian chonta wood suggest that exchange relations between the Upper Amazon and the Ecuadorian and Peruvian coasts may have existed from 2000 BC to 1500 BC (Blower 1995: 96, 97 [Lathrap 1973: 177]). The Chilean archaeological record also reveals the importation of Amazonian wool textile and hallucinogenic drugs (Browman 1981: 413). Browman (1981) argues that amongst the most valuable Amazonian items traded included products that could be used for ritual and healing purposes, such as coca, tobacco, and hallucinogens of the *Ilex, Datura, Banisteriopsis,* and *Anadenanthera* genera (1981: 416).

Tropical lowland bird feathers and fragments of *Spondylus* shells are found at the site of El Paraiso (Blower 1995: 96 [Quilter 1985]). The bird feathers range from a variety of colors including blue, red, green, and turquoise, but the yellow feathers likely from macaws and parrots are used most frequently in Andean featherwork (Pasztory 2008: 2, 5) These exotic feathers were as valuable as gold and precious stones, and featherwork was usually incorporated into

[49] "The Incas, who went to great extremes to maximize the amount of available cultivable land through the construction of terraces and irrigation systems, appear to have depended on fish to bolster their protein intake. Juan de Batanzos, writing circa 1551, states that Inca Yupanqui ordered that his 50,0000 artisans and their families in Cuzco be supplied with maize, charqui (dried meat), and dried fish every four days" (Quilter and Stocker 1983: 551). Although domesticated llamas were the main source of protein in the Cerro la Virgen village, fish contributed about a third of the protein consumed by people (1983: 551).

headdresses (Pasztory 2008: 1, 4). Pasztory writes, "one must imagine these pieces [featherwork adornments] worn with gold jewelry and insignia, whose gold often was inlaid with turquoise and shell in mixed media displays" (2008: 5). In addition to feathers, rainforest birds such as macaws, parrots, paradise tanagers, Muscovy ducks, flamingos, and honeycreepers were transported to the Peruvian coast, and Andean people may have bred the birds in captivity as well (Pasztory 2008: 2).

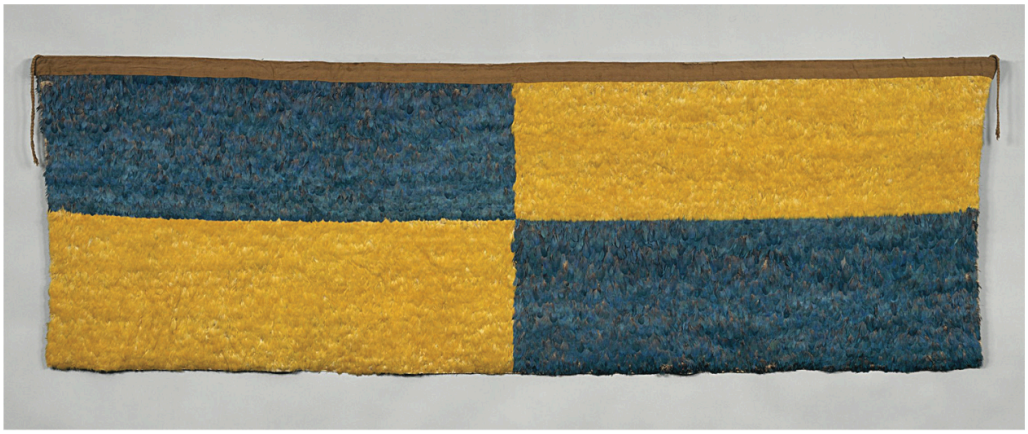


Fig. 1. Wari hanging, cotton camelid fiber and feathers, seventh–eighth century, ht. 66.04 cm, wdth. 219.71 cm. New York, the Metropolitan Museum of Art, the Michael C. Rockefeller Memorial Collection, Bequest of Nelson A. Rockefeller, 1979, 206.468 (© The Metropolitan Museum of Art).

Fig. 2. Wari four-cornered hat, cotton, cane, and feathers, seventh–eighth century, ht. 17.145 cm. New York, Brooklyn Museum, A. Augustus Healy Fund, 41.228 (courtesy Brooklyn Museum).

Fig. 3. Chimu tabard, cotton and feathers, 15th–16th century, lgth. 76.2 cm, wdth. 63.5 cm. New York, the Metropolitan Museum of Art, Fletcher Fund, 1959, 59.135.8 (© The Metropolitan Museum of Art).

Featherwork images from Pasztory 2008: 3,4

The Structural Features of the *Spondylus* Exchange System

"As symbols of opposition—water and earth, wet and dry, coast and sierra—shell, and metal and stone, together, may have represented a synchronized hydraulic and cosmological system. Buried as gifts to the subterranean world of the dead, they may have been used to invoke the power of the ancestors to bring forth water."

-Glowacki and Malpass (2003: 443)

"The trade value of Spondylus became apparent when exchanging it for other materials. This commercial and ideological value associated with Spondylus might be considered oppositional, and as such, is similar to the dyadic structures found in the Andean cosmological system."

-David Blower (1995: 84)

Mary Glowacki

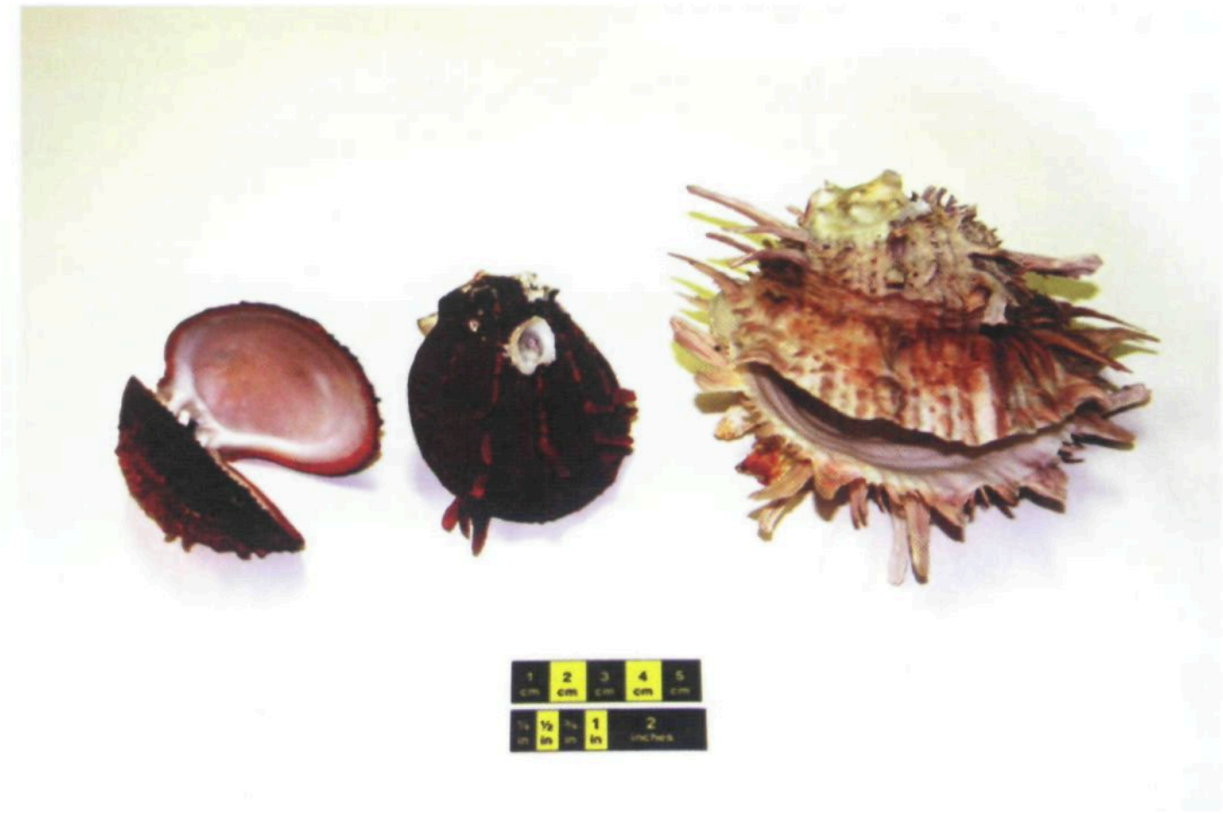
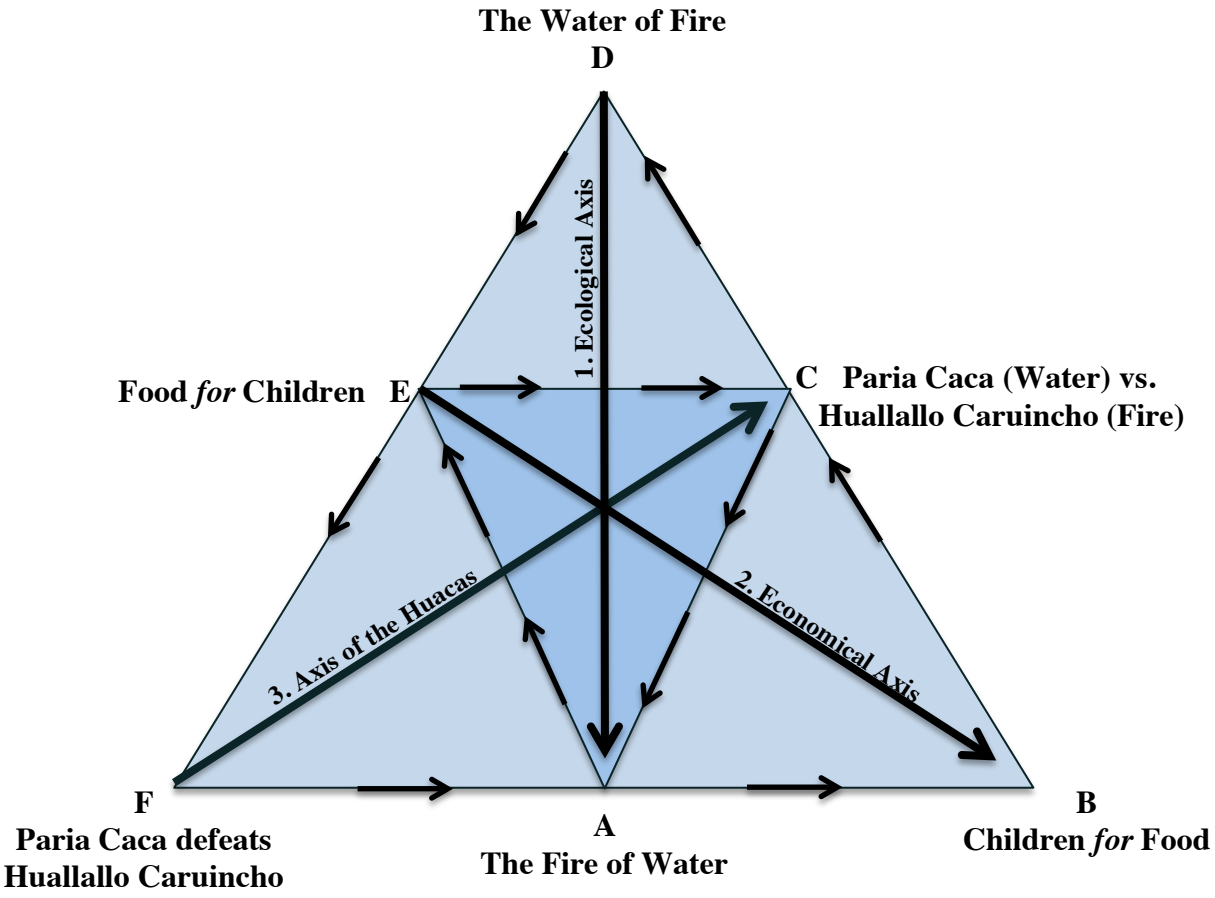


Figure 1. Spondylus *shell. The examples to the left and centre are* Spondylus *princeps; the example to the right is* Spondylus *calcifer. (Photograph taken by the author; use of* Spondylus *calcifer shell, courtesy of James Dunbar.)*

Image from Glowacki 2005: 259

Throughout the remainder of this chapter, I will refer to the obviation diagram to interpret the archaeological evidence on *Spondylus*. The metaphors and the figure-ground reversals of the obviation diagram will reveal how the *Spondylus* exchange system embodies Andean structures of complementary opposition. In the end, I will argue that the *Spondylus* exchange system provides a constant source of water to the Andean highland region and that the myth of Paria Caca parallels this. The obviation diagram is reintroduced below.



The Mythological Metaphors in the *Spondylus* Exchange System

The Coast as "The Fire of Water" and the Andes as "The Water of Fire"

The first axis of the obviation model, or the double-ground reversal from point D to A, is representative of the ecological transformations in the myth of Paria Caca. As described in the previous chapter, the metaphors at points A and D are double-proportional comparisons. The metaphor, "The Fire of Water," indicates the containment of *fire* (i.e. dry, hot, and desert) in the coastal (*water*) region, while the metaphor, "The Water of Fire," indicates the containment of *water* (i.e. lakes, cold, and ice) in the volcanic (*fire*) highland region. The mythic landscape transforms after Paria Caca consumes *Spondylus* (point E) and becomes *red and yellow* rain. The ecological landscape becomes "The Water of Fire" when Paria Caca rains down on the region and creates Mullo Cocha Lake, or Lake of Thorny Oyster.

The metaphorical representations of "The Fire of Water" and "The Water of Fire" may be used to describe the landscapes involved in the *Spondylus* exchange system. In the exchange system, items are physically transported between "The Fire of Water," or the *warm, low-altitude coastal* regions, and the "The Water of Fire," or the *cold, high-altitude Andean* regions. In addition to *Spondylus,* items involved in the exchange system[50] include obsidian, green stone, metals, feathers, cotton, wool fabrics, and various foods (Glowacki 2005: 263). Excavations (Glowacki 2005: 264 [Topic 1990: 161, 164]) at the site of the Chimú Chan Chan complex provide evidence of coastal and highland exchange mediated through camelid caravans (Glowacki 2005: 264).

[50] The food offerings in the myth are items involved in the exchange. *Spondylus*, coca, and ticti are offered to Paria Caca, while llamas and coca are offered to his son, Chuqui Huampo.

Coastal *Spondylus* as "The Fire of Water"

Spondylus was collected from the *warm* Ecuadorian intertidal zones, and the shells were crafted into ornaments at the workshops existing in the Ecuadorian coastal regions from 3500 BC to 1500 BC (Bauer and Lunniss 2010: 82). Worked and unworked forms of *Spondylus* are transported to the Ecuadorian sierra beginning in 2800 BC, and *Spondylus* is eventually exported to the Peruvian coastal region around 1100 BC (Paulsen 1974: 599). The bivalve is transported to the Peruvian Andean region throughout the Early Horizon (Paulsen 1974: 601) and becomes especially significant during the Middle Horizon period from 600 to 1000 AD (Blower 1995: 99 [Cordy-Collins 1990: 408]).

Glowacki describes how some scholars argue that the ritual value of *Spondylus* may be correlated to the bivalve's morphology[51]: "its spine and teeth may have suggested strength and protection (Yonge 1973-4); its light sensitive eyes located on the middle margin of the bivalve may have been indicative of extra sensory perception and futuristic vision (Davidson 1982); and its colour, again, symbolic of femaleness, blood, and sacrifice (Cordy-Collins 2001), and, in combination with green stone (jade in MesoAmerica) symbolic of water and earth (Friedel, Reese-Taylor & Mora-Marín 2002; Glowacki and Malpass 2003: 3-37)" (Glowacki 2000: 260). Because of its *warm*-water niche, *red* color, and morphology, *Spondylus* is "The Fire of Water" and represents the containment of *fire* in *water*.

[51] Joanne Pillsbury's earlier paper (1996) also discusses how morphological and biological aspects of the mollusk may be correlated in part to its value in ritual and economic Andean life (318). Pillsbury describes the rarity of the shell's spiny projections amongst other bivalve shells and notes how "the spiky, aggressive characteristic of the bivalve's morphology seems to have been highlighted by Chimú artists in the visual rendering of the shell" (1996: 318). With regards to the biological characteristics of the animal, Pillsbury discusses its seasonal toxicity (Davidson 1981) and also its peculiar sensory capabilities (Davidson 1982).

Highland Items as "The Water of Fire"

Copper and obsidian originate in the Andean regions, and both were exchanged for *Spondylus* and transported to the coastal valleys. According to Paulsen, the Santa Elena Peninsula of Ecuador received obsidian and copper in exchange for great quantities of *Spondylus* during the Guangala occupation. She explains that this "reciprocal exchange began after Guangala 1, or about A.D. 200" (Paulsen 1974: 602 [Paulsen n.d.]). Several obsidian scrapers and cores have been found at sites throughout the peninsula (Paulsen 1974: 602 [Bushnell 1951: 68]), and the copper items that have been uncovered include a needle at the site of Tigre, a punch at the site of Palmar (Paulsen n.d.), and pins, nose rings, celts, and tweezers (Paulsen 1974: 602).

The exchange of opposing items between the coastal and highland ecological landscapes may be represented metaphorically. If the coastal region and *Spondylus* are both captured in the metaphor "The Fire of Water," then the highland region and highland-originating items may be captured in the metaphor "The Water of Fire," representing the containment of water in fire. For example, obsidian is volcanic glass (water) that forms once the volcanic lava (fire) *cools*. In exchange for *Spondylus,* obsidian, or "The Water of Fire," is transported to the coastal region, which is represented as "The Fire of Water" (point A). As a result of these highland and coastal exchanges, "Fire" and "Water" complement each other, and the relations become more apparent when items originating from the different ecological zones appear together in the archaeological record.

Copper seems to arrive in the Peruvian coastal region towards the end of the Early Horizon period from 900 to 200 BC (Paulsen 1974: 602 [Lanning 1967: 111]). Archaeologists have unearthed *Spondylus* shells buried with copper. Paulsen describes how the two items share burial especially throughout the Early Intermediate period: "For example, a burial at Cerro de

Trinidad in Chancay…contained one whole mature *Spondylus* shell, smoothed and ground, a necklace of 48 *Spondylus* beads, and about 200 more formerly sewed to a headdress, some *Spondylus* necklace spreaders, and a copper-and-gold face mask" (Paulsen 1974: 602 [Willey 1943: 165-166]). In the Middle Horizon, worked and unworked forms of *Spondylus* continue to be buried with gold and copper ornaments (Paulsen 1974 [1968]), and both *Spondylus* and *Strombus* appear with copper, such as the copper bar and *Spondylus* and *Strombus* shells uncovered at Pikillaqta in the lower Cuzco valley (Paulsen 1974: 603).

In the myth, Paria Caca demands the father to give him his offerings of *Spondylus,* coca, and ticti (point B of the obviation diagram) as opposed to giving the offerings—along with the man's son—to Huallallo Caruincho. As Paria Caca demands the father to do this, "Bluish smoke" is released from his mouth. In "The Many Facets of Mullu: More than Just a *Spondylus* Shell," David Blower describes how "the original Quechua term used in *The Huarochirí Manuscript* (Salomon and Urioste 1991: 214) for describing this colored smoke is llacça (llacsa), a term that also refers to smelted or alloyed metal materials such as copper or bronze" (Blower 2000: 214). This information may further intensify the relationship between copper and *Spondylus* as observed in the archaeological record. Blower is particularly interested in mullu[52] color associations. Blower notes how another definition for the term, *llacsa,* is "a green powder or stone, like copper oxide (Arriaga 1968 [1621]: 46), similar in color to turquoise" (2000: 214). Blower argues that there is a relationship between turquoise and other mullu color associations. Interestingly, true turquoise, lapis lazuli, and chrysocolla are minerals often found buried with *Spondylus* in tombs and in other ceremonial deposits (Blower 2000: 214). For example, Max Uhle (1900) uncovered "thousands of dumortierite, turquoise, *Spondylus* beads, and large

[52] Mullu is one of the various spellings of the Quechua term for *Spondylus* that is discussed in greater detail in the following chapter.

worked and unworked pieces of *Spondylus"* after dredging one of the wells[53] at the second-largest Wari complex, known as Viracochapampa (Glowacki and Malpass 2003: 438). *Spondylus* and *Strombus* shells have been found with a couple of sets of turquoise figurines and a copper bar at the Wari site of Pikillacta as well (Glowacki and Malpass 2003: 438 [Trimborn and Vega 1935: 36-89; Valcárcel 1933:4]). I assert that the colors green and turquoise—which may be contrasted to red *Spondylus*—further solidify the metaphorical representation of highland items as "The Water of Fire."

The green smoke coming from Paria Caca's mouth may also allude to the Andean cultural use of coca leaves as a stimulant. (Coca is one of the food offerings that Paria Caca consumes along with *Spondylus*.) Plowman (1981: 216) cites Martius' accounts on the effects of coca powder:

"The Indians use this fine, grey-green powder as a stimulant, with which they fill their mouths from time to time, just like the Turks do with opium or tobacco chewers do with tobacco. It is especially excellent to appease the lack of food or sleep. It increases the secretion of saliva, brings a feeling of warmth and fullness to the mouth and stomach and deadens the sensation of hunger. In the slightest amount, it raises the spirit to gaiety and energy, and thus acts as a dispeller of woe. However, when taken in too great amounts or by nervous individuals, it can result in fatigue and sleeplessness" (Spix and Martius 1831).

Amazonian coca is cultivated in the tropical lowlands and a powder is often made from it, which forms into a "pasty wad" when mixed with saliva as it is placed between the cheek and the gums (Plowman 1981: 211, 216). Plowman (1981) notes that because of its "extreme fineness," coca powder is taken precisely and writes that it "is not uncommon to choke or inhale the powder, which resembles green smoke, when first learning to chew" (1981: 216).

[53] These offerings were likely made at the well to bring water (Glowacki and Malpass 2003: 438).

The Mythological Transformations in the *Spondylus* Exchange System

Andean Offerings to the Huacas

The term "huaca" refers to various things that are sacred, from the powerful beings introduced in the myth to landscape structures such as mountain peaks or springs. *Spondylus,* coca, ticti[54], and llamas are offered in the myth as food to the huacas. These offerings were all involved in the exchange system and are also items that Andean people offer to huacas.

Spondylus shells were offered to sources of water to promote rain and other forms of running water (Blower 2000: 209 [Murra, 1975; Marcos 1986: 197; Davidson 1981: 80]; Glowacki and Malpass 2003: 442 [Cobo 1956: Libro XIII, Capítulo xxii-xvi (1653); Polo 1916: 39 (1554)]; Pillsbury 1996: 318 [De Acosta 1962: 246, 247 [1590]; Paulsen 1974: 603 [Row 1946: 249]). Andean people often thought of their ancestors as "desiccated seeds" and would make offerings of chicha to quench their thirst (Glowacki and Malpass 2003: 436, 437). The chewing and sharing of coca leaves and the rituals related to the practice, such as blowing on small piles of coca leaves while communicating with godly beings, "reaffirm one's identity as Indian peasants, or Runakuna, as well as the ties to one another, to the land, and the deities associated with the community" (Langer 1990: 147). Allen argues that ceremonies involving coca and chicha have a tendency to bring the community members together (Langer 1990: 147, 148 [Allen: 1988]).

Interestingly, the offerings in the myth of Paria Caca originate from different ecological zones: *Spondylus* comes from the coast, the maíze used to make chicha resulting in ticti "by-product" is grown in the Andes, and coca is grown in the Amazonian region. All three items may be classified as marginal, or ecotonal, in their ecological zones. *Spondylus* shells come from the

[54] Ticti is the "by-product" of "thick maize residue" from making Chicha, or corn beer (Salmon and Urioste 1991: 91).

rocky intertidal zones of Ecuadorian waters. Maíze[55] is grown at the lower elevation levels of the Andes, below the montane steppe that ranges from 3000 to 5000 meters above sea level. Finally, the coca species of *Erythroxylum coca*[56] is cultivated normally around 500 and 1500 meters above sea level in the Amazonian lowlands between the highlands and the rainforest (Plowman 1981: 196).

At the end of the myth, Paria Caca declares that all of the inhabitants of the coastal valley must provide coca to his son, Chuqui Huampo, and sacrifice a "childless" llama in Chuqui Huampo's honor (Salomon and Urioste 1991: 173-174). Paria Caca explains to his son that he must eat the llama's ear tips before consuming the rest of the animal. Paria Caca's command to sacrifice a "childless llama" in honor of his son[57], Chuqui Huampo, may be contrasted to Huallallo Caruincho's declaration that each couple should sacrifice one of their two children in his own name. In addition, Chuqui Huampo's consumption of the "childless llama" may be contrasted to Huallallo Caruincho's consumption of children.

Llamas are significant components of the exchange system. Llama caravans transported mollusks including *Spondylus* and *Strombus* (Glowacki 2005: 264 [Shimada 1994: 189]). In addition to the transportation and the exchange of prestige items, consumable goods were involved in the system and include maíze, ají[58], squash, coca leaves, quinoa, and potatoes

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[55] Peruvian people begin growing maíze in the coastal region by the ninth century B.C. (Grobman et al. 1961: 15)

[56] Two species of cultivated coca exist. *Erythroxylum coca* is more common and found in the tropical lowlands. Cocaine is made from *Erythroxylum coca*. *Erythroxylum novogranatense*, is cultivated in the desert inner-valleys between the coastal and highland regions (Plowman 1981: 196). *Erythoxylum novogranatense* is known as the Colombian coca, but the specific variety existing in Perú is *Erythoxylum novogranatense* var. *truxillense*, commonly referred to as "Trujillo coca" since it is grown in the dry, coastal desert city of Trujillo in northern Peru (Plowman 1981: 196).

[57] Perhaps, Paria Caca sympathizes with the crying father in the beginning of the myth, since he, too, has a son. It would be interesting to look at the significance of children in the myth for future research. Interestingly, the excavation of a high status burial at Huaca de los Sacrificios in Aspero uncovered a newborn baby with more than 500 shell beads and other items (Blower 1995: 95 [Feldman 1982: 81]). Feldman (1982: 81) discusses this finding in his dissertation, but the types of shell used to make the beads are unfortunately unidentified (Blower 1995: 95).

[58] Ají refers to chili pepper.

(Browman 1981: 413). Browman (1981) argues that these consumer goods included the majority of items transported via llama caravans throughout the Inca civilization (413).

Andean people have domesticated guinea pigs[59], dogs, and the Muscovy duck in addition to camelids (deFrance 2009: 111). In Ecuador, camelids and guinea pigs are domesticated by the second millennium B.C.; and "remains of these animals are found only infrequently and in association with elites who participated in the trade of colorful thorny oyster shell (*Spondylus),* thus reflecting a complicated process of domesticate adoption rather than the diffusion of an animal for meat or other uses" (deFrance 2009: 112 [Stahl 2003: 479]).

Similarly to Paria Caca's commands, Andean people also sacrifice llamas for ritual purposes. Offerings made in sami rituals[60] of the south-central Andes often include black llamas (Bolin 1998: 53) in addition to pig fetuses (Candler 1997: 86), sugar (Allen 1988: 161), incense (Allen 1988: 161), coca leaves, chicha, and cane alcohol (Jennings 2003: 437). Notably, Jennings writes: "the offerings, and the practices surrounding the giving of these offerings, are broadly similar across a wide range of rituals. For example, offerings given to help speed a buried loved one back to the earth are often nearly the same offerings given to end a drought or to begin a difficult journey to a distant town" (Jennings 2003: 437 [Allen 1988]). During an excavation at the site of Marcahuamachuco in the northern Andean region, a number of sacrificed llamas were located near a niched wall where roughly ten kilograms of *Spondylus* shells and small turquoise, *Spondylus*-shaped figurines had served as an offering (Glowacki and Malpass 2003: 442).

[59] deFrance writes that guinea pigs take on a wide-range of roles and may be eaten or used in ritual and healing purposes (2009: 111).
[60] Sami refers to "the essence of life" that circulates through flows (Jennings 2003: 433).

It is made clear in the myth that Chuqui Huampo will eat the offerings of sacrificed llamas, and Andean people also consume llamas. For example, the people of Chavín exchanged their agricultural products for fresh camelid meat produced at higher elevations and for ch'arki, or freeze-dried camelid meat [61] (deFrance 2009: 112). Finally, in the myth, Paria Caca orders his son to first eat the llama's ear tips before eating the rest of the animal (Salomon and Urioste 1991: 174). Salomon and Urioste (1991) associate the detailed command with señalasqa festivals. During these festivals, herders slit the ears of their llamas as a symbol of ownership (Salomon and Urioste 1991: 178 [Aranguren Paz 1975: 117]).

Spondylus and Fertility in Highland Perú

In the obviation diagram, the ecological axis from points D to A represent the relation between "The Water of Fire" and "The Fire of Water," but the transformation from "The Fire of Water" (point A) to "The Water of Fire" (point D) does not occur in the myth until the huaca Paria Caca consumes *Spondylus* and the other offerings (represented as "food" at point E). After he eats the offerings, Paria Caca and his five "selves" transform into *red and yellow* rain while fighting Huallallo Caruincho five days later. When they fight, one of Paria Caca's five persons knocks down a mountain. This creates Mullo Cocha Lake, and the highland lake represents the containment of water, or "The Water of Fire" at point D. Interestingly, "mullu,[62]" and its various spellings of "mollo" and "mullo," is a Quechua term that suggests *Spondylus* (see chapter 4, page 99). In summary, the huaca must consume the offering of *Spondylus,* coca, and ticti in order to generate the double-proportional comparison.

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[61] Susan D. deFrance references Miller and Burger to describe this relationship as a "vertical interdependence" between agriculturalists of lower levels and camelid herders of the higher elevations (deFrance 2009: 112 [Miller and Burger 1995: 442]).

[62] In the next chapter, I draw heavily from "The Many Facets of Mullu: More than Just a Spondylus Shell" and support Blower's argument (2000) that the term mullu, and its various spellings, embodies more than just the bivalve, itself.

I will now discuss how the mythological transformations are apparent in the *Spondylus* exchange system. If transporting *Spondylus* into the highlands and offering the bivalve as an offering to the huacas or as a sacrifice bring rain and water, then this ensures agricultural fertility to the region. The huacas are the power that generate the transformations and complete the obviation. In addition, I believe that crops, such as potatoes and other tubers that are grown in the *cold*, upper highland regions (3000 to 5000 meters above sea level), may be represented as "The Water of Fire." Highland people depend on agriculture for survival, and like water, agriculture is essential to life. Finally, the transportation of coastal *Spondylus* to the highland region may be viewed as supplying a constant source of water and thus, life.

The Consumption and Sacrifice of *Spondylus*

Spondylus is clearly connected to agricultural fertility[63]. Mester (1989) argues that Inka people viewed the shiny pearl oysters, *Pteria sterna* and *Pinctada mazatlantica,* as a "celestial symbolic complex," and red *Spondylus* as the "structurally opposing terrestrial complex, closely associated with agricultural fertility" (Pillsbury 1996: 318). Pillsbury also notes that both *Spondylus* and copper were given "symbolic qualities indicative of ancestor worship and cosmological aquification" (1996: 442).

In the highland regions, *Spondylus* shells were sacrificed to sources such as springs and rivers to promote rain and running water (Blower 2000: 209 [Murra, 1975; Marcos 1986: 197; Davidson 1981: 80]; Glowacki and Malpass 2003: 442 [Cobo 1956: Libro XIII, Capítulo xxii-xvi (1653); Polo 1916: 39 (1554)]; Pillsbury 1996: 318 [De Acosta 1962: 246, 247 [1590]; Paulsen 1974: 603 [Row 1946: 249]). "Shell dust" was offered to the godly beings, or huacas, to avert

[63]Spondylus associations to agricultural fertility are apparent in the archaeological record, in historical accounts, and according to Paulsen's paper from 1996, also evident in contemporary Andean farming techniques (1996: 318). Murra (1975) also notes the contemporary use of *Spondylus* in ritual purposes to promote agricultural fertility (Paulsen 1996: 318).

drought (Glowacki 2005: 257; Pillsbury 1996: 318 [Murra 1975]), and *Spondylus* was notably used in Andean rain ceremonies during the Late Horizon period (Jennings 2003: 445 [D' Altroy 2002: 225).

In "Water, Huacas, and Ancestor Worship: Traces of a Sacred Wari Landscape," Mary Glowacki and Michael Malpass investigate the reasoning behind Wari expansion during the Middle Horizon period from A.D. 540 to A.D. 900 and argue that a severe drought during the sixth century may have caused the Wari to expand their control over places where "cosmological sources of water" could be retrieved from, such as huacas (2003: 431, 434, 437). Particular types of huacas known as pacarinas were thought to be origin places of certain ancestors or powerful beings, and descendants respected their ancestors by making offerings, such as chicha and *Spondylus,* to these pacarinas (Glowacki and Malpass 2003: 436, 437, 442). Glowacki and Malpass suggest that offerings of *Spondylus* made to huacas may have served to retrieve water from the underworld to bring to the earthly world (2003:442).

Spondylus shells and beads were scattered into the fields to ensure agricultural fertility,[64] and Blower's footnotes describe the shell's potential use as fertilizer: "The highly acidic nature of many Andean fields may have been ameliorated by the addition of significant amounts of ground sea shell added over a long period of time. However, the quantity of shell required may have made such a mitigation unlikely" (Blower 2000: 210).

The consumption of *Spondylus* is important to recognize, and the myth clearly parallels the archaeological evidence of sacrificial *Spondylus* offerings. In the myth, Paria Caca's "five selves" consume the father's offerings, and as they eat the thorny oyster, they make it "crunch with a 'Cap cap' sound" (Salomon and Urioste 1991: 172). Mark Sicoli (personal

[64] Because *Spondylus* was a prestige item used for ritual purposes, it may seem less likely that the shell was used as an agricultural fertilizer. However, it would be interesting to look into the possibility that crushed *Spondylus* along with other seashells were used as fertilizer (Mark Sicoli's comments received on 5/4/2017).

communication 12/20/16) suggested how there might be an interesting correlation between the crushing of shells ritually and the "cap cap sound" made when *Spondylus* is consumed in the myth. Ground *Spondylus* shells, corn flour, and the blood of sacrificed animals such as llamas were mixed with chicha for ritual purposes (Blower 2000: 210 [Acosta 1962 (1590): 248; Murúa 1987 (1590): 422; Carrión Cachot 1955: 38]). Fragments of crushed *Spondylus* were sometimes thrown on the paths of high people while they walked (Blower 200:10 [Cavello Valboa 1951 (1586): 327]), and other accounts suggest that *Spondylus* shells were made into powder and served as a carpet before administrative lords (Glowacki 2005: 258 [Cabello Balboa 1951 (1586): 327; Means 1931: 51-3]).

The consumption of *Spondylus* is what causes Paria Caca to transform into rain and to create Mullo Cocha Lake, or "The Water of Fire." The huacas are the power behind the ecological transformations, but *Spondylus* is the source of that power. In consuming *Spondylus,* the huacas consume the *fire* of water, and this brings water to the highland region, or "The Water of Fire."

The *Spondylus* Exchange as a Constant Flow of Water and Life

Sacrificial offerings of *Spondylus* (or the consumption of *Spondylus* by the huacas) promote rainfall in the Andean region, and this ensures agricultural fertility. Tubers, such as potatoes, grow in the montane steppe, or the highest ecological zone about 3000 to 5000 meters above sea level. Potatoes may be represented as "The Water of Fire" because they grow in the coldest zone of the volcanic, Andean region. In addition, potatoes, like water, are necessary for human life. The huacas consume *Spondylus*, while the Andean people consume potatoes. In the myth, Huallallo Caruincho consumed children as a food offering. Point B of the obviation diagram, "Children for Food," may suggest that children die (or the lack of reproduction) when

there is no water to promote agricultural fertility. However, once the necessary transformations occur to result in "The Water of Fire," there is "Food for Children," or point E of the obviation diagram.

The *Spondylus* exchange system provides a constant flow of water to the Andean region. *Spondylus* is transported into the highland regions and sacrificed as offerings to the huacas. This results in rainfall and promotes agricultural fertility, or "The Water of Fire." Andean people consume potatoes to live, and the consumption of potatoes also gives them the necessary energy to farm and export highland items (i.e. obsidian, potatoes), or "The Water of Fire," into the coastal region. The consumption of highland items, or "The Water of Fire," in the coastal region, or "The Fire of Water," provides the necessary energy to collect and export *Spondylus* to the highland region. This results in a cyclical movement of water involving the celestial and terrestrial realms, supplying a constant flow of water to the highland and coastal regions. Perhaps it's no wonder why Andean people referred to *Spondylus* shells[65] "as daughters of the sea, mothers of all waters" (Pillsbury 1996: 318 [De Acosta 1962 (1590): 246, 247]; Blower 2000: 217 [De Acosta (1962 [1590]: 247).

There is strong evidence of these Andean flows of water similar to that of the *Spondylus* exchange system. Justin Jennings explores Andean concepts of reciprocity, fluidity, and symmetry of life and describes the importance of "circulating currents" in south-central Andean cosmology (2003: 436, 437). These constant flows exist in many aspects of Andean ecology and life. Rivers and streams begin in the highlands, and the running water flows down towards the coastal and Amazonian regions and returns to the Andes as rain (Jennings 2003: 436). Blood is

[65] "A similar version of this theme is presented by Bernabé Cobo (1990 [1653]: Book I, chapter 22, p. 117), although he identified the springs and fountains as the daughters of the sea, not *Spondylus*" (Blower 2000: 217). Cobo (1990) writes, "…These Indians were also accustomed to sacrifice sea shells, especially when they made offerings to the springs. They said that this was a very appropriate sacrifice because the springs are the daughters of the sea, which is the mother of all waters" (Blower 2000: 217 [translation by Roland Hamilton]).

viewed as constantly flowing throughout the body but returns to the earth, or "the place it came from," when the dead are buried, an act thought to replenish the soil (Jennings 2003: 436 [Allen 1988: 226]; Jennings 2003: 436). For example, the Inkas viewed ancestors[66] as "desiccated seeds, which through burial were returned to the earth so that life could be renewed" (Glowacki and Malpass 2003: 436, 437). In addition, the Inkas believed that the celestial gods controlled the cyclic movement of "life energy" between the earth and the sky (Jennings 2003: 437).

In "At the Crossroads of the Earth and the Sky: An Andean Cosmology," Gary Urton (1981 [fieldwork from July 1975 to March 1976 and from August 1976 to July 1977; subsequent visits in July 1979 and August 1980]) offers an understanding of how the Andean people of the town of Misminay structured the terrestrial and celestial space (1981: 54). The Milky Way,[67] or the Mayu, is viewed as a celestial river that extends beyond a metaphorical representation. The Mayu is a "mirror" reflection of and is "equated directly with" the Urubamba River, which flows southeast to northwest (Urton 1981: 56), and the relations between the terrestrial and celestial space result in a "continuous cosmic circulation of water" (1981: 64). Gary Urton provides a detailed account of the relations between the realms of the earth and sky that allow for this constant flow of water, but one example is the Mayu's black constellation of the llama. The llama sips water from the Urubamba River during the rainy season, and this action brings water up from the terrestrial space to the celestial space (Urton 1981: 188).

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[66] "Both 'thirsted,' and just as seeds are watered, the ancestors were offered libations of chicha, or brewed corn beer, for their revitalization which in return, brought prosperity to their communities. Their supernatural journeys through the underground waterways helped to 'aquify' the land, sending them to their ultimate dwelling or resting placed called upaimaracas, which were bodies of water. Because of their desiccated state, the ancestors were evidently drawn to these watery sites where they were reconstituted" (Glowacki and Malpass 2003: 437).

[67] The Quechua term for Milky Way is Mayu, which translates to "river." Professor Frederick Damon has wondered if the transportation of *Spondylus* to Andean regions such as Cuzco was "conceptually entailed in the flows of the Milky Way" (email exchange from 8/1/2016).

Gary Urton's descriptions of the Milky Way and Urubamba River forming a "continuous cosmic circulation of water" (1981: 64) may be likened to Justin Jennings' understandings (2003) of Andean, circulating currents. Jennings describes how "closed rings" form as the "essence of life," known as "sami" or "enqua," moves through these currents and "turns back on itself" (Jennings 2003: 437 [Allen 1982: 179; Allen 1988: 226; Bolin 1998: 232]). He writes:

"In order to receive sami, you must give "sami" to other people, places, and objects" (Jennings 2003: 437 [Allen 1982: 194])…South-central Andean people are deeply concerned about maintaining sami's proper flow through the world because some of the most tangible manifestations of the approval of the gods and the dead area essential to life—wind, water, and sunlight" (Jennings 2003: 437).

Spondylus and Death in Coastal Peruvian Waters

The appearance of *Spondylus* in the Peruvian coastal waters may have served as a warning signal for El Niño (Glowacki 2005: 260 [Sandweiss 1985]; Pillsbury 1996: 319 [Sandweiss 1985]). Glowacki (2005) describes the connections of *Spondylus* to water, cosmology, and femaleness and suggests that the shell may have served as a model of stability:

"Linked to this symbolism are the catastrophic effects of El Niño and its red tides, death, and sacrifice to restore the balance of these climatic events. Communicating with the supernatural surely must have been an integral part of trying to control the disastrous effects of El Niños. *Spondylus* may have symbolised all of these interrelated concepts as well as having functioned as the quintessential conduit to the gods through human spiritual vision in restoring balance between the earthy and supernatural worlds" (Glowacki 2005: 264, 265).

During ENSO events, the trade winds weaken and cold-water upwelling events of the Humboldt Current are interrupted. The effects of El Niño bring red tides[68] (Glowacki 2005: 264, 265) and heavy rainfall along the desert coastal region (McEwan 2006: 11). The warming water temperatures are disastrous to the abundance of marine life that usually exists in the Peruvian coastal waters (McEwan 2006: 21), but these waters become suitable for Ecuadorian *Spondylus* to migrate south into the Peruvian coastal waters.

[68] Algal blooms

The obviation diagram is useful in interpreting the appearance of *Spondylus* in the Peruvian coastal waters. To reiterate, *Spondylus* and the Peruvian, coastal desert region are represented as "The Fire of Water." However, ENSO events bring a series of disruptions to the usual order. *Red* tides and *Spondylus* appear when the Peruvian coastal waters become *warm*, but rain falls heavily along the coastal region. The coastal ecology transforms into "The Water of Fire." Interestingly, ENSO events have the opposing effects on the highland region and cause drought (Sandweiss 2015: 10). The highland ecology transforms into "The Fire of Water." The appearances of *Spondylus* in coastal and highland ecologies have opposing effects: *death* (to the marine biodiversity) in the Peruvian coastal waters but *life* (agricultural fertility) in the Peruvian highlands. Transporting *Spondylus* into the highland regions and offering it to the huacas as sacrifice may have functioned to counteract the effects of *El Niño* and bring back order to the coastal and highland ecologies, which is surely paralleled in the myth.

Chapter 4:
Linguistic Evidence of Andean Duality in the *Spondylus* Exchange System

Introduction

In the previous chapter, I looked at the archaeological record to understand the significance of *Spondylus* as it moved through both space and time. The *Spondylus'* "movement through space" refers to the transportation of the bivalve throughout Ecuadorian and Peruvian coastal and highland sites, and the bivalve's "movement through time" is in reference to Paulsen's expansive phases of the exchange system (1974). The obviation of the myth of Paria Caca resulted in transformations between opposing metaphors that were useful in the interpretation of the archaeological evidence and ultimately revealed the complementary oppositional structures of the *Spondylus* exchange system. The structural analysis suggests that the myth of Paria Caca parallels the *Spondylus* exchange system.

This chapter deals with linguistics. In the first section of this chapter, I will introduce the expansion histories of Aymara- and Quechua-language families. I introduce the language families' geographic expansions for two reasons: 1) to support Alf Hornborg's argument (2014) that the trajectory inland of both Aymara- and Quechua-language families may have been motivated (or partially motivated) by long-distant systems of exchange, therefore paralleling the geographic movement of *Spondylus* from the coastal to highland regions; and 2) to argue that Andean complementary oppositional structures are apparent in both long-distant exchange systems and "shorter-distant" relations of exchange that are presented in Gary Urton's "The Herder-Cultivator Relationship as a Paradigm for Archaeological Origins, Linguistic Dispersals, and the Evolution of Record-Keeping in the Andes" (2012).

In his paper, Urton uses linguistic evidence to support the assertion that "social and political relations within Andean communities tend overwhelmingly to operate on the basis of complementary asymmetric dualism," a dualism that is "grounded in complementary opposition" (Urton 2012: 323, 324). I will summarize how in "The Herder-Cultivator Relationship as a Paradigm for Archaeological Origins, Linguistic Dispersals, and the Evolution of Record-Keeping in the Andes" Urton relates the khipu, or the pre-Columbian Andean record-keeping technology, to Aymara-speaking and Quechua-speaking people as evidence of complementary oppositional organization of Andean culture. Finally, I will use the remainder of the chapter to demonstrate how the language surrounding *mullu*, or the Quechua term for *Spondylus,* reveals Andean complementary oppositions. I will refer to the obviation diagram of the myth of Paria Caca to work through the linguistic evidence.

Aymara and Quechua: Linguistic Convergences and Divergences

"Political projects such as Wari and Tawantinsuyu, like production systems, stylistic homogeneities, and linguistic dispersals, were ultimately only reflections of prior and more profound socioeconomic processes—namely, the integration of extensive networks of long-distance exchange."

-Alf Hornborg (2014: 818)

Aymara-language and Quechua-language families[69] characterize the Andean region although numerous languages and dialects existed and interacted throughout Andean prehistory. The 16th-century Spanish conquest is largely responsible for this characterization, since homogenization of Quechua and the erasure of other indigenous languages facilitated the diffusion of Spanish beliefs (Quilter et al. 2010: 361). In addition, pre-Columbian Andean people had no written language. Upon Spanish arrival, chroniclers recorded the Andean languages and confronted the linguistic mosaic along with inconsistencies in pronunciation, orthography, and meaning (Blower 1995: 17). Admitting that the understanding is an oversimplification, I will now introduce the Aymara- and Quechua-language families. "Correspondences both *within* each of these families independently, and also *between* them, make for a rich mine of information about their prehistories" (Heggarty & Beresford-Jones 2004: 40).

Although some Americanist linguists have mistakenly supported the "'Quechumaran' hypothesis" (Büttner 1983, Greenberg 1987), strong evidence[70] supports that Quechua- and Aymara-language families are unrelated (Heggarty and Beresford-Jones 2004: 42). The histories of these languages involve processes of *divergence within* each family and later processes of

[69] The phrase "language family" is used to emphasize that Aymara and Quechua are not single languages. Aymara and Quechua are each a group of related languages, whose expansions through time have notable "(pre-)historical implications" (Heggarty & Beresford-Jones 2004: 33).

[70] The "Quechumaran hypothesis" suggests that Quechua and Aymara may be traced to a common ancestral language, so the lexical and structural features that are shared between the two languages are viewed to have endured processes of divergence (Heggarty and Beresford-Jones 2004: 42). Heggarty and Jones (2004) note how experts on Andean languages do not support the "Quechumaran hypothesis" and view the similarities between Quechua- and Aymara-language families resulting from processes of convergence (2004: 42).

convergence between the families (Heggarty & Beresford-Jones 2004: 37, 40). Quechua and Aymara originated in different regions along the Peruvian coast. In "Archaeology, Language, and the Andean Past: Principles, Methods, and the New 'State of the Art,'" Heggarty and Beresford-Jones (2004) describe how a language diverges into "daughter languages" as the language expands into new territories. In other words, the language changes as it becomes more distant from its original source, and how the language diverges varies from area to area (Heggarty & Beresford-Jones 2004: 37). The structural and lexical similarities between Aymara and Quechua derive from the convergence between the language families as Quechua- and Aymara-speaking people came into contact and interacted with each other (Heggarty & Beresford-Jones 2004: 42).

Alfredo Torero (2002) hypothesizes that the "ancestral Proto-Aymara[71] form" of the Aymara language family originated in the central to southern coastal desert of Peru, in the Nazca region (Hornborg 2014:816; Urton 2012: 325; Heggarty & Beresford-Jones 2004: 43). During the Early Horizon period (900 to 200 BC), Proto-Aymara expanded east into the highland Ayacucho region and eventually prevailed the Lake Titicaca basin by the Late Intermediate Period (1000 to 2476 AD) (Heggarty& Beresford-Jones 2004: 43; Hornborg 2014: 816 [Heggarty& Beresford-Jones 2010, 2012]). Hornborg references Burger (2013: 330) to suggest that the language family's movement inland during the Early Horizon may be attributed to an increase in camelid pastoralism and long-distance trade through the means of llama caravans (Hornborg 2014: 816).

[71] A language family's "proto-language" refers to "the stage of a language lineage at the point in time just before it first diverged" (Heggarty and Beresford-Jones 2004: 40).

Torero (2002) claims that ancestral "Proto-Quechua" originated along the central Peruvian coastal region[72], directly north of the Aymara region (Urton 2012: 325, Heggarty & Beresford-Jones 2004: 44). In contrast to Torero's assertion (2002), Cerrón-Palomino (2000) argues that the Quechua language family originated in the central highlands further inland from the coast (Heggarty & Beresford-Jones 2004: 44). Regardless of where the language family originated, Torero (2002) describes the Quechua-language expansion and processes of divergence from the Early to the Late Intermediate periods in two phases: Central Quechua (QI) and North-South Quechua (QII) (Heggarty & Beresford-Jones 2004: 44). The Quechua I expansion resulted in the presence of Quechua along the central coastal region and in the north-central Peruvian highlands (Heggarty & Beresford-Jones 2004: 44 [Torero 2002]). Essential to Torero's model (2002) is the understanding that the QI Quechua-speaking region, referred to as "Central Quechua," encompassed Ancash south to Huánuco but not far enough south to have interacted with the Aymara-speaking, Ayacucho region (Heggarty and Beresford-Jones 2004: 44). Heggarty and Beresford-Jones note how Torero (2002: 124) offers no reasoning behind what motivated the QI expansion (2004: 44).

The interactions between Quechua-speaking and Aymara-speaking people occurred during the Quechua II expansion of the Middle Horizon period, when Quechua-speaking people expanded into the Aymara-speaking central Andean regions (Urton 2012: 326). Hornborg correlates the Middle Horizon, Quechua II expansion with "maize-cultivating terrace builders" (2014: 816). The Quechua-speaking peoples' intrusion into the Aymara-speaking region resulted

[72] Torero's claim that proto-Aymara and proto-Quechua originated along the coast is interesting in reference to Jeffrey Quilter and Terry Stocker's work (1983), "Subsistence Economies and the Origins of Andean Complex Societies," suggesting that Peruvian people settled along the coast 5000 years ago. Quilter and Stocker support Michael E. Moseley's maritime hypothesis (1975) and summarize it as: "marine resources provide abundant, localized, and perennially available foods that supported the development of the complex societies of the late Preceramic Period, providing the foundations for later cultural developments" (1983: 546).

in the "complementary distribution reflected in the pervasive altitudinal and ethnic contrast between cultivators and herders[73]" (Hornborg 2014: 816).

Current and Past Aymara Language Distributions
Image from Heggarty and Beresford-Jones 2004: 35

Figure 4. Current and assumed earlier distributions of Aymara, by nature and strength of evidence (figure prepared by David Beresford-Jones and Paul Heggarty).

Quechua Expansions Before and Since the Incas
Image from Heggarty and Beresford-Jones 2004: 35

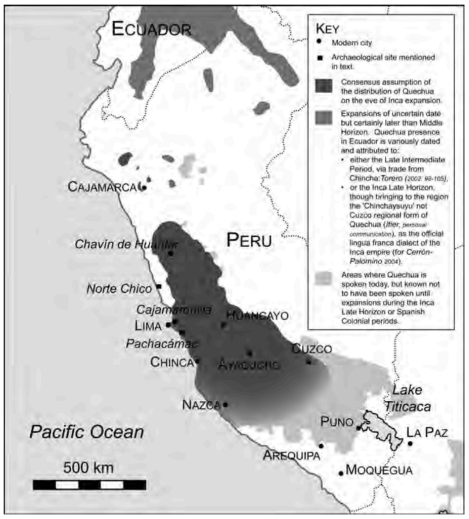

Figure 3. Assumed expansions of Quechua prior to and since the rise of the Incas (figure prepared by David Beresford-Jones and Paul Heggarty).

[73] The herder-cultivator relationship is reintroduced in the chapter's later section, "Gary Urton's Complementary Asymmetric Dualism in the Andean Linguistic Area."

Torero's model (2002) is controversial. For example, Heggarty and Beresford-Jones suggest that Aymara, or the "first expansive language," expanded into the "homeland region of the other (Quechua)" (2004: 47). However, Urton accepts Torero's explanation (2002) of the Quechua II expansion into Aymara-speaking territory but also suggests that the "militaristic Aymara-speaking Wari peoples of the Middle Horizon (c. AD 600-1000) proceeded at cross-currents to the somewhat earlier Quechua expansion through much of the same territory in the central and south-central Andes" (2012: 326). Many models exist to explain the origin and expansion of Quechua- and Aymara-language families, but every model acknowledges that the "intense interactions between the two go far back in their divergence and expansion histories" (Urton 2012: 322).

It is now appropriate to address what motivated the Aymara- and Quechua-language family expansions east into the highland regions. Heggarty and Beresford-Jones (2010, 2012) associate the Aymara- and Quechua-language expansions with the Chavín and Wari political expansions, respectively (Hornborg 2014: 816, 817). However, Hornborg (2014) suggests that the diffusions of Aymara- and Quechua-language families were likely taking place former to the political expansions (817) because the "the successive expansions of Andean languages reflect the establishment of prestigious lingua francas[74] integrating such systems of long-distance exchange, which facilitated, rather than merely resulted from, political strategies to promote collective experiences of reciprocity and ethnic connectedness" (810, 11).

If proto-Aymara and proto-Quechua originated on the coast, there is no doubt that the diffusions of Aymara- and Quechua-language families east follow a geographic patterning

[74] Heggarty and Beresfored-Jones (2014) would argue against the need to develop "prestigious lingua francas" (Hornborg 810, 811), since archaeological evidence dating from the Intermediate Period suggests that "exchanges remained at the level of relatively balanced interactions between neighbours and relative equals" (47).

similar to the long-distance movement of South American coastal items, such as *Spondylus,* into the highland regions. As described earlier, the Aymara-language family expansion into the highland region began in the Early Horizon period that dates from 900 to 200 BC (Hornborg 2014: 16 [Heggarty and Beresford-Jones 2010, 2012]). This expansion may be correlated to the growth of camelid pastoralism and the custom of llama caravans for long-distance systems of exchange (Hornborg 2014: 816 [Heggarty& Beresford-Jones 2010, 2012]).

In the previous chapter, I introduced Allison C. Paulsen's timeline (1974: 597) indicating the expansive phases of *Spondylus* movement. Paulsen's second expansive period from 1100 to 100 BC is "when the trading area expanded south (from Ecuador), and the Ecuadorian shell became entrenched in the culture of the central Andes" (1974: 599), which clearly occurs at the same time as the Aymara-language family expansion into the interior regions. Recalling from the archaeological evidence of the previous chapter, *Spondylus* and *Strombus* are depicted on Early Horizon pottery (Paulsen 1974: 603), and images of both mollusks associated with a divinity dating from 800 BC have been uncovered at the central Andean, ceremonial center of Chavín de Huantar (Glowacki 2005: 258; Paulsen 1974: 601).

Alf Hornborg (2014) correlates the Aymara and Quechua linguistic expansions with the long-distant movement of prestige items, such as *Spondylus* (817). "Through strategic deployment of prestigious gifts, political leaders in Andean societies have converted long-distance imports of valuables into labor production, military conquest, and ceremonial architecture, and landesque capital such as terraces and irrigation canals. Products such as cloth, *Spondylus* shell, and maize beer have further aggrandized their potential to accumulate the productive capacity of labor, land, and capital" (2014: 817). In addition, he explains that "controlling the *Spondylus* trade (cf. Pillsbury 1996)" may have been the incentive behind the

"shifting political dynamics of the north coast (e.g., the Chimú expansion)" (Hornborg 2014: 817).

As I have discussed in the previous chapters, Andean and eastern lowland items were exchanged for coastal items and transported west. With this in mind, I will also briefly mention the Pukina-language family of the Pucara, Chiripa, and Tiwanaku people (Hornborg 2014: 816). Similarly to how Alf Hornborg argues against correlating the Aymara- and Quechua-language family expansions to the Chavín and Wari political expansions (2014: 816, 817), Hornborg argues that the Pukina linguistic expansion should not be associated to the Tiwanaku political expansion (2014: 817). Instead, Hornborg argues that the Pukina linguistic expansion out from its origin in the eastern Andean slopes of the Titicaca Basin—in the opposing direction of Aymara- and Quechua-language family dispersals—were likely related to the creation of networks involved in long-distant systems of exchange (2014:17). The "political projects" were later "attempts to control such trans-Andean flows of valuables between the tropical eastern slopes and the arid coast" (2014: 818). Finally, the procurement of prestige items may explain why every principal Andean center (Chavín de Huantar, Wari, Wankau, Cuzco) was positioned near exchange routes that moved towards the eastern lowlands (Hornborg 2014: 817).

Gary Urton's Complementary Asymmetric Dualism: Andean Linguistic Area

"What I am driving at here is the following. While the descriptive and substantive details that obtain(ed) in different times and places may vary, social and political relations within Andean communities tend overwhelmingly to operate on the basis of complementary asymmetric dualism. This mode of intergroup relations has been argued archaeologically (Netherly and Dillehay 1983; Burger and Salazar-Burger 1993; Urton 1993; Moore 1995; Parsons et al. 1997), and is explicitly attested to ethnohistorically (Zuidema 1964, 1989; Netherly 1990, 1993; Salomon 1995), ethnographically (Palomino 1970; Urton 1990, 1993; Abercrombie 1998), as well as linguistically (Cerrón-Palomino 2008: 225ff.).

-Gary Urton (2012: 323)

In the chapter titled "Linguistic Areas," in her book, *Language Contact,* Sarah G. Thomason defines a linguistic area "as a geographical region containing a group of three or more languages that share some structural features as a result of contact rather than as a result of accidence or inheritance from a common ancestor" (2001: 99). Using Thomason's definition, the highland region comprising Aymara-, Quechua-, and Pukina-speaking people constitute a linguistic area.

In the previous section, I discussed how the Aymara and Quechua linguistic expansions from the coast to the interior regions may have been motivated by networks of long-distant systems of exchange. According to Paul Heggarty and David G. Beresford-Jones (2004:42), the structural and lexical similarities between Aymara and Quechua arose not from relatedness but from the interactions of people that originated from different areas and that spoke different languages. Heggarty and Beresford-Jones (2004) argue that the exchange relations between the coastal and highland regions are not enough to explain the extensive linguistic modifications made to Quechua and Aymara upon contact[75]. To explain what drove the "wholesale re-

[75] Heggarty and Beresford-Jones' model addresses the linguistic changes upon contact, and I would argue that their model still offers the possibility that Aymara-language family divergences east into the Andes may have been

modelling" of Quechua and Aymara, Heggarty and Beresford-Jones propose that Aymara,[76] or the "first expansive language," was likely "associated with cultural prestige and a degree of socio-economic utility and demographic growth (the Chavín Early Horizon?)" and expanded into the originally Quechua-speaking region, impacting the Quechua language immensely (2004: 47). Gary Urton proposes a different model (2012) and examines how relationships of complementarity may explain the "exceptionally high degree of convergence" of Aymara and Quechua languages (Heggarty and Beresford-Jones 2004: 52 [Urton 2012]) and how these relationships may have been the primary driving force behind the interactions between the Aymara-speaking and Quechua-speaking people (Urton 2012: 322; Heggarty and Beresford-Jones 2004: 52 [Urton 2012]).

I will introduce Urton's "The Herder-Cultivator Relationship as a Paradigm for Archaeological Origins, Linguistic Dispersals, and the Evolution of Record-Keeping in the Andes." Urton argues, "social and political relations within Andean communities tend to overwhelmingly operate on the basis of complementary asymmetric dualism" (Urton 2012: 323, 324) and explains what he refers to by "complementary asymmetric dualism":

"I am referring to the relationships between a pair of social identities—individuals or groups—such as two siblings, *ayllus (kinship groups),* moieties, or other entities in which one member of the pair is considered by both to be superior to, and to have precedence over, the other. The dominance of one member of such a pair over the other may be worked out and expressed in a variety of different contexts—for example, upper terrain vs. lower terrain, the head of an irrigational canal system vs. lower down along the canal, priority vs. subordination in a ritual context, etc." (Urton 2012: 323).

Academics (Urton 2012: 328 [Parsons et al. 1997; Zuidema 1962]) have argued that the interactions between the people associated with Quechua- and Aymara-language families

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related to networks of exchange, especially if the Aymara speakers were "associated with prestige," etc. (Heggarty-Beresford-Jones 2014: 47).

[76] Heggarty and Beresford-Jones' model (2004) opposes Torero's hypothesis (2002) of the Quechua II expansion of the Middle Horizon period, which argues that Quechua expanded into Aymara-speaking territory.

developed an economy based on highland-valley complementarity: the Aymara-speaking pastoralists and the Quechua-speaking cultivators (Urton 2012: 326). Urton's model is useful. I would argue that Aymara- and Quechua-language distributions are possibly correlated to: 1) larger, long-distant exchange systems (Hornborg 2014) to explain the linguistic divergences from the coastal regions towards the highland, interior regions, and 2) shorter-distant relations of asymmetric complementary (Urton 2012) to elucidate why the geographic distributions of Aymara- and Quechua-language families extensively overlap (Heggarty ad Beresford Jones 2004: 52). Andean complementary oppositional structures are apparent in both long-distant systems and short-distant relations of exchange.

Linguistic patterning reveals "active aspects of dynamic, area-level human adaptions" to their environment (Jane H. Hill 1978: 5). Parsons et al.'s studies (1997) on Aymara-speaking pastoralist and Quechua-speaking cultivator settlement patterning in the central highland region of Tarama-Chinchaycocha (Urton 2012: 327, 330) suggest that the Aymara-speaking people and Quechua-speaking people within the central Andes settled in two separate ecological landscapes within this region and adapted accordingly to their landscape (Urton 2012: 327, 330).

The Aymara-speaking herders inhabited the "high, puna grasslands," while the Quechua-speakers cultivated "tubers, cereals, legumes, and cucurbits in the intermontane *quichwa valleys*" (Urton 2012: 327). The different economic activities complemented each other since "access to both of these economic zones was essential for highland subsistence" (2012: 327). These complementary oppositional structures were also present in their ritual practices. The Aymara-speaking, highland pastoralists associated themselves with "male huacas incarnated in snowcaps," while the Quechua-speaking, farmers associated themselves with "valley-based female fertility huacas" (Salomon & Grosboll 2011: 40).

Aymara-speaking and Quechua-speaking people organized themselves through a system of complementary asymmetric dualism. Urton adopts this model as an explanation for "a pattern of intimate interactions between groups having different economies and cultural profiles, and, in many cases, speaking different languages, that were in a complementary manner (probably terms in economic specialization, as herders/cultivators) and in which one member was considered superior to, or dominant over, the other" (2012: 330). Interestingly, Urton works to associate these relationships to two different khipus, or Andean chord technologies (2012: 328).

Gary Urton and Khipus

Urton relates the two Andean chord technologies, the "Wari" and "Inka" khipus, to the Aymara and Quechua languages spoken by people that are actively engaged in opposing economic activities: the herders and the cultivators. In summary, the economic asymmetric dualism is revealed through the language families associated with either the "Wari" or "Inka" khipus. To understand these associations, I will first summarize the Inkan language history. I will then introduce the two types of record keeping and explain how Urton relates the khipus to Pukina, Quechua, and Aymara languages.

Cerrón-Palomino argues that the Inka people originally spoke Pukina when they first arrived in the Cusco region. As supporting evidence, he presents Inkan "critical terms and concepts" that are of Pukina-origin: *"inti* ('sun'), *capac* ('great rich'), and *roca* (the name of the second Inka king)" (Urton 2012: 333). When the Inkas inhabited the Aymara-speaking Cusco Valley, Aymara became their dominant language, while Pukina developed into a "secret language" (Urton 2012: 333). The Inkas encountered Quechua-speaking populations as they expanded northwest from the Cusco region and adopted a version of Quechua spoken in Chínchay as the "lengua general" beginning in the Late Intermediate Period (c. AD 1000-1450),

"perhaps as a strategic concession to the wide diffusion of that language throughout the central Andes at the time of Inka expansion" (Urton 2012: 333).

There are two pre-Columbian, Andean forms of record-keeping that both involve the knotting of cords made from cotton and camelid fibers: the Wari khipus and the Inka khipus (Urton 2012: 335). There are stylistic differences between the Wari and Inka khipus, and "there is no evidence in terms of the structures of Wari khipus that points to the existence of hierarchical arrangements of knots, which are a feature of the pattern of knotting on Inka khipus" (2012: 335). The Inka khipus reveal a system for decimal numeration, while the Wari khipus do not (2012: 336).

Urton asks: "To what degree do the principle languages spoken by peoples who most likely were the inventors, produces, and users of these devices—i.e. Quechua, Aymara, and Puquina—accommodate (or not) the characteristics of the cord technologies themselves?" (2012: 336). Pukina and Quechua languages have "independent lexemes" for the numbers one through ten, and Urton concludes that the Quechua and Pukina "decimal-based" numerations are congruent with "the decimal numeration principle of Inka khipus" (2012: 337). In contrast, the Aymara language does not have a "decimal-based system of numeration." "Independent lexemes" only exist from the numbers one through five, and the numbers seven, eight, and nine are compound terms (2012: 337). Although Urton does not directly link the absence of an Aymara decimal-based system of numeration to the Wari non-decimal khipus, he would argue that Aymara-speaking people developed Wari khipus over Aymara- or Pukina-speaking people (2012: 338).

Ultimately, Urton links the language families to the Wari and Inka khipus "within the overall context of the succession of archaeological cultures in the central Andes" (2012: 338). He concludes that Aymara-speaking Wari people were the first to invent khipus for administrative purposes. The "Wari/Aymara (non-decimal) cord technology was then introduced to the Pukina-speaking Inca or Inca-ancestors as they expanded into the Cusco basin throughout the Late Intermediate Period. Urton proposes that the Pukina-speaking Incas adopted the Wari khipus but modified the technology to express decimal numeration (2012: 338). Finally, the Inkas interacted with Quechua-speaking people as they diffused northeast towards Chinchaysuyu from the Cusco region. The decimal-based "Inka khipus" became the predominant record-keeping technology since Quechua-speaking people, too, were "bearers of decimal numeration" (2012: 338).

Table 13.1. Number names in three Andean languages.

Number	Puquina	(Cuzco) Quechua	(Altiplano) Aymara
1	HUKSTU	HOQ	MAYA
2	SO	ISKAY	PAYA
3	CAPPA	KINSA	KIMSA
4	SPER	TAWA	PUSI
5	TACPA	PISQA	PISQA
6	CHICHU	SOQTA	SUXTA
7	STU	QANCHIS	PAQALLQU
8	KINAS	PUSAQ	KIMSAQALLQU
9	CHIQA	ISQON	LLATUNKA
10	SCATA	CHUNKA	TUNKA

Note: Spellings given are respectively as per Torero (2002: 448–56), Cusihuamán (1976), and Briggs (1993).

Urton 2012: 337

Urton relates the pre-Columbian Andean record-keeping technology to Aymara-speaking and Quechua-speaking people. I will now work to demonstrate the complementary oppositional structures that are also present in the long-distant exchange system through an examination of the language surrounding *mullu*, or the Quechua term for *Spondylus*.

Complementary Oppositions and *Mullu*

"…I argue that mullu is a complex concept, not simply a Quechua word for Spondylus, and that use of the two terms as completely synonymous is confusing and inappropriate. The term mullu encompasses a semantic field that includes physical and ideological attributes. Mullu appears in different geographical regions, ritual contexts, and in conjunction with other words."

-David Blower (2000:209)

In "The Many Facets of Mullu: More than Just a Spondylus Shell," Blower (2000) examines Spanish chronicles and indigenous accounts to understand the term *mullu* and its relationship to *Spondylus*. According to Matthias Urban, the term *mullu* adheres to the "lexico-semantic regularities," so it may be possible to trace *mullu* to proto-Quechua (first draft: 26). Both Quechua-speaking and Aymara-speaking people have used the term *mullu* to signify *Spondylus*. However, Blower concludes that the term *mullu* signifies much more than the mollusk, itself. *Mullu* embodies "physical and ideological attributes" and emerges in "different geographic regions, various ritual contexts, and in conjunction with other words" (Blower 2000: 209).

The Spanish accounts on indigenous languages are productions of what the chroniclers heard as opposed to the definite sounds of the Indigenous words (Blower 2000: 211 [Mannheim 1991:127]). Quechua is also particularly difficult to translate since slight pronunciation differences may change word meanings (Blower 2000: 211). As I have discussed earlier, Quechua constitutes a language family. The historical processes of divergence gave rise to sister languages that vary regionally, and the processes of convergence placed Quechua sister languages in contact with foreign languages (Heggarty & Beresford-Jones 2004: 37; Blower 2000: 211). Complications with regards to orthography, phonetics, and semantics in addition to language histories and Spanish biases are factors that help explain why the various spellings of

the term *mullu* exist in Quechua to Spanish dictionaries, in mythological accounts, and as toponyms throughout Peru and Ecuador. These spellings[77] include the following: *mullu, mollo,* and *mullo*. Because "the 'u' and 'o' are variants of the same phoneme," we may be confident that these different spellings indicate the "same object or concept" (Blower 2000: 211; personal communication with Quechua teacher Inés Yanac [12/31/16]; personal communication with Quechua sociolinguist Dr. Félix Julca [1/4/17]). In the myth of Paria Caca, the term is spelled *mullo*, such as in Mullo Cocha Lake (see chapter 3, page 75).

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[77] *Mullu* has also been spelled *muyu* to refer to Spondylus, but Blower dismisses *muyu* as an "erroneous spelling" (2000: 211). He explains that this spelling refers to roundness or circular in quality (Blower 2000: 211 [Gonçalez Holguín 1952 (1608): 254; Lastra 1968: 91; Parker 1969: 164]). As another example, Gonçalez Holguín's dictionary (1952 [1608]) includes *muyuycuni muyuricuni,* which is defined as "andar al rededor" (1952[1608]: 258), or "to walk around."

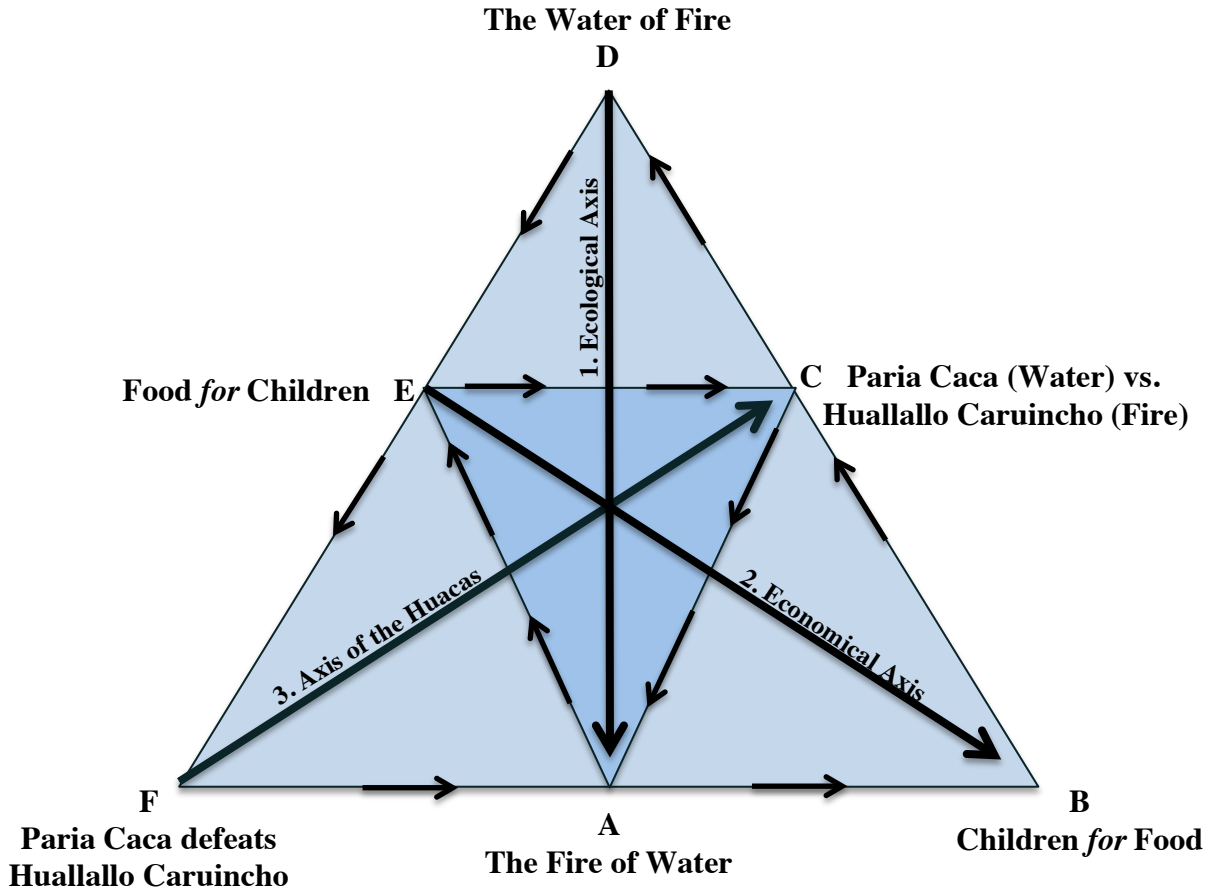
The letters 'u' and 'o' resemble the same phoneme in the Quechua language (Blower 2000: 211; personal communication with Quechua teacher Inés Yanac [12/31/16]; personal communication with Quechua sociolinguist Dr. Félix Julca [1/4/17]), so spellings of *moyo* representing the same meaning also exist. For example, although the term *muyu* is absent from Domingo de Santos Tomás' dictionary (1560), the term *moyo* is present in this dictionary and is defined as circulo, linea redonda" (1560: 294), or "circular, round line." In addition, *moyontin is* defined as "en rededor," or "around" (1560: 294), and "moyosca" is defined as "cosa redonda" (1560: 294), or "round thing." (The reverse is true in Diego Gonçalez Holguín's dictionary [1608], in which *moyo* does not exist although *muyu* [1608: 254] does.) Parker and Chávez define "muyu" as "girar; dar vueltas" (1976: 108)

Although Blower (2000: 211) would disagree, there may be value in looking at the *muyu* spelling. Dr. Félix Julca (personal communication in Carhuaz, Peru [1/4/2017]) explained that the Spaniards would have pronounced the 'll' in *mullo* and 'y' in *muyu* in the same manner. In addition, the Quechua teacher Inés Yunac associated the term *mullu* to "colores," or "colors," as she pointed to a cloth of various colors, while she defined the term *muyu* as "un animalito que se encuentra en la costa," or a small animal found in the coast (personal communication in Carhuaz, Peru [12/31/16]).

In Gonçalez Holguín's dictionary (1952 [1608]), the term *muyu* is found in conjunction with terms signifying "of the ground," perhaps a subtle reminder of the correlations made between *mullu* and agricultural fertility. Gonçalez Holguín defines *Ticci muyu pacha* as "toda la redondez de la tierra" (1608: 223), or "all of the roundness in the earth," and he defines *Ticci muyup chaupi vcun* as "el centro y dentro de la tierra (1608: 228)," or "the center and inside of the earth."

In "Inka Cosmology in Moray," John C. Earls and Gabriela Cervantes discuss the infrastructure in place for agricultural terracing at the site of Moray, found on the high Mara plateau south of the Urubamba River. Moray's "singular geometric formation of its agricultural terracing" includes four "bowl-shaped cavities," and numerous terraces and man-made canals encircle each cavity (2015: 123,125). All four cavities are referred to as *Muyu* in Quechua. If the definition of *muyu* is "circular," the name *Muyu* may simply refer to the concentric, irrigated terraces that characterize the cavities. Earls and Cervantes claim that these Inka irrigated terraces "had dual, interlocking primary purposes: (a) to enhance agricultural productivity at local scales and (b) to facilitate effective agricultural coordination at large scales" and suggest "that the site might have worked as a transducer of microclimate structure (agricultural terraces) and astronomical observations into macroclimatic conditions (high-mountain ecology) and a calendar" (2015: 121). Perhaps the term *muyu* and its references to circularity and the earth may be suggestive of the circular flows between the terrestrial and celestial realms that exist in the *Spondylus* (*mullu)* exchange system.

I will now describe the language surrounding *mullu* and argue that many of the phrases and definitions of the term and its various spellings are suggestive of complementary oppositional thinking. Recalling from chapter two, obviation deals with symbols interacting with other symbols and is a model of semiotic transformation (Wager 1978: 21, 31). Metaphors describe the reflexive relations between symbols, and this allows the anthropologist to enter the cultural domain (1978: 30). I will refer to the metaphors and the relations between them as presented in the obviation diagram of the myth of Paria Caca and discuss many of the archaeological findings from chapter three to work through the linguistic material. The obviation diagram is below.



Mullu as *Spondylus* Shells

David Blower's findings in early Spanish dictionaries demonstrate how *mullu*, and its various spellings, may be defined as the shell of *Spondylus* or the beads made from *Spondylus* shells. Gonçalez Holguín (1608: 173) defines *mullu* as "concha colorada de la mar chaquira, o coral de la tierra," which Blower translates to "red shell of the sea, or coral of the land" (Blower 2000: 211). "Chaquira" is a word found in many definitions, and this term usually refers to beads most likely made from *Spondylus* shells. Gonçalez Holguín defines *Ninapuco mullu* as "muy fino coral (1608: 179)," which translates to "very fine coral." Holguín translates *castilla mullu pucapuca* to the Spanish term "coral" (1608: 290), and he defines *mullu huallcca* as "chaquira en sartas" (1608: 296), or "beads on a string." The Quechua term *huallcca* is defined as "collar, o cadena, o sartal de quenta, y todo lo que se pone al cuello hombres y mugeres, o bestias, o animales etcétera" (1608: 131). This definition translates to a "necklace" that could be worn by men (hombres), women (mugeres), beasts (bestias), and animals (animals), and perhaps *mullu* in conjunction with *huallcca* may suggest that both men and women wore these beaded necklaces.

Santo Thomas (1951 [1560]) defines *mollo* as "coral or pearls" (Blower 2000: 211). According to Blower, "the reference to pearls confirms an ambiguity of definition that could include alternative sea shells such as the *Pinctada mazatlantica* or *Pteria sterna*" (2000: 211). "Mother of pearl" was an item involved in the long-distant exchange system (Blower 1995: 84), and Mester (1989) argues that the Inka people may have viewed shiny pearl oysters, *Pteria sterna* and *Pinctada mazatlantica,* and *Spondylus* as complementary oppositional items that connected the celestial and terrestrial realms (Pillsbury 1996: 318).

In Ecuador, the Quechua term *mullu* has also been used to refer to jewelry. Blower discusses how women in Otovalo wear *kori mullu,* or "necklaces of gold-plated glass beads," and

how girls and women in Majipamba "wrap long strings of tiny seed beads of various colors around their wrists," that they call *maki watana* or *mullu* (Blower 2000: 212 [Monica Barnes, personal communication, 1998). In Torero's studies on the diffusion of Quechua language to Ecuador, *mullu* is referred to as "conchas de *Spondylus"* (1984: 374), or "*Spondylus* shells."

Aymara-speaking people also use the term *mullu*. Adolph Bandelier (1969 [1910]) describes an 1895 Aymara ceremony performed on Titicaca Island that involved "ritual items[78] as coca, uira-koa leaves, llama tallow, fetuses of a llama and a pig, a piece of the skin of a titi or wildcat, grape brandy, wine, and especially, *mullu"* (Blower 2000: 221 [1969 (1910)]). In this ritual context, Bandelier (1969 [1910]) describes *mullu* as "a fetish of white alabaster representing a bull or cow, similar to those found in New Mexico[79], but also known on the Bolivian Altiplano" (Blower 2000: 221). Bolivian Aymara-speaking people currently use the term *mullu* to refer to alabaster plaques that promote agricultural fertility or wealth (Blower 2000: 21 [van de Berg 1985: 131]), and Blower suggests that archaeological findings such as llama figurines might indicate why Aymara-speaking people call these plaques *mullu* (Blower 2000: 221). As further evidence of this claim, Weston La Barre emphasizes the significance of amulets to Aymara medicine and magic, and he describes these amulets as "calcareous stone for which they charge exorbitant prices and which are extensively used in the Andean region" (1951: 176).

Nevertheless, Aymara-speaking people have also used *mullu* to refer to the beads that are most likely made from *Spondylus* shell. In *Vocabulario dela [sic] Lengua Aymra, Iuli,* the term *mullu* is defined as "piedra, o hueso Colorado como coral con que hazen gargantillas" (Bertonio

[78] Bandelier's list of ritual items includes coca and llama, which are offerings made in the myth of Paria Caca.

[79] The comparison to New Mexico is interesting since archaeological evidence suggests that the exchange system eventually involves Mesoamerica, especially from AD 1000 to the 16th century (Blower 1995: 74).

1879: 222; Weston La Barre 1951: 176), which translates to "red coral-like rock or bone which they use to make necklaces." Weston La Barre's accounts also suggest Aymara people wore *Spondylus*-beaded necklaces: "In the north of the Department of La Paz, on the day of his saint, a young Aymara puts on a bead necklace with a *qolqemunaci* (a little hand holding a Spanish *real),* and if a male a *warmimunači* (that he may obtain a wife), or if female a *cacamunaci* (that she may obtain a husband)…"

Mullu and its Morphological Relations

Evidently, the term *mullu* may refer to objects such as the *Spondylus* shell, itself, or the beads and necklaces made from *Spondylus*. However, *mullu* embodies so much more than a physical quality. Parker and Chavéz' definition (1976) of *mullu*[80] recognizes the term's range of meanings, from describing abnormalities to borrowing. In the "Many Facets of Mullu: More than Just *Spondylus* shell," Blower (2000) discusses *mullu's* associations to color, gods, water, and females that are suggestive of complementary oppositional thinking. "By understanding the full range of *mullu*'s meanings," Blower writes, "an understanding of its place within socio-cultural belief systems and rituals of the Andes, and the trade networks that handled its distribution can be developed" (2000: 211).

In the previous chapter, I compared *Spondylus* to "The Fire of Water" because of its *red* color, its morphology, its *warm* niche, and its appearance with red tides in the Peruvian coastal waters during ENSO events. Definitions of the term *mullu* note the shell's red color, such as "concha marina de color rojo que se ofrendaba a los dioses en el Inkario" (Jesús 2001: 160), or "sea shell of red color that was offered to the gods during the Inka Empire." David Blower

[80] "mullu, -A. : El género grammatical del cast. se mantiene espurádicamente en los préstamos, además, se usa con cierta frequencia en raíces nativas, sobre todo en adjeticos referentes a estados de anormalidad fisica. Esta mismo fenómeno se observa en el quechua sureño" (Parker, Gary J. and Amancio Chávez 1976: 106, 107).

suggests that female associations to the word *mullu* may have to do with the shell's morphology (2000: 218). Gonçalez Holguín defines *mulluysimi pucaysimi mulluy virpa* as "el de los labios colorados hermosos" (1608: 173), or "person with the beautiful red lips" (Blower 2000: 219); while Lara's definition of *mullusimi,* "mujer de labios muy rojos y hermosos" (2001: 160) details the red lips of a woman.

In the archaeological record, *Spondylus* appears to have represented a "'mythical' vulva that was protected by its intertwined spines" (Blower 2000: 219 [Marcos 1986: 198]), and the *vagina dentata* was a significant characteristic of "the female supernatural being" (Blower 2000: 218 [Lyon 1978]). The interior red margins of the *Spondylus* shell may suggest why *mullu* has been associated with red lips and the female genitalia (Blower 2000: 219). The shell's exterior red color may have been taken to resemble blood and the cycles of menstruation. Evidently, the *Mullu* associations to females strengthen the relationship of *Spondylus* and agricultural fertility in the highland region (Blower 2000: 219). *Spondylus* shells were the "daughters of the sea, mothers of all waters" (Pillsbury 1996: 318 [De Acosta (1962 [1590]: 246, 247]; Blower 2000: 217 [De Acosta (1962 [1590]: 247).

Finally, Blower mentions the dualistic features morphologically present and intrinsically given to the *Spondylus* shell. The shell's right valve may be separated from left valve, and each valve has been associated with either of the two complementing male or female genders (Blower 2000: 219 [Paulsen 1974; Cordy-Collins 1978; Burger and Salazar-Burger 1993]). For example, *Spondylus* "male" and "female" valves are bought in pairs in the municipal market at Chiclayo (Blower 2000: 219).

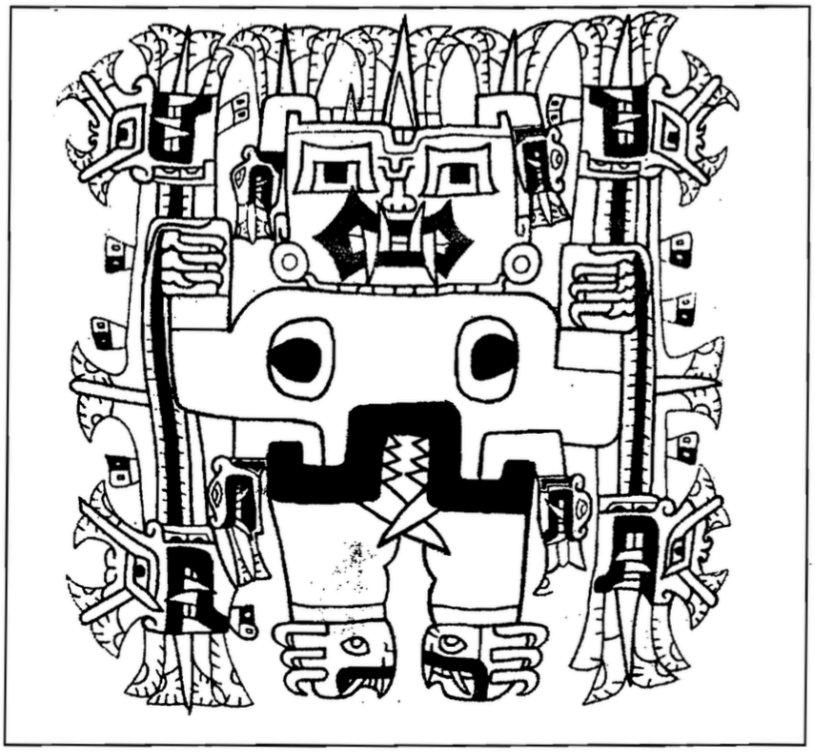


Figure 4. Staff Goddess from a Carhua-Chavín textile illustrating the *vagina dentata* and secondary female sex characteristcs (from Roe 1974: figure 14).

Image from Blower 2000: 208

Mullu and Highland Relations

I have discussed how *Spondylus* was transported[81] to the highland regions in exchange for highland-originating items. The pairing of *mullu* with items such as copper, turquoise, and bronze is indicative of oppositional structures. I have suggested that the coastal region and *Spondylus* represent "The Fire of Water," while the highland region and highland-originating items represent "The Water of Fire" (see chapter 3, pages 67-71).

Archaeological evidence indicates that the Santa Elena Peninsula of Ecuador received obsidian and copper in exchange for great quantities of *Spondylus* during the Guangala

[81] The phrase *churu mullo chasqui* likely refers to the messenger (chasqui) that transported *Spondylus* to the highland regions. The term *churu* in conjunction with *mullu* suggests that the *chasqui*, or messenger, transported *Strombus* along with *Spondylus* (Blower 1995: 54)

occupation (Paulsen 1974: 602 [Paulsen n.d.]), and *Spondylus* and copper are often found buried together throughout the Early Intermediate period (Paulsen 1974: 602). Copper and *Spondylus* have been associated with each other at sites such as Túcume, where copper-silver alloy figures had been placed inside *Spondylus* shells (Blower 2000: 215). Furthermore, the Incas referred to *llacsa camayoc*, as "a person who worked turquoise and stones from the sea" (Blower 2000: 215), and *mullu* found with turquoise is apparent throughout the archaeological record. For example, the Wari often paired luxury items, and discoveries of *Spondylus* with either turquoise, green items, or obsidian is common and especially characteristic at the site of Quispisisa (Lau 2012: 30).

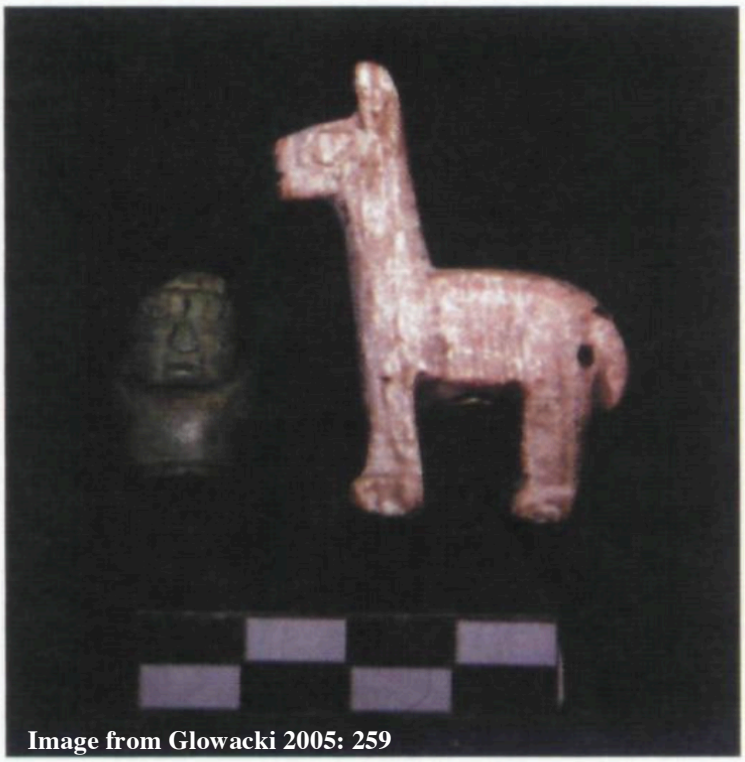


Image from Glowacki 2005: 259

Figure 2. Wari figurines from the Huaro Valley, Cuzco. The human figurine shown on the left is made of greenstone. The llama figurine depicted on the right is crafted out of Spondylus. *(Photograph taken by author.)*

The opposing relations between the coastal and highland regions are augmented with Blower's findings of *mullu* ands its association to blue-green and turquoise colors (2000: 214). In the myth of Paria Caca, bluish-green smoke is released from Paria Caca's mouth as he commands the father to give him the offerings of *Spondylus,* coca, and ticti (Salomon and Urioste 1991: 172; see chapter 2, page 34). The Quechua-version of *The Huarochirí Manuscript* uses the term llacça (llacsa) to refer to the colored smoke (Blower 214 [Salomon and Urioste 1991: 214]). Llacça "refers to smelted or alloyed metal materials such as copper or bronze" (Blower 2000: 214), and *llacsa* has also been defined as "a green powder or stone, like copper oxide" (Blower 2000: 214 [Arriaga 1968 (1621): 46]; Holguin 1608 [1952]: 214). In addition, one of the five Paria Cacas is named Llacsa Churapa (Salomon and Urioste 1991:173). Blower notes that "the first part of Llacsa Churapa's name means the 'bright greenish-blue color that blew from the mouth of Maca Uisa like smoke as he spoke" (Blower 2000: 214 [Taylor 1987: 343; Salomon and Urioste 1991: 115). Interestingly, Llacsa Churapa is the one (of Paria Caca's five persons) that knocks down the mountain while fighting Huallallo Caruincho (Salomon and Urioste 1991: 172). This prevents over-flooding and forms Mullo Cocha Lake, or Lake of Thorny Oyster. If both the creation of Mullo Cocha Lake and highland-originating items may be taken to resemble "The Water of Fire," then I believe that the blue-green colors (i.e. llacsa) may also be associated to water.

Mullu and Consumption

In the last chapter, I discussed how the Huaca consumption of *Spondylus* is crucial for the ecological transformations, or the figure-ground reversals of the obviation diagram. The huacas motivate the transformations, but the source of that power is in *Spondylus*, or "The Fire of Water." Andean people sacrifice *Spondylus* shells at huacas, or sources of running water to

promote agricultural fertility (Blower 2000: 209 [Murra, 1975; Marcos 1986: 197; Davidson 1981: 80]; Glowacki and Malpass 2003: 442 [Cobo 1956: Libro XIII, Capítulo xxii-xvi (1653); Polo 1916: 39 (1554)]; Pillsbury 1996: 318 [De Acosta 1962: 246, 247 [1590]; Paulsen 1974: 603 [Row 1946: 249]). Martín de Murúa (1987 [1590]: 420) writes about *paucar mollo* and *yahuar mollo,* as the "ground sea shells used in sacrificial offerings" (Blower 2000: 213). *Paucar* is translated to "light," "bright" or "fine" (Blower 2000: 213; Holguín 1608: 191), while *yahuar* is translated to "blood" (Blower 2000: 213; Holguín 1608: 235). *Paucar* and *yahuar* may refer to the white and red coloration of *Spondylus* shells, but *yahuar* may also represent the ritualistic mixture[82] of llama blood and ground seashells used to promote agricultural fertility or health (Blower 2000: 210, 213). The term "yahuar" may also be suggestive of menstrual blood since *mullu* has been associated to females and fertility.

In the myth of Paria Caca, Paria Caca's "five selves" consume the *Spondylus* and make it "crunch with a 'Cap Cap' sound" (Salomon and Urioste 1991: 172). Glowacki and Blower introduce another myth of *The Huarochirí Manuscript* (Salomon Urioste 1991[1600]: 67-8, 116) that tells the story of the mighty god, Maca Uisa, who insists on eating *Spondylus* and exclaims, "I am not in the habit of eating stuff like this. Bring me some thorny oyster shells, [eating] them all at once, making them crunch with a *Cap Cap* sound" (Glowacki 2005: 260; Blower 2000: 215). Blower claims[83] that the "Cap Cap sound" suggests that Maca Uisa is eating the shell (2000: 215). The crushing of the shells for ritual purposes may be associated with the gods'

[82] The mixture of crushed *Spondylus* and blood was sometimes added to chicha as a drink offering (Blower 2000: 210 [Acosta 1962 (1590): 248; Murúa 1987 (1590): 422; Carrión Cachot 1955: 38]).
[83] Glowacki (2005) doesn't fully agree with Blower's assumption (2005: 260).

consumption of *Spondylus* and the "cap cap sound" that eating the shells makes[84] (see chapter 3, page 78).

According to Blower, there are no accounts of human beings consuming *Spondylus* shells, although the "shell was crushed and mixed with chicha" (2000: 215). Coastal people do, however, eat and continue to eat *Spondylus* meat, or "vidi" (Blower 2000: 215). Ancient Andean people may have consumed *Spondylus* meat for its hallucinogenic effects, connecting them with their ancestors (Glowacki 2004: 257). Paulsen suggests that *Spondylus* meat would have become toxic by the time the mollusk would have reached the highlands (1974: 605). In addition, there is a seasonal toxicity to the animal that results from the ingestion of toxic dinoflagellates. The dinoflagellates are referred to as aguajes, or red tides (Blower 2000: 215 [Rojas de Mendiola 1978: 183]). If eaten out of season, *Spondylus* meat consumption may result in psychotropic experiences and even paralysis or death (Blower 2000: 215; Glowacki 2005: 257, 260). As discussed in the third chapter (see page 81), El Niño brings a series of ecological disruptions that result in the appearance of *Spondylus* and red tides in the Peruvian coastal waters. The effects of eating toxic *Spondylus* further augment the association between the appearance of *Spondylus* in the Peruvian coastal waters during ENSO events and the death it brings to the coastal region (see chapter 3, pages 81-82).

The Huarochirí Manuscript indicates *mullu* as food of the gods although it is unclear if *mullu* directly refers to *Spondylus* (Blower 2000: 216). These accounts suggest a division between man and God, and knowing the potentially toxic effects of *Spondylus* meat consumption may further suggest that *mullu* was food for the gods and not humans (2000: 216). Interestingly, the term *huaccamullu,* or "cierta yerua de comer" (Gonçalez Holguín 1608: 126), translates to "a

[84] It would be interesting to see if there is an association between crushing *Spondylus* shells and the chewing of coca leaves. Farmers often chew coca leaves while working their fields in the Andean region where crushed *Spondylus* has been offered and sprinkled on fields.

certain herb to eat" and brings to question whether herbs could be *mullu* (Blower 2000: 216). The relationship between *mullu* and herbs is enhanced with the understanding of green color associations with *mullu* (Blower 2000: 216), and Blower suggests that *huacamullo* likely refers to an aquatic plant in Guaman Poma de Ayala's 1615 account (2000: 216, 217).

Mullu and Agricultural Fertility

I believe that *Spondylus,* "The Fire of Water," was the food of the huacas and not humans. In the myth, Paria Caca consumes *Spondylus* ("The Fire of Water") and transforms into *red and yellow* rain when fighting Huallallo Caruincho. This results in the creation of Mullo Cocha Lake. Finally, "The Water of Fire" promotes agricultural fertility, or "Food *for* Children." In the highland region, the huacas consume *Spondylus* shells while the Andean people consume crops.

Acosta[85] (1962 [1590]: 247) describes how the names of the shells, or "mollo," were often associated with their colors and how this indicated their uses for different purposes (Blower 2000: 213), and Cobo's records (1990 [1653]: Book 1, chapter 2, p.117) detail how the shells were sometimes used in their entirety, crushed into pieces, or created into powder (Blower 2000: 213). Cristóbal Molina (1989 [1575]: 68) describes *mullo* as "…y conchas de la mar que llaman mullo, colorado y amarillo, hechas a manera de maíz…," which Blower translates to "…and sea shells which they call *mullo*, red, and yellow, made like maize…" (Blower 2000: 213). Cobo's accounts [1990 [1653]: Book 1, chapter 14, p. 69] are also indicative of red and yellow shells used for sacrificial purposes (Blower 2000: 214). Finally, Blower also describes how things may be "*mullu*-like." Molina (1989 [1575]: 133) writes about how different varieties and colors of

[85] "…[Conchas… llamaban mollo] tienen diferentes nombres según el color, y así sirven diferentes efectos" (Blower 2012: 213 [Acosta 1962 (1590): 247]).

corn, such as corn with "red and yellow stripes," are collected with *mollo mollo, or* "various sea shells like *mollo*," "of all the colors that one can have," or *ymaymana mollo* (Blower 2000: 213, 214). The colored corn and sea shells were then grounded together and offered to the *huacas*, or "shrines," and *wilcas*, or "powerful spirits" to promote good health (Blower 2000: 214).

The red and yellow color relations to *Spondylus* and corn appear in the myth. Paria Caca fights Huallallo Caruincho in the form of *red* and *yellow* rain after he consumes the offerings of *Spondylus,* coca, and ticti (Salomon and Urioste 1991: 68; Blower 2000: 214 [Salomon and Urioste 1991: 68]). Interestingly, ticti is the by-product of chicha, or beer made from maíze. Perhaps the red and yellow rain may be correlated with colors of *Spondylus* and corn respectively. In addition, red and yellow corn also exists. Blower mentions how Peruvian ritual practices have involved the use of charm bundles, known as mesas, that include red and yellow maize (Blower 2000: 214 [Gifford and Hoggarth 1976: 64]). During my time in the Callejón de Huaylas from December-January 2017, I visited the women of Shilla and was introduced to various corn varieties. Two of these varieties had yellow kernels with red stripes. The women called one variety "Caziki," or "red butt," and the other variety was referred to as either "maize rayado" ("striped corn") or "dios panjunko" ("knee of god").

Like *Spondylus*, maíze may be compared to "The Fire of Water" because of its yellow and red colors, where it grows, and its value as an agricultural crop. Maize is cultivated in the coastal region or at lower altitudes in the highland regions, below the montane steppe (3000-5000 meters above sea level) where tubers are grown. For example, the women of Shilla grow corn around 2500 meters above sea level. In addition, maize can withstand drought[86] much more

[86] The Callejón de Huaylas had just gotten over a terrible drought when I arrived late December 2016. Many of the people spoke to me about the drought and explained that even the corn had been suffering. The women of Shilla explained that drought cause people to rely more heavily on the irrigation techniques and explained how rain water is so much better for the harvest than irrigated water.

easily than tubers can. Tubers rely heavily on rainwater, while man-made irrigation systems are usually sufficient for corn to grow. Potatoes provide Andean farmers with the necessary energy to work their fields, but the tubers were not prestigious commodities in the exchange system. In contrast to potatoes, maize and chicha (corn beer) were traded as prestige items of the larger exchange system (Hornborg 2014: 817, 819), and chicha is a common offering made to the huacas (Glowacki and Malpass 2003: 436, 437).

John Murra's "vertical archipelago model[87]" (1972: 70, 71) describes how demographically and politically small groups of people occupy different ecological zones of the vertically complex Andean ecological landscape. The "nuclei" are the centers of population, power, and food supply, while the permanently inhabited peripheral zones are located below or above the nucleus. People vertically control the different ecological zones through short-distant exchanges between the different zones. As discussed earlier, highland-valley complementarity with the Aymara-speaking pastoralists and the Quechua-speaking cultivators is an example of vertical control. The obviation diagram is also useful in interpreting Andean vertical exchanges, since these shorter-distant exchanges exhibit the complementary oppositional structures present in the long-distant *Spondylus* exchange system. For example, exchanges made between maize of the lower Andean zones and potatoes of the upper zones may be represented as exchanges between "The Fire of Water" and "The Water of Fire," respectively.

[87] "En resumen, el primer caso de "control vertical" nos ofrece la información siguiente: 1) se trata de sociedades demográfica y políticamente pequeñas—de 500 a 3,000 unidades domésticas, de 3,000 a un máximo de 18,000 a 20,000 almas; 2) los núcleos de población y poder, que a la vez eran centros de producción de los alimentos básicos, se ubicaban en Chaupiwaranqa y en el alto Huallaga, por debajo de los 3,2000 metros. Núcleos como Cauri, a 3,700 metros, en alto Marañín, eran excepcionales en territorio yacha o chapaychu; 3) sus zonas periféricas estaban pobladas de manera permante por asentamientos ubicados tanto por encima como por debajo del núcleo (lo que da la calificativo de "verticalidad" al modelo)." (Murra 1972: 70, 71).

Concluding Remarks

This paper encourages the integration of anthropological fields as opposed to keeping them apart and working within the fields independently of each other. I have attempted to synthesize mythological, archaeological, and linguistic evidence to understand complementary oppositional structures of the *Spondylus* exchange system. Roy Wagner's obviation technique was applied to the myth of Paria Caca of the Huarochirí Manuscript [1991(1600)], and its obviation model was used to interpret archaeological and linguistic evidence of *Spondylus* and the exchange system that it was involved in. The synthesis of mythological, archaeological, and linguistic data supports Gary Urton's assertion that "social and political relations within Andean communities tend overwhelmingly to operate on the basis of complementary asymmetric dualism," a dualism that is "grounded in complementary oppositions" (2012: 323, 324). Through the integration of approaches, it was also discovered that the myth of Paria Caca parallels the exchange system in many ways.

The first chapter discussed how the Andean ecological landscape is comprised of the coastal, highland, and tropical lowland regions that run parallel to each other west to east. The cold Humboldt Current flows north along the Chilean and Peruvian coastal waters. In addition, the earth's rotation and southeast trade winds cause cold-water upwelling. The cold ocean waters supply rich marine biodiversity but also turn the coastal region into one of the world's driest deserts (McEwan 2006: 20). Coastal valleys exist between the desert and highland regions, and irrigation techniques are practiced in this area.

The Peruvian highland region is a vertically complex environment located within a volcanic gap of the Andean cordillera. Seasonal precipitation occurs and lakes are found in the upper highland tier between 4300 and 5000 meters above sea level. Tubers, such as potatoes and

ocas, are grown in the montane steppe that ranges from 3000 to 5000 meters above sea level, while maize is grown roughly 2500 meters above sea level, where canal systems are necessary for agricultural fertility. Finally, the tropical lowlands are an ecotonal zone between the Andean region and the Amazon. Coca leaves are grown in this area.

Spondylus is a warm-water bivalve that inhabits the intertidal zones of the Ecuadorian ocean waters. *Spondylus* shells were being worked into beads and pendants about 5000 years ago (Bauer 2007: 34; Bauer and Lunniss 2010: 82), and the bivalve became a prestige item involved in a complex system of exchange including the Ecuadorian and Peruvian coastal and highland regions. *Spondylus* appears in the Peruvian archaeological record of the Supe Valley roughly 3000 years ago (Paulsen 1974: 601; Blower 1995: 95 [Feldman 1992: 73]). Many scholars, such as Urton (2012), have argued that Andean culture operates through opposing yet complementary structures. The second, third, and fourth chapters of this paper respectively looked at mythological, archaeological, and linguistic evidence to determine whether these structures are apparent in a larger Andean exchange system that involved *Spondylus* trade.

In the second chapter, I introduced Urton's *mytho*historical approach (1990) and likened it to Wagner's technique of symbolic obviation (1978). The two approaches allow for nonlinear, structural interpretations of myths. Roy Wagner's technique of obviation was applied to the Andean myth of Paria Caca of *The Huarochirí Manuscript* [199(1600)]. The points of the obviation diagram were labeled with the following metaphors: "The Fire of Water" vs. "The Water of Fire," "Children *for* Food" vs. "Food *for* Children," and "Paria Caca (Water) vs. Huallallo Caruincho (Fire)" vs. "Paria Caca defeats Huallallo Caruincho." The ecological axis, the economical axis, and the axis of the huacas illustrated the figure-ground reversals between

the opposing metaphors that are generated when the huaca Paria Caca consumes the food offering of *Spondylus* in the Andean region.

The coastal and highland ecologies are two opposing ecological regions that interact with each other in the myth of Paria Caca. The contrasting features between the two landscapes are clear: the Andean region may be characterized as "interior," "high," and "cold," while the coastal region may be described as "exterior," "low," and "hot." Contradictions within each landscape also exist. The Andean region consists of a volcanic belt, but rain precipitates, snow accumulates, and lakes and glaciers exist in the cold highland region. As a result, the Andean region may be metaphorically represented as "The Water of Fire." In contrast, the Peruvian coastal region is one of the driest deserts in the world and may be represented as "The Fire of Water." *Spondylus,* too, signifies "The Fire of Water" because of its warm niche, morphology, brilliant red color, and its appearance in the Peruvian coastal waters during times of El Niño. *Spondylus* offerings in the highland region and the huacas' consumption of the bivalves generate the transformations between opposing metaphors of the obviation diagram, such as from "The Fire of Water" to "The Water of Fire."

The third chapter begins with an overview of the expansive history of *Spondylus* that Paulsen (1974) has organized into three periods. *Spondylus* was exported from the Ecuadorian coastal to the Ecuadorian sierra during period A from 2800 to 1100 BC (1974: 599). The exchange system expanded throughout period B from 1100 to 100 BC (Paulsen 1974: 601; Torre and Striffler 2008: 20). *Spondylus* was transported south to the Peruvian coastal region through land-based or maritime-based routes and transported east to the central Peruvian highlands through the means of land-based trade routes, road systems, and llama caravans (Blower 1995: 58, 86; Glowacki 2005: 264). Finally, period C from 100 BC to AD 1532 describes when the

exchange system expanded from Quito to Lake Titicaca (Paulsen 1974: 559), and evidence suggests that trade involving long-distance, maritime exchange with Mesoamerica occurred between AD 1000 and the 16th-century Spanish conquest (Blower 1995: 74 [Bray 2008]).

The obviation diagram of the myth of Paria Caca was used to interpret the archaeological evidence on the *Spondylus* exchange system. The mythological metaphors were used to understand the opposing yet complementary ecological regions and items involved in the exchange system. The coastal region and *Spondylus* may both be described as "The Fire of Water," while the Andean region and highland-originating items may be represented as "The Water of Fire." The archaeological evidence demonstrates that *Spondylus*, "The Fire of Water," was transported into the highland regions in exchange for highland goods, or "The Water of Fire." The mythological transformations that occur in the myth are also apparent in the *Spondylus* exchange system. *Spondylus,* "The Fire of Water," is an offering made to the huacas, and the bivalve's sacrifice and consumption bring rain to the Andean region, or "The Water of Fire." Rain ensures agricultural fertility, and potatoes may be represented as "The Water of Fire" because they grown in the *coldest* zone of the Andean volcanic region, and like water, potatoes are necessary for life. Highland items, such as potatoes and obsidian, may then be transported to the coastal region. The movement of *Spondylus,* or "The Fire of Water," into the Andean region in exchange for opposing Andean items, or "The Water of Fire," results in a cyclical movement of water involving the celestial and terrestrial realms, supplying a constant flow of water to the highland and coastal regions.

In the fourth chapter, the expansion histories of Aymara- and Quechua-language families were first introduced to support Alf Hornborg's argument (2014) that long-distant systems of exchange may have motivated (or partially motivated) the language families' geographic

expansions inland from the coastal region, which parallels the transportation of *Spondylus* to the highland regions. The Aymara- and Quechua-language families' expansion histories support the possibility that Andean complementary oppositional structures are apparent in long-distant exchange systems as these structures have been revealed in "shorter-distant" relations of exchange.

Shorter-distant relations operating on complementary asymmetric dualism (Urton 2012) might explain the great degree of convergence of Aymara and Quechua languages, or why the language-families' geographic distributions extensively overlap (Heggarty and Beresford-Jones 2004: 52 [Urton 2012]). Aymara- ad Quechua-speaking people may have developed an economy based on highland-valley complementarity: the Aymara-speaking pastoralists that inhabited the "high, puna grasslands" and the Quechua-speaking cultivators that inhabited the "quichwa valleys" (Urton 2012: 326, 327). The different economic activities are thought to complement each other because both economic zones were necessary for Andean subsistence (2012, 327). In "The Herder-Cultivator Relationship as a Paradigm for Archaeological Origins, Linguistic Dispersal, and the Evolution of Record-Keeping in the Andes" (2012), Urton looks at the "Wari" and "Inka" khipus to better understand the relationships between the Aymara- and Quechua-speaking peoples, or two groups of people that were actively engaged in opposing economic activities.

The remainder of chapter four discussed the language surrounding *mullu* and its various spellings of *mollo* and *mullo*. *Mullu* is Quechua for *Spondylus,* but the term signifies so much more than the bivalve (Blower 2000: 209). In "The Many Facets of Mullu: More than Just a Spondylus Shell" (2000), Blower asserts: "The term *mullu* encompasses a semantic field that

includes physical and ideological attributes. *Mullu* appears in different geographic regions, ritual contexts, and in conjunction with other words."

An examination of *mullu* spellings, phrases, and definitions suggest complementary oppositional thinking and reinforced the mythological and archaeological evidence discussed in the previous chapters. The obviation diagram of the myth of Paria Caca and the archaeological findings were used to interpret the linguistic material, and the synthesis revealed significant aspects of *Spondylus* morphology and *mullu* associations to opposing highland goods like copper and obsidian and prestige items such as maíze.

In conclusion, engaging with different anthropological fields is informative, and this paper demonstrates how mythological, archaeological, and linguistic evidence may be used to enhance and inform each other. Using the obviation diagram of the myth of Paria Caca to interpret the archaeological and linguistic evidence suggests that the *Spondylus* exchange system may have been organized through Andean structures of complementary opposition. Finally, the mythological transformations that occur between opposing metaphors of the obviation diagram are paralleled in the *Spondylus* exchange system.

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