

ARTICLE

Drunken Mountains: Analysis of the Bennett and Ponce Monoliths of Tiwanaku (AD 500–1100) from a Multispecies Perspective

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Abstract

Archaeological research on the architecture and sculpture of Tiwanaku society in the south-central Andes follows two separate paths: one emphasizes iconographic interpretation, whereas the other studies lithic materials' origin and spatial relations. This separation, stemming from dualistic modern thought, is an obstacle to a comprehensive understanding of lithic sculptures and their role in Tiwanaku society. This article focuses on the Ponce and Bennett monoliths, the two largest and most complex sculptures of the Tiwanaku ceremonial center. It presents the results of an iconographic analysis identifying minimal design components ordered in a three-level nested hierarchy and their distribution over the spatial structures of both sculptures. This analysis incorporates existing information about lithic materials and quarries, the monoliths' locations, and spatial relationships. All those data are interpreted in the light of Aymara and Quechua ontologies about the relationships between mountains, stones, and images. Characterizing aspects of the Tiwanaku site and its role in lithic production, this article extends the limits of Tiwanaku society to include nonhuman agents and suggests that we overcome anthropocentric biases.

Resumen

La investigación sobre la arquitectura y escultura de la sociedad Tiwanaku en los Andes sur-centrales se divide en dos líneas de estudio: una dedicada a la interpretación iconográfica y otra al estudio de la procedencia y ubicación de los materiales líticos. Esta separación, derivada de los dualismos del pensamiento moderno, impide una comprensión integral de las esculturas y su rol en la sociedad Tiwanaku. Este artículo se enfoca en los monolitos Ponce y Bennett, los mayores y más complejos del sitio de Tiwanaku. Presenta resultados de un análisis iconográfico que identifica componentes mínimos de diseño jerarquizados en tres niveles, y estudia su disposición sobre la estructura espacial de ambas esculturas. Incorpora también información acerca de los materiales líticos, canteras, ubicación y relaciones espaciales de ambos monolitos, interpretandolos mediante ontologías aymaras y quechuas sobre las relaciones entre montañas, piedras e imágenes. La discusión final busca caracterizar y matizar algunos aspectos del sitio de Tiwanaku y su producción lítica, sugiriendo superar sesgos antropocentristas y ampliar los límites de la sociedad Tiwanaku a actores no humanos.

Keywords: megaliths; Tiwanaku; south-central Andes; Middle Horizon; iconography

Palabras clave: megalitos; Tiwanaku; Andes sur-centrales; horizonte medio; iconografía

Tiwanaku society of the Middle Horizon (AD 500–1100), with its monumental center in the south-eastern Titicaca basin, is one of the most archaeologically studied communities of the south-central Andes. This interest in Tiwanaku, which began in the Spanish colonial period and continues to the present, derives from the massive stone blocks comprising most of its architectural structures and

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sculptures. The characteristics of platforms, enclosures, and sunken courts are the basis for some of the most significant discussions about Tiwanaku society's technical and aesthetic capabilities, antiquity, chronology, sociopolitical character and reach, and the function of this monumental center. Analyses of Tiwanaku lithic architecture have enabled scholars to interpret highly organized labor investment (Ponce Sanginés 1976) and a carefully planned architectural axis mundi (Kolata 1993), ideas related to the depiction of a centralized state. More recent readings of Tiwanaku architecture have emphasized long-term changes in its religious and political orientation (Janusek 2006) and, by adopting a phenomenological stance, the construction of ritual participants' subjectivities (Janusek and Williams 2016) emphasizing scenography and performance proper of a pan-regional pilgrimage center (Isbell 2013; Vranich 2016).

This study focuses on sculpture, a quantitatively minor realm of Tiwanaku lithic production that is nonetheless one of the densest among ancient Andean societies. Influenced by modern ontological perspectives, earlier research was divided between stylistic-iconographic and technic-material studies. To overcome this divide, this article presents an integrated analysis of the two major sculptures from Tiwanaku, the Bennett and Ponce monoliths. It describes and compares the iconography of both sculptures and their material, technical, spatial, and landscape-visualization characteristics. The results of this comprehensive view are interpreted through contemporary Andean ontologies that posit the indivisibility and living character of mountains, stones, and images, which are vital to establishing social relations of nurturing through the acts of sharing food and beverages. This interpretation allows us to discuss some archaeological notions of the Tiwanaku site and society using a non-anthropocentric, multispecies approach.

Earlier Research on Tiwanaku Sculpture

Earlier archaeological inquiries into Tiwanaku sculpture went along two paths. The iconographic-stylistic path has followed three main trends. The first relates stylistic sculptural change to Tiwanaku's chronological sequence. Bennett (1934) took the initial step along this path, building the first stratigraphic sequence at the site. The later development of sculptural sequences for the Formative period (1500 BC–AD 500) in the southern Titicaca basin allowed scholars to understand Tiwanaku sculpture as an heir to earlier Pa-Ajanu, Asiruni, Mocachi, Pokotia, or Khonkho styles (Browman 1997; Janusek 2004; Portugal Ortíz 1998), which were sometimes understood as a single Yaya-Mama religious tradition (Chávez 2018). Other research highlighted the strong iconographic relations between Late Formative (200 BC–AD 500) Pukara sculpture from the northern basin and Tiwanaku (Chávez and Mohr-Chávez 1975; Cuynet 2012). Tiwanaku's sculptural style was also used to organize sculptures chronologically that usually lacked precise excavation contexts (Agüero Piwonka et al. 2003; Janusek and Ohnstad 2018).

The second trend, also based on the style concept, seeks to understand the relations between Tiwanaku and neighboring societies such as Wari (Cook 1983; Makowski 2002; Menzel 1964) or the local populations of northern Chile (Berenguer Rodríguez 1998; Llagostera 2006; Torres 2004). Although some views were influenced by outdated notions, such as center-periphery relations or origin hypotheses, the “Southern Andean Iconographic Series” concept (Isbell 2018:3–6) pointed toward a more horizontal understanding of those iconographic interactions.

The third trend distances itself from the style concept, interpreting iconography through semiotic approaches. Intuitive iconographic interpretation was common among nineteenth- and early twentieth-century explorers; interpretations by Posnansky (1945a) are especially comprehensive and controversial. Theoretically refined iconographic studies began in the 1980s (Berenguer Rodríguez 1987); since then, Tiwanaku lithic iconography has been interpreted as representing practices, characters, entities, or events. The most-positated objects for these signs are astronomical, religious, and calendrical phenomena (Makowski 2002); ancestral, elite, or priest-like characters (Janusek and Williams 2016; Viau-Courville 2014); and shamanic and psychotropic substances (Berenguer Rodríguez 1987; Torres 2018).

The second research path on Tiwanaku sculpture is separate from iconographic studies and links instead to spatial and architectural analysis. Lithic materials studies address questions about stone

origins, transportation, and carving techniques. The first petrographic analyses were performed during the nineteenth century (Stübel and Uhle 1892) and continued throughout the era of Bolivian nationalist archaeology (Ponce Sanginés 1971; Ponce Sanginés and Mogrovejo Terrazas 1970). Later, metric and experimental approaches contributed to a better understanding of transport and carving processes (Mamani Roque 2017; Protzen and Nair 2016; Vranich 2020). Incorporating spectrometric techniques enabled precise chemical characterization: it showed that gray andesite quarries lay near the southern Titicaca shore, several kilometers northeast of Tiwanaku, but that red sandstone was from mountains south of the site that were much closer to it (Janusek and Williams 2016:101–108).

Sandstone comprises most of Tiwanaku's Late Formative structures, such as the Temple Semisubterráneo and the Kalasasaya, whereas andesite was incorporated during the Middle Horizon in the Kalasasaya and the larger Akapana and Pumapunku pyramids, among other structures. An influential paper by Janusek (2006)—incorporating considerations about the meaning of lithic materials' color and orientation to logistical or technical arguments—posited that the political character of Tiwanaku changed from a local center limited to the Tiwanaku Valley to a broader pan-regional center. More recently, stones were understood as mountains' "embodiments," aimed to produce the subjectivity of those who ritually interacted with them (Janusek and Williams 2016:123–124). This notion is compatible with recent spatial and archaeo-astronomical analyses that use a phenomenological approach to performance in the site (Benítez 2013; Vranich 2010), although semiotic readings of Tiwanaku's architecture and landscape came from decades earlier (Kolata 1993; Reinhard 1991).

Even though increasing attention is being paid to the significant dimensions of lithic materials and space, iconographic analysis is notoriously absent from those approaches. The recent development of archaeometry led to an increasing specialization that created a domain separate from iconography. However, this bias is also a consequence of the representationalist ontology underlying archaeological thought, which seeks to understand reality through dichotomies such as matter/spirit, nature/culture, or function/meaning. As a result, research on Tiwanaku sculpture is bifurcated between iconography as an expression of identity, meaning, or thought and stone as material, technique, and function. This article aims to partially overcome those dichotomies, adding to a general trend in studies of the ancient Andes (Hamilton 2018; Trever 2022; Weismantel 2013).

Andean Perspectives on Mountains, Stones, and Images

Several ethnographic studies show that Andean communities attribute agency to objects and to landscape features (Allen 1997; Sillar 2004). There is a constant interaction with living entities of the landscape, such as the earth (*Pachamama*), celestial bodies, and, more importantly, mountains (*apus*, *achachilas*, or *uywiris*) regarded as owners of wealth, ancestors, providers, and breeders (Dransart 2002; Isbell 1974). The proper order of existence depends on mutually beneficial commitments between these entities; life is reproduced through ritual exchanges and agreements that must be renewed cyclically between actors with equivalent subjectivities but different material conditions (Cavalcanti-Schiel 2007:9–10). This interaction often occurs through an etiquette of "mutual raising" (Bugallo and Tomasi 2012:221), sharing food and beverages to achieve a state of ritual drunkenness.

The inhabitants of Kaata, in the Kallawayá region northeast of Titicaca, understand mountains or *machulas* as living bodies (Bastien 1996). *Machulas* express emotions and enjoy offerings: they eat, drink, and chew coca like the human attendants at communal meetings. These other-than-human beings communicate in ways humans can perceive, without a need for spokespersons: they are mountains and ancestors of the Kallawayá but "not only" (Alderman 2015:35). This important concept was developed by De la Cadena based on her work among Quechua-speaking communities in Peru. *Runakuna* (humans) and *tirakuna* (mountains) are more than independent subjects interacting; they are also subjects emerging from an interaction. They cannot be disentangled from each other because then they would become simple humans and stones. *Runakuna* are humans but not only, and *tirakuna* are mountains or stones but not only, their coming together exceeding our modern understanding (De la Cadena 2014:255–256).

It is critical to consider the relationship between enormous mountains and smaller but unique stones, usually called *wak'a* (Martínez 1983). Specific animal-shaped stones—*inqaychus*, *khuya*, *illa*,

or *inqa*—are animals that endured a shrinking and hardening process that condensed the *animu* or vital energy of their original mountain; thus, they share its specific power and character (Allen 2016:328–330). An *inqaychu* does not represent anything but instead presents itself: its *animu* derives from the mountain in a fractal manner.

The material aspect of this fractal mountain–stone relationship transcends the modern understanding of the human mind by assigning animation to inert materials. The concept of the “emanicipation of things,” developed by Holbraad (2011:17–18), implies that things can “speak”: materials nurture and define their concepts affecting human perception. In Sullka Titi Titiri in southern Titicaca, the Aymara term *qhasqha* refers to a hard, fine-grained stone that is powerful because of its ability to break other stones; thus, a stone *wak’a* has a vigorous, authoritarian, and unpredictable personality (Astvaldsson 1998:209–213). The meaning of *wak’a* in variants of Quechua and Aymara is that of something cleft or notched: the *wak’a* character of stones or statues would allude to their being “splits” broken from a larger mountain (Itier 2021:8). Thus, stones share the mountain’s *animu* because of their material characteristics: hardness or “authority” and, crucially, irreducibility or “stubbornness.” Even though they are fragments of larger stones, their power and personality remain intact.

The material–image relationship has also been revisited from nondichotomous stances; Arnold (2017) suggests that Andean images be reimagined by reinserting them into their material productive flows. An inspiring study centered on colonial period sacred images highlights the contrast between Western ontology, which posits images as representations of mythical or divine figures, and Andean ontology, understanding images as powerful because of the materials that compose them (Siracusano 2005). A contemporary example of this indivisibility of image and material is the *pedrasanto*, a small stone painted with Christian images found in the Bolivian valleys. Vargas (2003:30–32) describes the process of creating a *pedrasanto*: a person finds a stone that reveals itself through dreams; then the shaman or *yatiri* collects the stone and “recognizes” its image; and finally, a specialized painter “clarifies” the image contained within the stone. Thus, humans do not impose mental representations onto inert matter, but rather, the stone possesses the *animu* of its matter and the shape of its image: the painter and the stone create the image together.

Escobar (2012) suggests that objects should be understood as tools for enactment: they aim to cause given effects in the world by affecting its human and nonhuman inhabitants. From this stance, a sculpture could be a tool for dialogue with a powerful mountainous subject. This conception seems to contradict our modern need to distinguish objects and subjects, but returning to De la Cadena, a lithic sculpture probably exceeds the limits of that duality. A sculpture and its images as an object/tool could contribute to creating a world in a community with nonhuman agents; simultaneously, as a lithic subject, it could be a powerful entity with which interaction is essential to establish commitments.

Sample and Methods

This analysis of Tiwanaku sculpture focuses on two of its most representative examples, the Bennett and Ponce monoliths, which I chose for several reasons. First, they are the only Tiwanaku monoliths detected in excavation contexts (Figure 1), which allows us to address, even hypothetically, their locations and spatial orientations; monoliths such as El Fraile, Suñagua, or Kochamama were on the site’s surface before the nineteenth century and were probably removed. Second, the Bennett and Ponce monoliths are relatively well preserved: many other Tiwanaku monoliths, including well-recorded examples such as the Putuni stela (Couture and Sampeck 2003), are either fragmented or incomplete. Third, both sculptures were created during the Middle Horizon (Janusek and Ohnstad 2018), so that their differences cannot be due to their chronology. This criterion ruled out Late Formative sculptures, such as the Barbado stela of Tiwanaku’s sunken court or Khonkho Wankane monoliths.

The Bennett monolith is the largest complete Tiwanaku sculpture (730 × 180 × 127 cm). Although the description does not allow for a complete identification, it was probably detected during excavations made by the 1903 French Scientific Mission (Créqui-Montfort and Sénéchal de La Grange 1903) and was fully exhumed by Wendell Bennett in 1932 while digging a series of test pits to establish a stratigraphic chronology. The sculpture was found inside Templo Semisubterráneo, a Late

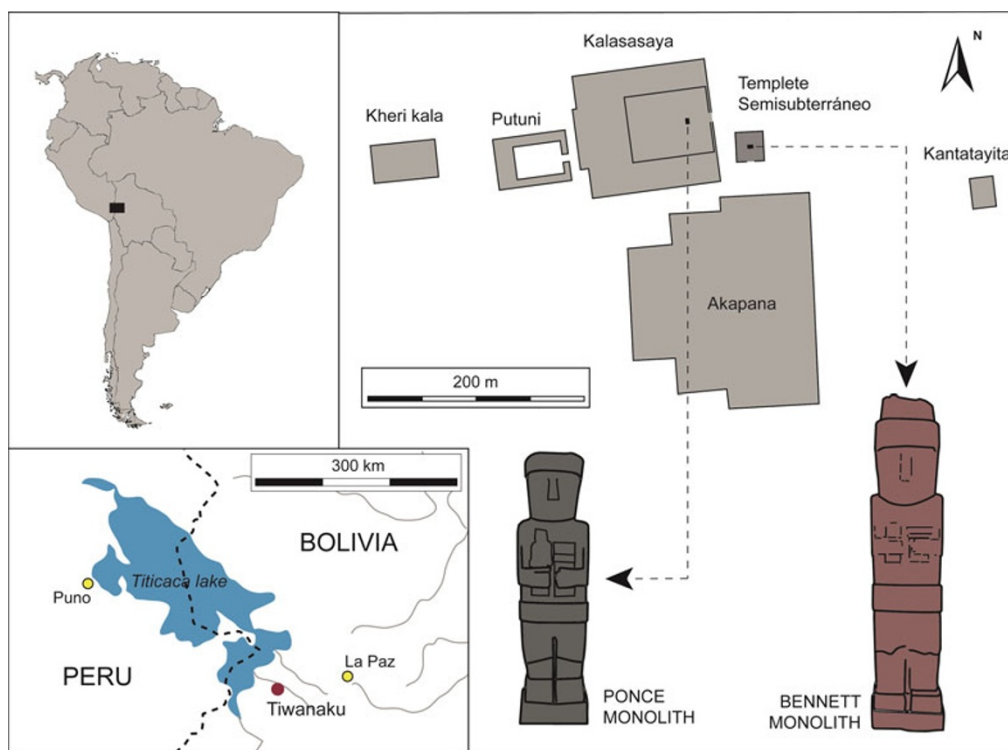


Figure 1. Location map and schematic plan of Tiwanaku monumental center, indicating both monoliths' finding locations.

Formative sunken platform, lying face up with two smaller and older stelae (Bennett 1934:429–432). Its iconography was extensively documented by Posnansky (1945b:185–200), who successfully promoted the project of moving the enormous sculpture to La Paz; it was returned to Tiwanaku in 2000 and is now the main attraction of the site's Museo Lítico.

The Ponce monolith is the best-preserved and the second-largest ($300 \times 79 \times 54$ cm) Tiwanaku sculpture. The Centro de Investigaciones Arqueológicas en Tiwanaku (CIAT) team, headed by Carlos Ponce Sanginés, exhumed it in 1957 during extensive excavations in the central enclosure of the Late Formative Kalasasaya structure (Ponce Sanginés 1995). The monolith was found lying on its left side, looking south (Torres and Torres 2014:57–59). Following the CIAT team's controversial restoration of the Kalasasaya, the Ponce monolith was erected in the center of the enclosure, where it remains to this day.

The most complete analysis of the Ponce monolith's iconography was carried out by Torres and Torres (2014), who directly observed it; their analysis of the Bennett monolith was based on the detailed drawings made by Posnansky (1945b:Figure 113a). This analysis combines two recent trends of Tiwanaku iconographic studies. First, it situates the motifs in the spatial structure of the sculpture (Figure 2), an important aspect highlighted by Viau-Courville (2014). Both monoliths share an almost identical structure, also present in other Middle Horizon and Late Formative sculptures: they are upright stones, highly elongated and slightly wider than deep, with the appearance of a standing human. It is easy to distinguish their front, back, and lateral surfaces, a structural pattern similar to the Late Formative Khonkho style (Janusek 2004) and Pukara round statuary (Cuyenet 2012); this pattern differs from that of Middle Formative stelae that can present two characters per sculpture (Chávez 2018; Portugal Ortiz 1998). The Ponce monolith presents better-differentiated volumes than the Bennett monolith, which looks almost like a continuous block. However, both share the same six horizontal levels: the first and second, respectively, correspond to the feet, which lack any iconography, and the legs, covered by a patterned skirt. Engraved iconography is found in the following levels:

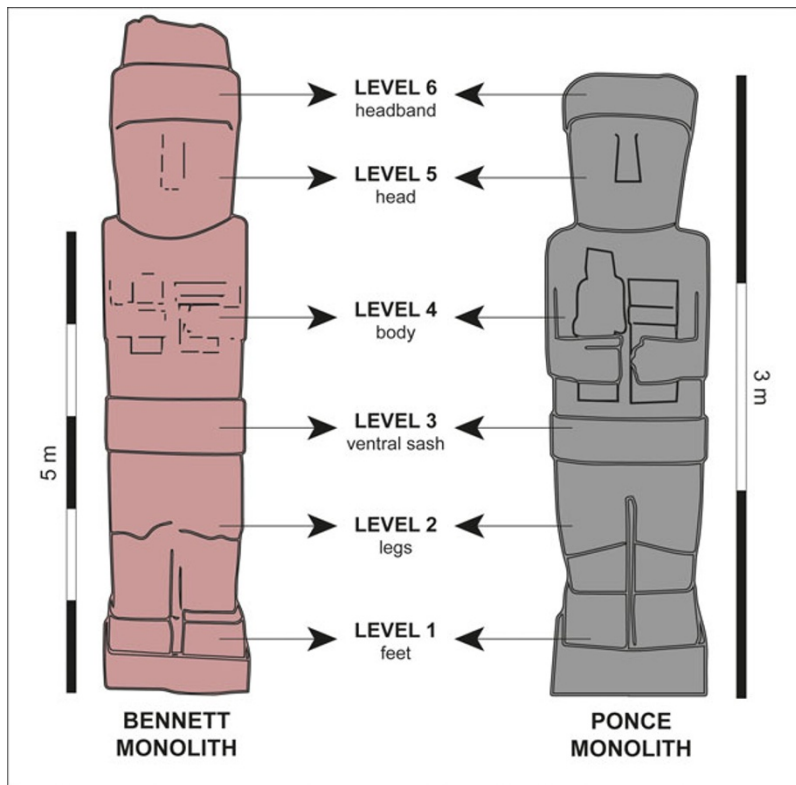


Figure 2. Spatial structure of Bennett and Ponce monoliths.

the third corresponds to the ventral sash, the fourth to the body, the fifth to the head, and the sixth to the headband. The Bennett monolith also features a heavily eroded seventh level.

The second analytical trend is the identification of minimum design components already used to study the Ponce monolith (Torres and Torres 2014). This analysis incorporates a motif hierarchy (Figure 3), which responds to the nested structure of Tiwanaku iconography, in which a character or motif can incorporate, on a smaller scale, anatomical elements of other beings emerging from its limbs, crown, staffs, or other parts. Three levels of design components can be distinguished: the primary components function as appendages to the main character of the sculpture; the secondary components are smaller, complete motifs and characters engraved on the main character; and the tertiary components function as appendages to the secondary components.

There are 23 minimum components, most of which are present in both sculptures (Figure 4). Five are geometric, usually inserted in squares with two motifs: the axial motif, in which pairs of rectilinear shapes depart from a central axis, and the concentric motif, where two half-bent rectilinear shapes enclose a central space from above and below. Less common geometric components are rhombuses, crosses, and a radiated face enclosed in a square.

The other 18 components are figurative. Three are humanlike: profile heads; frontal heads with many variants, such as those presenting halos, crowns, or quadrangular, *keru* vase-like shapes; and hands, often holding staffs. Nine components are animal-like: frontal feline heads, often associated with snake bodies (Villanueva Criales 2020:45); profile feline heads, probably of Andean wildcats; and profile bird heads, possibly of eagles or falcons, as interpreted in the polychromous pottery of Akapana and Pariti Island (Alconini Mujica 1995:214–219; Villanueva Criales 2020:41–42); camelid heads, characteristically with blunt teeth (Baitzel and Trigo Rodríguez 2019:9–10); fish heads, recognizable by their upward-bent mouths (Posnansky 1945a:118–121); snails (Posnansky 1945a:122); legs with three-fingered feet, primarily associated with feline bodies (Villanueva Criales 2020:42)¹;

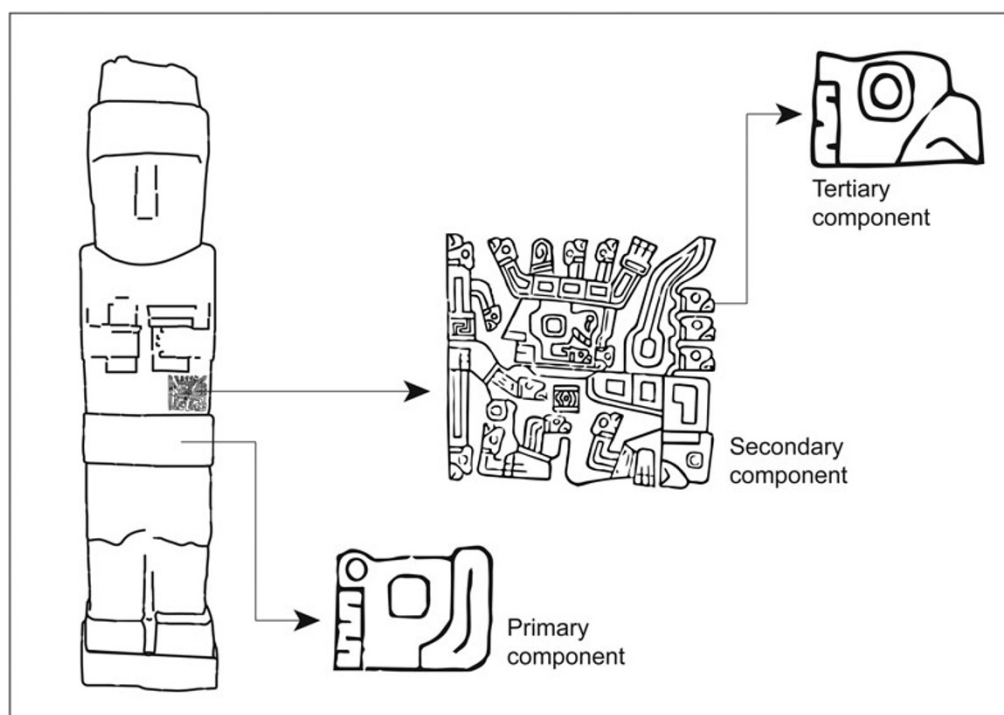


Figure 3. Nested hierarchy of motifs used in this research.

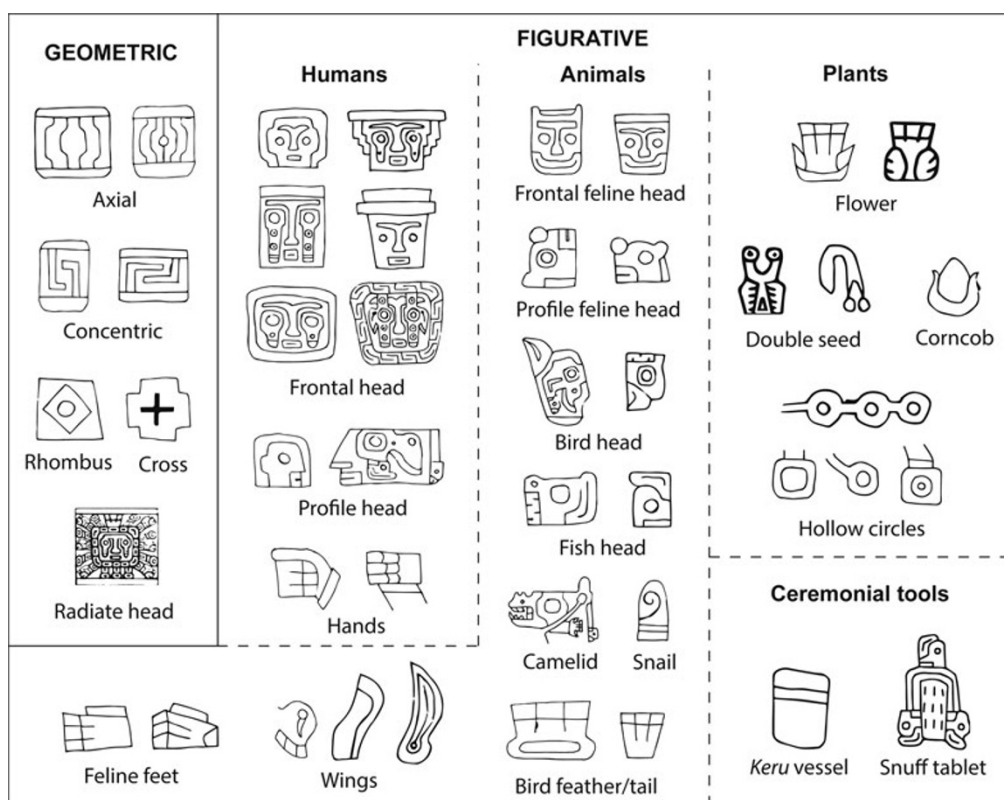


Figure 4. Minimum design components identified in both monoliths.

wings; and bird tails or feathers. Another four figurative components recall the realm of ceremonial plants but with some ambiguity: flowers are similar to feathers but have an extra lower pair of petals and were interpreted as psychotropic plants (Torres 2018:355); double seeds, identified with *villca* or *cebil* (Knobloch 2000:391-392); hollow circles, both alone and chained, that resemble *villca* seeds (Torres 2018:354)²; and corncobs.³ Finally, *keru* vessels and snuff tablets feature as secondary components.

A Comprehensive Analysis of Two Tiwanaku Sculptures

Both sculptures share many similarities. They stand straight, with toes projected forward, forearms hanging at both sides, elbows bent, and hands over the stomach. The left hand rests in a natural position, showing the back of the hand and five extended fingers; by contrast, the right hand is turned over, making a fist with the thumb up, looking like a second left hand that is out of place. Both faces feature protruding noses, quadrangular fangless mouths, hollow eyes with large teardrops running down the cheeks, and intricately sculpted ears. The monoliths wear sashes, skirts, headbands, long braids running down their temples and napes, and wrists, ankles, and neck ornaments. Finally, in the left hand they hold a *keru* vase, a ceramic shape emblematic of Tiwanaku society that is linked to the ceremonial consumption of fermented alcoholic beverages (Janusek 2006); in the right hand they hold what appears to be a snuff tablet for psychotropic consumption (Berenguer Rodríguez 1998; Torres 2018). No anatomical or other feature assigns sex or gender to the monoliths.

Primary Components

Both monoliths also present similarities at the primary-component level. Fish appendages appear in each bend of the meandering shapes that cross both sculptures' sashes. Fish also top off their large teardrops and emerge from their snuff tablets and *keru* vessels.

However, there are differences precisely in those objects (Figure 5): the Ponce monolith presents only fish and flower appendages, whereas the Bennett monolith incorporates bird appendages.

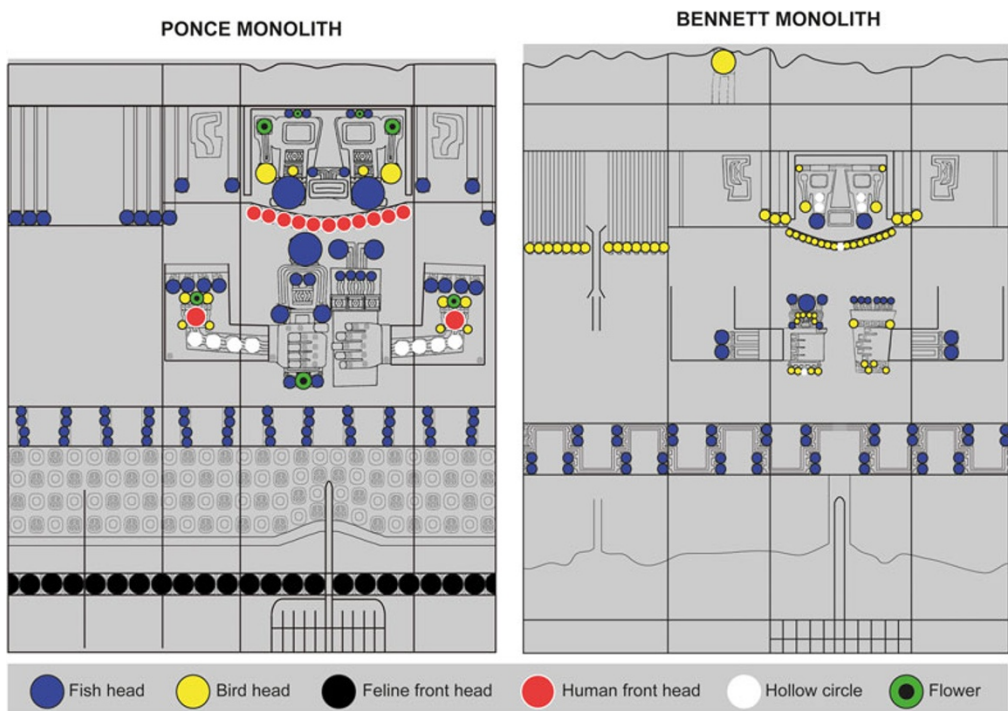


Figure 5. Distribution of primary components. (Color online)

arms are also quite different: fish emerge from the Bennett monolith's wrists, but in the Ponce monolith, they arise from the shoulders. From the Ponce monolith's wrists stem large appendages with chained circles, topped off by human heads with large flowers on the forehead. The teardrops of the Bennett monolith contain bird heads and concentric circles, in addition to fish heads; those of the Ponce monolith show bird heads, geometric motifs, and flowers. Moreover, both sculpture's necklaces and braids are markedly different: in the Bennett monolith, they deploy bird appendages, whereas the Ponce monolith's braids end in fish appendages, and its necklace is made of frontal human heads. Finally, each sculpture presents an exclusive attribute: the Bennett monolith wears a headdress over its headband, with large bird-headed appendages⁴; the Ponce monolith instead wears elaborate anklets made of frontal feline heads.

About half of the Bennett monolith's 211 primary appendages are birds (50.5%, $n = 56$), and the rest are fish (49.5%, $n = 55$; Supplemental Table 1). Fish control the lower region, birds dominate above, and both share the middle body. By contrast, the Ponce monolith is thoroughly dominated by fish, which constitute 61.4% of its 145 appendages ($n = 89$); fish share the lower region with felines, the medium body with birds, and the upper realm with humans. The sculpture also features some flowers on its body and head.

Secondary Components

At this level, minimal design elements assemble into complex motifs (Figure 6). In geometric motifs, the quadrangular components are topped off by fish or bird appendages. The realm of figurative motifs is more complex, with two recognizable types: front and profile characters. Front characters have

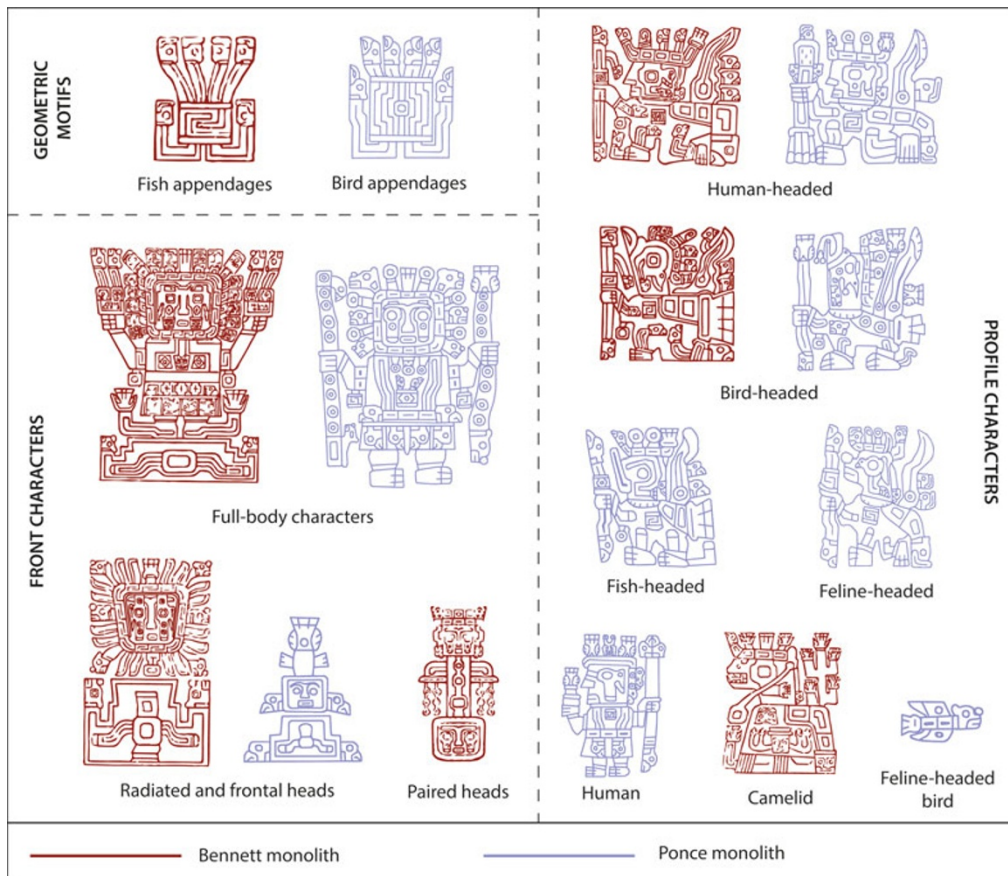


Figure 6. Classification of complex secondary motifs. (Color online)

frontal human heads, usually with radiated appendages or linked in pairs by a vertical shape. Some consist only of the radiated face, whereas others incorporate square bodies, with staff-holding open arms, a sash, a skirt, and square feet. These characters are uncommon but essential as indicated by their significant size and central location.

Profile characters appear more frequently in both sculptures. Most have feline legs in standing or running positions, a human arm and hand holding a staff, a large wing, and a tail that ending in a bird's feather or an animal head or curling into a spiral. Their most variable feature is their heads, which can be human, feline, bird, or fish. However, they always wear crowns with several appendages and face forward, except for the bird head, which faces upward. Only three profile characters have other structures: camelids, with no recognizable legs, wings, or arms but with dendritic structures stemming from their backs; profile humans, with two staff-holding arms, square bodies dressed in tunics and with crowned heads; and a small bird with two wings, a feathered tail, and feline head.

Secondary motifs can be found in both monolith's sashes, bodies, and headbands. However, they are distributed differently on each sculpture's structure (Figure 7). Ventral sashes are again where both monoliths present remarkable resemblances: geometric motifs dominate, filling in the spaces left by the meandering shapes. All these motifs are concentric in the Bennett monolith, whereas the Ponce monolith's sash alternates axial, concentric, and radiated face motifs.

Both monoliths present profile characters symmetrically arranged in pairs at the body level. In the Bennett monolith, human-headed profile characters are located on the belly, flanks, chest sides, and shoulders; bird-headed profile characters are found in the chest center, under the chest, and over the elbows. Camelids, exclusive to this monolith, are located on the flanks, and two pairs of vertically linked frontal faces are deployed on the sternum and belly button. The Ponce monolith presents fewer profile characters because the already described primary components occupy its arms. Human-headed profile characters appear on the stomach, lower flanks, and upper chest; there are fewer bird-headed profile characters, and they are located only below the chest; and feline-headed characters, exclusive to the Ponce monolith, occupy the shoulders.

The most prominent secondary motifs are frontal faces and full-body characters on both monoliths' backs. In the Bennett monolith, the main frontal character occupies the lower back, standing on a stepped platform; on its sides appear vertical sequences consisting of an axial geometric motif, a small frontal face with a dendritic structure, and a concentric geometric motif. The upper back is dominated by two large, radiated frontal faces over stepped platforms; similarly, on each side of this pair of faces, there is a vertical sequence of geometric motifs, the lower one axial and the other two concentric. The Ponce monolith's back is very different, with frontal characters surrounded by profile characters instead of geometric motifs. On the lower back, a small frontal face seems to spring from a stepped platform, flanked by two human profile characters, over whom a small feline-headed bird flies from left to right. Three pairs of profile characters symmetrically surround this scene: the first pair has fish heads; the second, human heads; and the third, bird heads. The most prominent figure in the sculpture is a full-body frontal character located on the upper back, surrounded by three other pairs of profile characters: one has a human head, one a bird head, and the smallest one is feline headed.

The only secondary motifs at the head level in both sculptures are small frontal faces: in the Bennett monolith, they are quadrangular faces behind both ears, and in the Ponce monolith, they are *keru* vessel-shaped faces below both ears. Finally, both monoliths' headbands present successions of profile characters, beginning at the rear and progressing symmetrically along both sides to meet in the front. Unfortunately, the Bennett monolith's headband is heavily eroded in its front region, making it impossible to identify motifs; on the rear appear profile, bird-headed, human-headed, and feline-headed characters, the last being heavily eroded. In the Ponce monolith, the sequence is complete and includes, from back to front, profile characters with feline, human, fish, human, feline, human, and fish heads; the central figure is a frontal, full-body character with staffs, partially eroded.

The quantitative analysis of secondary components tends to confirm the trends marked by primary components (Supplemental Table 2). Sashes are almost identical, and each back presents the monolith's distinctive character. In the Bennett monolith, the geometric components that flank the main

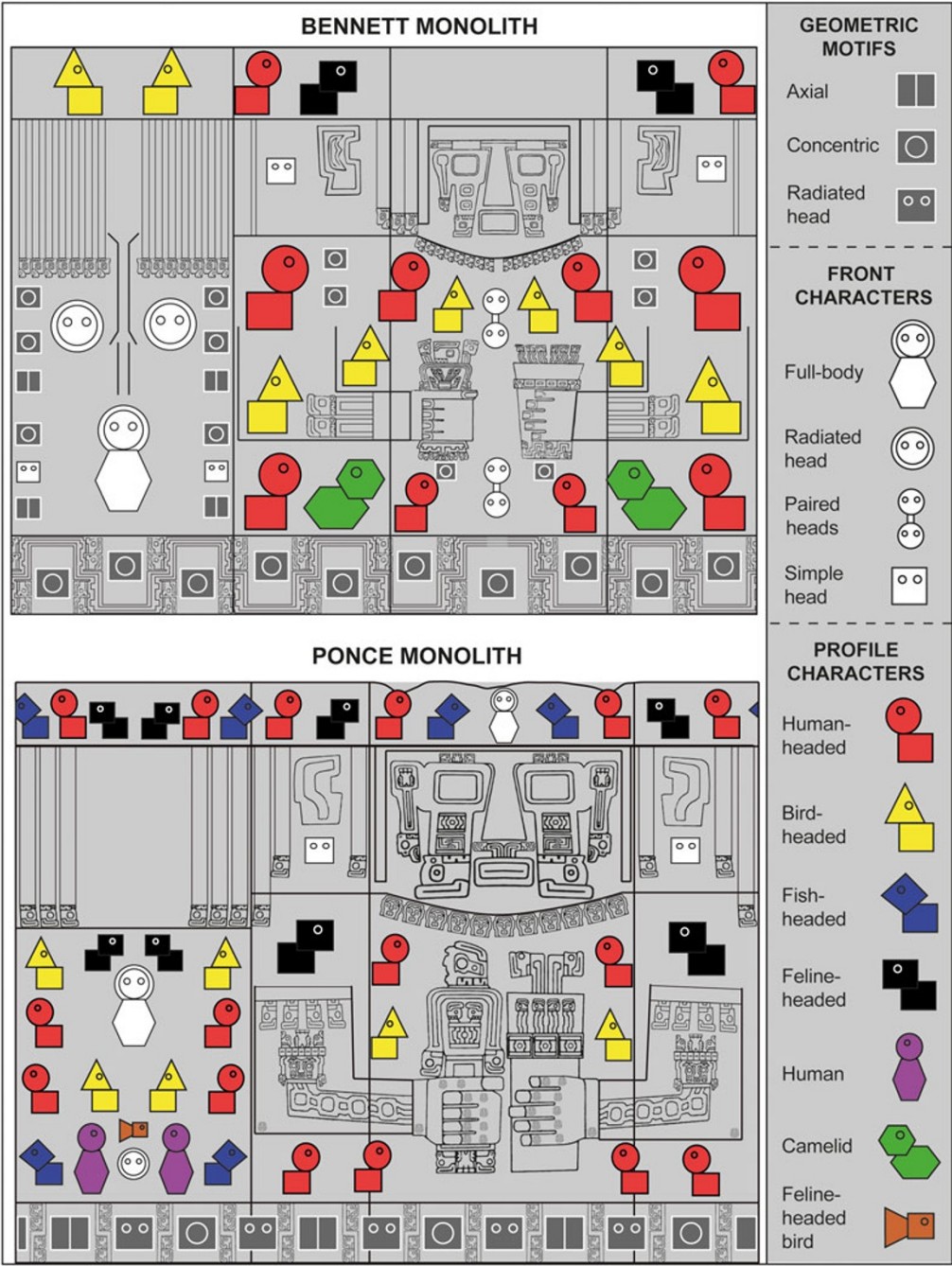


Figure 7. Distribution of secondary components.(Color online)

frontal characters contribute to a sense of an orderly, bottom-up progression. In the Ponce monolith, by contrast, the main characters are surrounded by profile characters that move toward both sides in a more dynamic, horizontal manner; an asymmetric detail in the lower back reinforces this sensation. Additionally, both monoliths differ in the profile characters they deploy. Both share a similar proportion of human-headed characters: 10 of 22 (45%) in the Bennett monolith and 16 of 36 (44%) in the Ponce monolith. However, they differ in the proportions of nonhuman-headed characters. In the

Bennett monolith, birds are the next most-frequent characters (36%, $n = 8$), followed by camelids and felines (9%, $n = 2$), whereas in the Ponce monolith, felines (22%, $n = 8$) are followed by birds and fish (17%, $n = 6$). These results reinforce the associations of the Ponce monolith with felines and fish, and the Bennett monolith with birds and camelids.

Tertiary Components

The Ponce and Bennett monoliths present 493 and 550 tertiary components, respectively; thus, a detailed description is not possible here. However, similarities and divergences appear with quantitative analysis (Supplemental Table 3) and observing their relationships with secondary components. Once again, both ventral sashes are similar, alternating a geometric motif with bird appendages and another with fish appendages. However, the proportions of tertiary components differ markedly between both sculptures at higher levels. In the Bennett monolith, the leading tertiary components are birds (31.1%, $n = 171$), fish (21.1%, $n = 116$), circles (15.8%, $n = 87$), and felines (9.3%, $n = 51$); the low proportion of flowers (4.7%, $n = 26$) is noticeable. This monolith also has human faces and corncobs as exclusive tertiary components. The Ponce monolith is quite different: circles constitute the major component (25.6%, $n = 126$), and although birds occupy second place ($n = 105$), their proportion (21.3%) is much lower than that on the Bennett monolith. They are followed by fish (14.4%, $n = 71$), flowers in a significant proportion (11.4%, $n = 56$), and felines (7.1%, $n = 35$). The Ponce monolith's exclusive tertiary motifs are double seeds, snuff tablets, and *keru* vessels, the latter two held by profile characters in their hands or staffs.

The arrangement of tertiary components also differs between sculptures. In the Bennett monolith, profile or frontal characters tend to incorporate the same type of appendages (Figure 8). Thus, human-headed profile characters on the chest, stomach, and headband deploy fish appendages, whereas those on the flanks and shoulders deploy bird appendages. Likewise, bird-headed profile characters on the elbows have fish appendages; those on the middle of the chest and the headband deploy bird appendages, and those under the chest have a mixture of both. The camelid character has a distinctive repertoire of flowers emerging from its back, felines, and a human head from which corncobs sprout; the vertically paired frontal faces in the middle of the sculpture's chest and belly present bird appendages and chained concentric circles. On the monolith's back, the appendages also have a schematic order. The central character deploys feline heads, human heads, and sprouting flowers; the accompanying vertical sequences present an evocative order, with fish in the lower geometric motif, felines and flowers sprouting from the middle frontal face, and birds in the upper geometric motif. The large, radiated face on the right deploys circles and bird heads, whereas the one on the left has wings and felines.

Contrasting with this rigid order, the Ponce monolith is quite chaotic, with each of its secondary characters tending to mix different types of appendages (Figure 9). Yet there are some general trends: fish are more common on the chest, shoulders, and lower back, and birds and felines are found more frequently on the upper back. However, flower tertiary components do not seem to follow a pattern. In the Bennett monolith, flowers are restricted to specific characters, but in the Ponce monolith, almost every frontal and profile character deploys at least one flower appendage. Flowers are mainly concentrated in the lower back scene, in the small nascent face and its human companions; meanwhile, the upper frontal character deploys concentric circles and felines. In the Ponce monolith's headband, profile characters have a specially mixed character. Another distinctive feature of the Ponce monolith is that many profile characters in its upper back, flanks, and headband hold *keru* vessels and snuff tablets.

Analysis of the monoliths' tertiary components reinforces some differences between them. It highlights the Bennett monolith's relationship with birds and its orderly presentation of dualities: birds and fish are associated with profile characters, and birds and felines with upper back frontal faces. In addition, the analysis emphasizes the association of flowers to specific figures, such as camelids and the main character of the lower back; flowers seem to sprout from dendritic structures, and their association with corncobs and camelids points to productive animal/vegetable growth. In contrast, the distribution of tertiary components in the Ponce monolith suggests a dynamic mixing of elements; animal appendages are not restricted to any area of the piece nor any specific character, and the



Figure 8. Distribution of tertiary components, Bennett monolith. (Color online)

appendages related to psychotropic plants such as concentric circles and flowers are more abundant. Snuff tablets and *keru* vessels reinforce the Ponce monolith's association not only with ceremonial drunkenness but also with the psychotropic complex and shamanic practices (Torres 2018).

Stone and Technique

The Bennett monolith is made of reddish sandstone, whereas the Ponce monolith is made of gray andesite. Both stones have different origins and characteristics: andesite is of volcanic origin, has a finer texture, and is much harder than sedimentary, porous sandstone. Detailed experimental research on carving andesite is presented by Protzen and Nair (2016:249–279), who describe a wide array of tools, techniques, and operational sequences. However, they do not provide comparative data with sandstone carving. Another experimental effort, although limited to cutting and polishing blocks without incorporating engraving techniques, was carried out by Mamani Roque (2017:103–112); they found that andesite confronts the sculptor with a more complex challenge than sandstone. More effort and skill were probably required to sculpt the Ponce monolith, although this difference may be offset by the much larger size of the Bennett monolith; differences in the stone's texture and hardness could also explain why the images of the Bennett monolith are more finely finished than those of the Ponce monolith, which are shallower and more curvilinear.

In the Aymara realm, stones are linked to women and the goddess Pachamama, and to male and female entities of the landscape or *uywiris* by their shapes or locations (Carrasco and Gavilán Vega

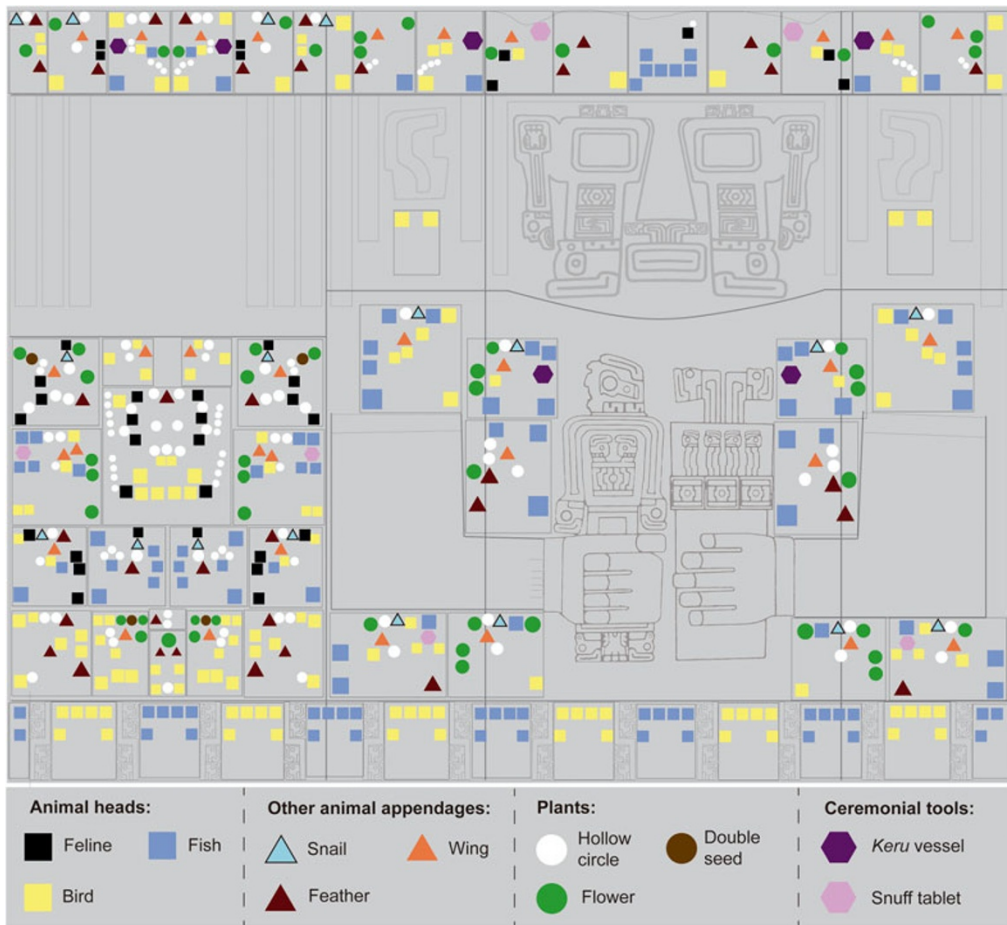


Figure 9. Distribution of tertiary components, Ponce monolith. (Color online)

2009:91–93); there is also a taste difference between male and female stones in cuisine techniques (Montecino Aguirre 2003:38–39). In addition, some stonemasons and sculptors of the Bolivian Andes differentiate the hardest “male” stones from their softest “female” counterparts.⁵ These ideas do not necessarily imply that Tiwanaku sculptures received gender connotations. However, they could be endorsed with different characteristics due to sensory relationships established during the carving and engraving processes. Hardness or porosity also relates to different affordances of possible phenomenological importance, such as retaining heat or moisture or brewing lichens and other forms of life.

Finally, the stone’s color could have been a key attribute, as suggested for some Pukara sculpture (Cuyner 2012:194). In the case of lithic Tiwanaku architecture, Janusek (2006:480) linked red sandstone with blood and, as such, with family lineages and pastoral activities; gray andesite was linked to the lacustrine environment. There is a degree of correlation between those meanings of color and the iconography of both monoliths: as mentioned, camelids are found only on the sandstone Bennett monolith, whereas fish and felines are linked with grayish, watery atmospheres (Villanueva Criales 2020:42) and are dominant in the andesite Ponce monolith.

Architectural Location

Because there is no evidence of the original positions of both monoliths, this section remains largely hypothetical. Evidence for monoliths in the center of sunken courts in the Titicaca basin comes from

Kala Uyuni, a Formative period site in the Taraco peninsula (Mattox 2011), and from ethnohistorical descriptions in Juli (Bandelier 1911). Colonial records suggest that the Indians buried the monoliths to avoid suspicions of superstition during the idolatry campaign of 1627 (Castro y del Castillo 1906 [1651]:195–196). A Christian cross on the Ponce monolith's shoulder (Ponce Sanginés 1995) ensures that it was buried in colonial times. Although the Bennett monolith does not have such marks, Cieza de Leon (1922 [1553]:325) describes two idols standing between the Kalasasaya and Akapana, hence inside or near the Temple semisubterráneo; they were later buried. If the burials of both monoliths were hurried, clandestine events, it would be logical to bury them as near as possible to where they stood.

Therefore, if we assume that both monoliths stood originally within the structures where they were later buried, a substantial difference emerges between the Bennett monolith, which was sunk in close contact with the subsoil in the Temple Semisubterráneo, and the Ponce monolith, which was raised above the ground in the Kalasasaya central court. Those locations would coincide with the two architectural strategies used to fix surrounding landscape features and astronomical bodies under the gaze of the participants in Tiwanaku open patios (Vranich 2016:203–204): (1) lowering the floor until the surrounding surface was no longer visible or (2) raising a surface and surrounding it with pillars and doors to create visual landmarks.⁶

Another meaningful aspect of the placement of both monoliths is their relationship to other sculptures. In the sunken court, the Bennett monolith would have shared the stage with several hundred-year-old sculptures and a set of white volcanic tuff heads embedded in the walls. The Andean subsoil was considered a place of the past, where new life emerges from the buried dead; this idea is contained in the poetic image of dead crania as potatoes from whose eyes sprout new plants (Arnold and Hastorf 2008:61–63). The Ponce monolith, as much as we can document, did not share the central patio of the Kalasasaya with other sculptures. Although Tiwanaku excavations in the 1960s suggested that two-room alignments flanked the monolith, subsequent studies instead posit a large esplanade with various entry points (Vranich 2010).

Landscape Visualization and Orientation

If we further assume that both sculptures faced the main entrances of their enclosures, the Bennett monolith would point south to the entrance of Temple Semisubterráneo. Archaeoastronomical research by Benítez (2013) suggests that early monoliths, such as those in the Temple, faced south. The Kalasasaya has several entrances, but its main monumental stairways are located on its eastern face (Vranich 2010); therefore, the Ponce monolith likely faced east, looking at the Temple and the Akapana pyramid.

A crucial feature of the monoliths' orientation may have been their visual dialogues with the broader landscape (Figure 10). For the Bennett monolith, looking southward implied a visual relation with the South Pole (Benítez 2013) and with nearby mountain ranges, such as Kimsachata and Kaliri sandstone quarries (Janusek and Williams 2016), as it turned its back on the Taraco range. Spatial links with regions that are not immediately visible could also be established: the productive characteristics of the neighboring valleys behind both mountain ranges would be in dialogue with the monolith's engraved images. The camelids on its flanks would look toward the pastoral region of Machaca and Khonkho Wankane, known for its Late Formative sculptures with engraved camelids (Janusek 2004); the main character on its back, with its felines and sprouting flowers, would point toward the agricultural Katari Valley (Kolata 1993). Both radiated faces on its upper back would succeed one another in the east–west direction of the sun, perhaps related to changing climates and atmospheres linked to hours or seasons; one of these faces deploys “moist” feline appendages, and the other “dry” bird appendages.

For the Ponce monolith, looking east meant turning its back on the andesite quarries of Kapia Volcano or the Copacabana peninsula on the Titicaca shores. Fish and felines, strongly related to lacustrine waters and rocks (Bouysse-Cassagne 1988:111–112), are predominant in the entire monolith, especially on its back. The monolith was also able to see, from its elevated position, a large portion of the eastern Andean mountain range or Cordillera Real, with imposing snow-capped peaks such

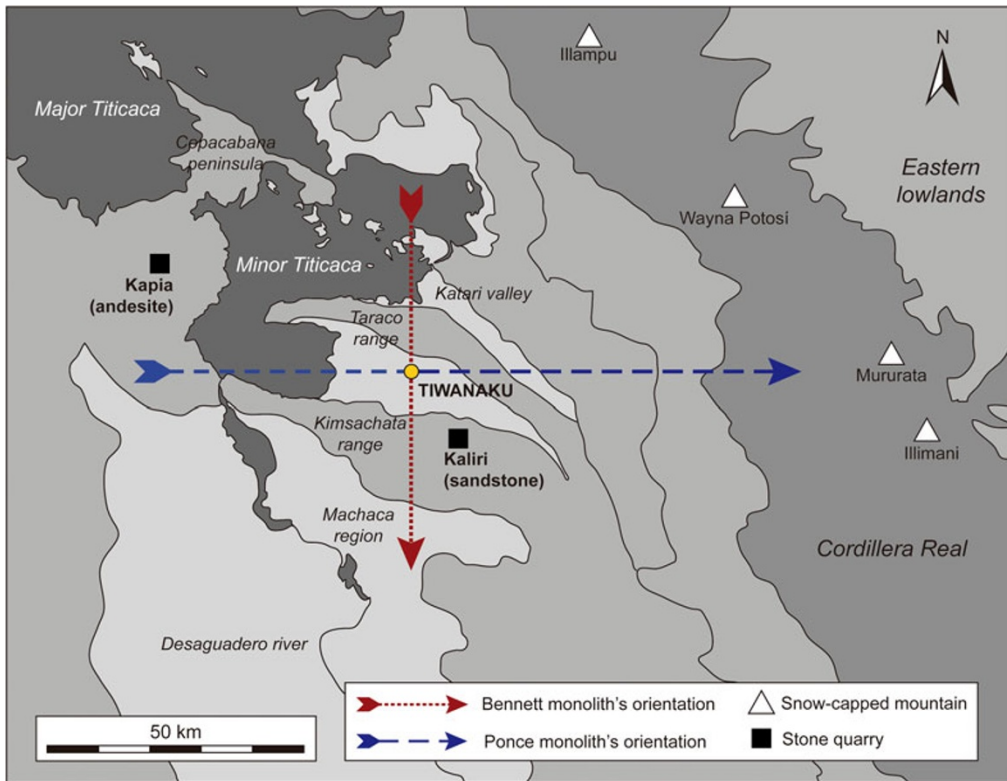


Figure 10. Hypothetical visual and spatial relations deployed by both monoliths. (Color online)

as Illimani, Mururata, Huayna Potosí, or Tuni Condoriri appearing as powerful lithic personas. The regions around those mountains are in crucial relationships with the Ponce monolith's imagery: large, glacial-origin rivers are the primary source of water for the southern Titicaca basin, highlighting the idea of snow-capped mountains as providers.

Rainclouds also arrive from the Amazonian regions behind those mountains, as do psychotropic plants such as *villca*, coca, and others. The color gray could have established an evocative dialogue between lacustrine and rainwater and between andesite and the cordillera, which looks grayish from Tiwanaku because of perspective effects. Thus, the Ponce monolith was set in a privileged position to summon a wide array of agents that came flying from the east, just like the small, winged feline on its back.

Discussion and Conclusions

This examination of two Tiwanaku monoliths in the light of Andean ontologies shows that they were mountains, but not only: they were also stones split (*wak'a*) from enormous mountains, which concentrated their personalities and power. The final shape that they acquired through sculpture cannot be described as "anthropomorphic representations" because they exceeded the modern human–mountain divide. Although the monoliths have a sketchy human anatomy, their lithic materials and the images engraved on their bodies highlight their mountainous character. They had stomachs with running, subterranean waters, perhaps emerging to the surface higher up, at points understood as giving hands or crying eyes; their slopes/flanks and heads/peaks were inhabited by diverse beings fluidly running and mixing. Each mountain was loaded with images that, together with its material, spatial, and visual relationships, constituted its unique attributes, personality, and power.

In that sense, the Bennett monolith was a mountain that, arising from a wet, watery foothill, progressed toward a peak where birds fostered a dry and bright atmosphere. Its structure emphasized a

vertical sequence through a rigidly ordered cosmogram; its images spoke of growth, with camelids, sprouting plants, and radiant faces that promoted the necessary, regular succession of humid and dry climates. Its location established links with the surrounding productive regions, and its reddish, porous material gave it the character of a sown stone, half-buried in the subsoil where it remained accompanied by a life-nurturing past. The Bennett monolith can be summarized as depicting ordered vertical growth emerging from the subsoil and rooted within the local realm.

In contrast, the Ponce monolith was an always wet mountain, a water stone thoroughly controlled by fish and wildcats. Through the lateral orientation of humans and animals, its structure suggests chaotic movement and distant horizontal interactions; its images presented summoning rituals and intense practices of ritual drunkenness and psychotropic consumption. These notions were reinforced by seeds and plants from the eastern humid regions, linked to the knowledge derived from shamanic experiences. The hard gray stone spoke of the cordillera's authoritarian, unpredictable snow-capped providers, with whom this mountain could engage in dialogue from its elevated position. The Ponce monolith created an axis between the lacustrine waters and the great snowy peaks, summoning rivers and rains from the Amazonian lowlands.

This comprehensive analysis of stone and image partially supports Janusek's (2006) idea of different spatial orientations denoted by sandstone and andesite. However, more than expressing the political intentions of the Tiwanaku state, the differing attributes of both stones might have responded to crucial dialogues with the nonhuman agents of Tiwanaku society. Hence, both stones may reflect the intention, on behalf of the human Tiwanaku elites, to communicate political messages through the symbolism of color (Janusek 2006:486–488) and to produce human subjects through ritual experiences (Janusek and Williams 2016:123–124). However, perhaps those were not their primary objectives. Andean sociality involves human and nonhuman (but not only) subjects engaged in constantly negotiated agreements and material dialogues that also produce the subjectivities and humor of the powerful lithic beings.

We suggest that Tiwanaku monoliths, as tools, responded to this need to cocreate the environment: the sculptural act of helping these lithic personas emerge defined those mountainous beings through a specific repertoire of images and equipped them for ritual engagement. Tiwanaku monoliths/mountains were capable of using their *keru* vases and snuff tablets to invite and receive, accept and reject, share, offer, and return; these actions of ritual drunkenness probably enabled them to reach different states of consciousness. Perhaps the harder-to-interpret motifs of both monoliths are the human faces near their ears, arms, hearts, or stomachs, which could allude to alterations in the mountains' balance, hearing, circulation, or digestion caused by drunkenness. Therefore, they were active participants within a community that certainly included humans—ceramic vessels for human ritual drinking are among the most common in the Tiwanaku ceremonial center—but probably also other powerful beings such as animals and plants, the past inhabitants, or snow-capped mountains. Through monoliths, vital commitments to cocreate the world could be renegotiated within an etiquette of reciprocal nurturing. As far as this interpretation goes, those commitments included agro-pastoral growth, the arrival of water, seasons' orderly succession, and knowledge derived from shamanic experiences.

A recent vision of Tiwanaku emphasizes its role as a pilgrimage center devoted to producing spectacles for its visitors through experiences that sought to integrate them with monuments and natural phenomena (Isbell 2013). In such a scenario, monoliths would have been focal points, orienting rituals toward spaces and features. However, they could have been more than that: Isbell (2013:189) correctly points out that Tiwanaku presents few indications of centralized, hierarchical leadership, such as lavish lifestyles and interments, but rather a prominence of shamanic practices and “hosts.” If we expand the limits of Tiwanaku sociality beyond the anthropocentric dictates of modern thought, we could find mountains occupying the apex of the Tiwanaku social hierarchy.

This idea is not altogether strange to south-central Andean archaeology; it has been posited for the Late Intermediate period (AD 1100–1450) in the Southern altiplano and *circumpuna* region that dead ancestors, to whose burial towers a great deal of effort was devoted, occupied the top of the social pyramid (Nielsen 2008). Dead Tiwanaku humans were buried in very simple underground cists (Isbell and Korpisaari 2012) or even dissolved and dismembered (Smith and Pérez 2015); yet, powerful lithic

beings could have occupied a similar position, understood both as mountains and as human ancestors. Those beings, whose definition, ritual equipment, and spatial arrangement involved significant collective effort, were probably those “important persons” with whom Tiwanaku residents and visitors aimed to live and share: essential agents for the reproduction of life. In such a scenario, drinking with drunken mountains would mean cocreating the world in a multispecies community.

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Data Availability Statement. The Ponce and Bennett monoliths are open to the public and to researchers in the Tiwanaku archaeological site in La Paz Department, Bolivia.

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Supplemental Table 1. Analysis of Primary Components.

Supplemental Table 2. Analysis of Secondary Components: Only Profile Characters.

Supplemental Table 3. Analysis of Tertiary Components.

Notes

1. Both monoliths lack the two-toed, easily recognizable camelid feet images that tend to be present in other materials, such as silver and golden plaques or wooden snuff tablets.
2. Interestingly, *villca* seeds have also been related to jaguar specks in Tiwanaku-contemporary and northern Argentina La Aguada iconography (Marconetto 2015).
3. The importance of maize as an ingredient for *chicha* beer used in Tiwanaku rituals has been recognized in the ceremonial center (Janusek 2005) and its eastern and western regions of influence (Anderson 2008; Goldstein 2003).
4. The headdress is badly eroded, but early descriptions feature big bird heads as appendages (Bennett 1934:431; Posnansky 1945b:Figure 113a).
5. Such information was reportedly collected from sculptors of Aymara origin in La Paz city in 2018 by the team of the Museo Nacional de Etnografía y Folklore (MUSEF; Milton Eyzaguirre, personal communication 2018).
6. The sunken court Kalasasaya and the Akapana pyramid have also been characterized as representing the levels of the Andean cosmos (Kolata 1993:90–100).

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