Style and Rebus in an Emergent Script from Bolivia: The Koati Variant of Andean Pictographic Writing

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Abstract. Andean pictographic writing, once considered the creation of foreign missionaries, is now recognized as a series of locally developed scripts that emerged after contact with alphabetic writing. However, the role of stylistic variation within the Andean pictographic scripts is little understood, nor has the rebus-based glottography of the system's phonetic signs been fully studied. This article examines the Koati variant of Andean pictographic script from Bolivia's Island of the Moon, based in part on a newly found pictographic manuscript preserved on animal hides in Harvard University's Peabody Museum. It analyzes how script styles in the Titicaca area correspond to regional groups and explores the nature of rebus signs in the Koati variant, identifying the principles underlying successful homonymic equivalences. Many of the characters in Andean pictographic writing appear to draw upon a repository of Indigenous visual signs that predate the Spanish invasion; research into the emergent pictorial scripts of Peru and Bolivia may provide insights into the meaning of visual signs in other forms of Andean inscription, such as ceramics and khipus.

Keywords. Andes, Bolivia, Lake Titicaca, Roman Catholic catechisms, writing systems, emergent scripts, rebus, pictographs

While traveling through Bolivia between 1838 and 1843, the Swiss naturalist Johann Jakob von Tschudi observed a form of pictographic script written on animal hides. Tschudi described his meeting with a Catholic priest, Father Areche, and a twelve-year-old Andean girl, who showed the visitor

> a hide covered with hieroglyphics. . . . By order of the Reverend Father, the girl easily read to me the hieroglyphics in Aymara, which contained a small catechism. Father Areche told me that an old Indian, a good Catholic from Sampaya who did not know how to read or write in Spanish, had invented these hieroglyphic signs, and had painted them on hides. . . . The ingenious Indian inventor taught his students how to read and write this script for many years before it came to the attention of the monks at Copacabana. He taught his method of writing to many Indians who taught it after his death. (Tschudi 1869; quoted in Ibarra Grasso 1953: 56–57) **{Au: Please add Tschudi 1869 to the reference list.}**

Tschudi was the first to write about the pictographic texts that were found throughout southern Peru and Bolivia in the nineteenth and twentieth centuries. Despite Father Areche's assertion that the script was created by a local Andean man, researchers had assumed until recently that Roman Catholic priests invented this writing, which was used primarily to record Christian prayers (Hartmann 1991; Jaye and Mitchell 1999; Mitchell and Jaye 1996). The latest scholarship, however, suggests that it is more appropriate to view Andean pictographic writing as local yet interrelated emergent scripts that incorporate elements of Andean symbolism found on textiles, pottery, and other objects (Rioja Montaño 2020; Castro Molina 2015: 84–89; Arnold 2015; Gaillemin 2017). Like the African Vai, Bamum, and Masaba writing discussed by Piers Kelly (2018: 189), most Andean pictographic scripts appear to have been devised by individuals without formal training in alphabetic literacy, were limited to specific domains of usage, and drew upon "indigenous pictorial culture and annotation systems." While Andean pictographic texts have been found in southern Peru, the writing system was utilized primarily in Bolivia. According to Daniela Castro (2015), Bolivian pictographic scripts can be subdivided into four distinctive regional traditions: (1) La Paz; (2) Potosí; (3) Oruro; and (4) Chuquisaca. Of these, the Chuquisaca variant, which includes San Lucas, has received the most scholarly attention (Garcés 2017; Garcés 2015; Castro Molina 2015; INIAM-UMSS 2014).

This article will analyze the Koati variant of Andean pictographic writing from the Island of the Moon (Koati) in Lake Titicaca, which belongs to the La Paz tradition. According to Adolf Bandelier, who carried out ethnographic research in Lake Titicaca in the 1890s, the pictographic texts from the Islands of the Moon and the Sun were shrouded in secrecy and kept hidden from outsiders (Bandelier 1910: 88–89). The Koati variant exists in two manuscripts, the oldest and most complete of which, the Pickering manuscript, has never been examined by scholars. An astronomer, William Pickering, acquired the manuscript in

1893, and it is currently preserved on two animal hides in Harvard's Peabody Museum. The second manuscript, the "Libreta de la Luna," was published in 1953 by Ibarra Grasso but has received little scholarly attention.

The Koati pictographic script from the Island of the Moon has been classified as belonging to the La Paz tradition of Andean pictographic writing, which, as this study will demonstrate, contains highly distinctive styles. A central issue that remains to be addressed in the literature on pictographic catechisms is the relationship among the different variants of Andean pictographic writing. While it is beyond the scope of this article to present a full account of the variation within Andean pictographic writing, this study provides a preliminary analysis of the Koati variant, including a consideration of the sophisticated rebus and wordplay within the script. The Koati characters will then be compared to the pictographic scripts from the nearby communities of Sampaya and the Island of the Sun, revealing the degree to which the script styles appear to correspond closely to the political and ritual ties among regional groups. Understanding the social dimension of an emergent script, in its historic and ethnographic contexts, is a necessary complement to linguistic analysis (Kelly 2018).

The Andean Pictographic Scripts

Tschudi was on Copacabana, the peninsula that juts out into Lake Titicaca, when Padre Areche and the girl showed him the pictographic hide. Tschudi later met the girl's father, Juan de Dios Apasa, a farmer who lived in Sampaya on the Copacabana Peninsula, where he prepared catechisms on paper (Ibarra Grasso 1953: 56–58). Tschudi purchased the catechetical hide and identified three of its texts, including the Five Commandments of the Church beginning on the left side of line 8 (see fig. 1).

<Insert Figure 1 here>

Throughout the nineteenth century other travelers wrote about their encounters with the pictographic texts. William Bollaert, who journeyed through Bolivia in 1857, observed a pictographic hide from Copacabana in the Museum of La Paz (Ibarra Grasso 1953: 70–72). In 1875 Charles Wiener (1880: 774–75) found pictographic catechisms in Paucartambo, Peru, and Sicasica, Bolivia, and published copies of them in his book *Pérou et Bolivie*. The German anthropologist Max Uhle, who conducted research in Sampaya in the 1890s, acquired a pictographic catechism to send to Berlin (now lost) (Bastian 1895: 82). Uhle described the characters on the catechism as having been written in red and explained that the pictograms required knowledge of the Aymara language. An Indigenous *doctrinero* (lay catechist) from Sampaya named Serapio Chuquimisa had produced the catechism, Uhle stated, adding that these pictographs still can be understood by "a few Indians" (*einzelne Indier*) in Sampaya and on the Challa hacienda on the Island of the Sun. Chuquimisa's script, Uhle concluded, was identical to the pictographs that Juan de Dios Apasa had shown to Tschudi some decades earlier.

In the 1890s Bandelier tried to persuade the residents of the Island of the Sun to show him their pictographic scripts, but to no avail. As he wrote:

> There is no school on the Island. An old man, who speaks Quichua as well as Aymara, teaches some of the children church hymns and Catechism in their own language. . . . Some of the Indians still preserve a kind of picture-writing. . . . It is very difficult to obtain such pictographs. The Indians refuse even to exhibit them, and our tenders of money could not induce them to show us one of these curious pictographs. Their import is wholly religious; they are the Catechism, and church-prayers, pictorially represented. . . . It seems that they all relate to church ritual and are all of post-Columbian origin. (Bandelier 1910: 88–89)

Investigators in the early twentieth century, including Horacio Urteaga, Arthur Posnansky, and Franz Tamayo, described additional pictographic texts (Rioja 2017). Father Porfirio Miranda Rivera, a Catholic priest in San Lucas, documented the pictographic writing found among his parishioners, who created three-dimensional clay versions of the Lord's Prayer for use during Lenten catechisms, in addition to inscribing pictographic prayers on paper (Holmer, Rivera, and Ryden 1951). The production of these clay glyptographic texts during Lent continues to the present day (Gaillemin 2017). These three-dimensional symbols, placed in a spiral on top of a round clay tablet, exhibit a high degree of rebus-based glottography (glottography is the recording of language-based utterances). This can be seen in the Gothenburg Ethnographic Museum's clay model of the Lord's Prayer in Quechua, where twenty-eight (65 percent) of the forty-three signs used to record the Our Father are rebus based. For example, a figure of a man biting something indicates the word *kuchu* ("bite"), a homonym for *kachun*, meaning "shall be." The phrase "your will"—*munayñiquiri*—is represented by a piece of the aromatic *muna* plant followed by a tooth—*quiru* in Quechua. "Earth," which is *pacha* in Quechua, is shown by a piece of cloth—*p'acha*—and so forth.

Dick Ibarra Grasso, an Argentine anthropologist, traveled through Bolivia in the 1940s and early 1950s, gathering examples of Andean pictographic writing in Quechua communities such as San Lucas, Ocurí, Vitichi, Vichacla, Carma, and Oroncota, as well as from Aymara settlements including Cumana, Sampaya, Sica Sica, and Puqui (Rioja 2017). His 1953 book *La escritura indígena Andina* remains one of the central texts for understanding this writing system. Ibarra Grasso estimated that, in general, about 20 percent of the signs in the various pictographic systems were rebuses, although some variants, such as the Chuquisaca script in San Lucas, had a significantly higher proportion of phonetic signs (Ibarra Grasso 1953: 28–29). Although he believed that the pictographic writing represented

an ancient, pre-Columbian script, no indigenous examples of Andean pictographic writing are known to exist outside of Catholic catechisms, and the earliest confirmed reference to the existence of the script dates to Tschudi's meeting with Padre Areche and Juan de Dios Apasa in the early nineteenth century.

In 1991, Roswith Hartmann published an analysis of pictographic texts from the Island of Taquile in Lake Titicaca and from San Lucas in Chuquisaca (Hartmann 1991). Eight years later, Barbara Jaye and William Mitchell (1999) produced a facsimile edition of a Quechua pictographic catechism, known as the Huntington catechism, which is currently in the Huntington Free Library in the Bronx, New York.

Little subsequent research on the pictographic writing system was carried out until the 2010s, when Bolivian anthropologist Fernando Garcés initiated a research project on the collection of pictographic texts in the Archaeology Museum at the Universidad Mayor de San Simón in Cochabamba. San Simón's collection of Andean pictographic texts is the world's most extensive, comprising approximately one hundred texts (INIAM-UMSS 2014; Garcés 2015; Garcés and Sánchez 2015; Castro Molina 2015; Garcés 2017). Osvaldo Sánchez Terrazas and Walter Sánchez, who carried out ethnographic fieldwork in San Lucas in the 1980s, donated the bulk of the collection. Among the significant findings that have arisen from the San Lucas materials is the ethnographic insight that prayers were read from the catechisms for specific purposes. The Nicene Creed, for example, was recited to cure illness; a local prayer, "Our God" (*Dios apunchik*) was intoned for rain; "I am a Sinner" (*ñuqa juchasapa*) provided protection from storms (Castro Molina 2015: 150–53); and so on.

Ibarra Grasso donated the remaining materials in the San Simón University collection: twenty-two pictographic texts on paper and eight on animal hides from the region of Copacabana and Lake Titicaca (Rioja 2017; Rioja 2020). Greby Rioja (2020: 45), who has studied the Ibarra Grasso collection, believes that the pictographic hides may date to the

eighteenth century. Unfortunately, only one of the eight hides is in a good state of preservation and can be read in its entirety. The other seven hides all display considerable damage and remain only partially legible.

The Islands of the Moon and the Sun

The Island of the Moon ("la Isla de la Luna"; also, Coati or Koati) lies nearly two miles to the northeast of the Copacabana Peninsula, and measures only one and a half miles long and one-half mile wide (Bandelier 1910: 41–42). It is approximately four miles from the Island of the Sun (formerly Titicaca Island). When Bandelier spent time on the Island of the Moon in 1895, he found a sparse population who subsisted primarily on farming potatoes, oca, quinoa, and maize (50). The island's owner, Dr. W. del Carpio, visited the island once or twice a year, leaving its day-to-day administration in the hands of Indigenous authorities in Sampaya on the Copacabana mainland. Nonetheless, as Bandelier noted, "Intercourse between Koati and the mainland is . . . irregular. When the Indians have to go to the Village [of Sampaya] or to Copacabana, a balsa or two will cross and recross; but if they have no cause for making the trip, the visitor on Koati may remain cut off from all the world for several weeks" (50).

<Insert Figure 2 here>

The Island of the Sun is separated from the Copacabana Peninsula by less than a mile (Bandelier 1910: 42; see fig. 2). Much larger than the neighboring Island of the Moon, the Island of the Sun measures seven miles in length and three miles in width. Until the Bolivian agrarian reform law in 1953, the Island of the Sun was dominated by two haciendas—Challa and Yumani—in which the entire Native population labored (Hyland and Lee 2021). The Garcés family of Puno owned the Challa hacienda (Bandelier 1910: 51); the Indigenous people on the Challa estate belonged to the kinship group of Aran-saya centered in the peninsula of Copacabana, with branches along the mainland.

> Every year the Aran-saya residing on the Island of the Sun interacted with kin from around the lake during religious festivities; they also participated in informal trading networks. Prior to the agrarian reform law of 1953, the workers on the Challa estate had to perform free labour on the Garcés properties in Puno, and they travelled regularly between the island and the city. The Challa hacienda labourers, therefore, maintained close contact with Native groups living along the mainland. (Hyland and Lee 2021: 424)

As Uhle noted, "a few Indians" from the Challa estate could understand the pictographic script from Sampaya.

The Island of the Sun's Yumani estate was owned by the Perrin Pando Guarachi family, descended from Juan Colque Guarachi, whose father had served on the war council of Manco Inca Yupanqui (half brother of the Inca emperor Atahuallpa), and who had submitted to Francisco Pizarro alongside him (425).

> In the late nineteenth and early twentieth centuries, the main properties of this branch of the Guarachi family could be found in La Paz and its environs. While the workers on the Challa hacienda performed their forced unpaid labour as "*pongos*" in Puno on the shores of Lake Titicaca, those from Yumani travelled to La Paz to serve as pongos for the Guarachis. Likewise, when the workers on the Island of the Sun's haciendas delivered their shares of the harvest to the landowners, those from Challa went to Puno and those from Yumani went to La Paz. (426–27)

The workers on each hacienda maintained distinctive spheres of interactions, which was reflected in the highly divergent khipu traditions found on each hacienda. Workers on both estates utilized khipus—knotted cords—to keep track of produce and livestock. The khipus from the Challa hacienda, collected by Uhle, share the khipu structures found in Puno and

elsewhere in Lake Titicaca, while the Yumani khipus exhibited features that were normally found in Cuzco and La Paz (Hyland and Lee 2021).

Through their ties to Sampaya and Copacabana, the Native people from the Island of the Moon interacted regularly with the families from the Challa estate, but not with those from the Yumani hacienda. In the nineteenth and early twentieth centuries both methods of inscription—khipus and pictographic texts—were used concurrently on the Islands of the Moon and Sun and on Sampaya and the Copacabana Peninsula. Were the pictographic styles of the catechisms defined by the same interaction zones as the khipus were? How do the Koati pictographs compare to those of Sampaya and those of the Yumani hacienda on the Island of the Sun? If the pictographic scripts were associated with the same interaction spheres as the local khipus, we would expect the Koati and the Sampaya pictographic writing to be similar, while the Koati and the Yumani scripts would differ greatly, despite their close geographical proximity. In fact, this is the case, as will be demonstrated below. As one would expect in a script that was highly local, created and maintained without the intervention of Catholic priests or other outsiders, there existed significant stylistic variations among the divergent spheres of interaction.

The Pickering Manuscript and the Libreta de la Luna

A Harvard astronomer, William Henry Pickering, donated two catechetical hides to the Peabody Museum of Archaeology and Ethnology at Harvard in 1921. He had acquired the hides many years earlier; according to Peabody Museum records, Pickering stated that the hides were given to him by a Lake Titicaca steamboat captain: "When Prof. Pickering was on Lake Titicaca in 1893, a steamboat captain told him of some picture writings he knew of, made probably by the Aymara Indians. Not long after, much to Prof. P's surprise, this same captain called on him at his house in Cambridge and presented him with these two specimens."[1]

In 1891, Pickering had established Harvard University's Boyden Station in Arequipa, Peru, building an observatory near the peak of the snow-capped Misti Mountain overlooking the city. That same year, according to his journal for 1891, he visited Lake Titicaca, traveling to the Islands of the Sun and the Moon.[2] His sketchbook contains his pencil drawings of the "palace of the Inca" on the Island of the Sun and of the "palace of the Virgins" on the Island of the Moon, both dated 1891.[3] He notes in his journal that he spoke with "Capt. Salavari" about the stars that could be observed in the night sky above Lake Titicaca: "Captain says he has seen Jupiter satellite with naked eye."[4]

The following year Pickering returned to Lake Titicaca but remained in Puno on the mainland.[5] This trip to Puno was the final journey in the Andes that is documented in his journal. Pickering left Boyden Station in 1893, returning to his home in Massachusetts.[6] It is possible that Pickering went on an unrecorded trip to Lake Titicaca in 1893. However, in 1921 Pickering may have been mistaken about the exact year when he met the captain who brought him the pictographic hides; the officer in question possibly may have been Captain Salavari whom he first encountered in 1891.

Boyden Station included a large residence in Arequipa that housed visiting scholars interested in Peruvian ethnology, archaeology, and history (McGrath 2019: 46–65). Professor Hiram Bingham, for example, used Harvard's Boyden Station as a base for his Andean expeditions (46). Boyden Station had a special relationship with Frederic Ward Putnam, the curator of Harvard's Peabody Museum. Putnam regularly sent his associates to stay with Pickering in Arequipa, where they conducted excavations in the surrounding area. Following Putnam's instructions, Pickering's assistant, the astronomer Andrew Douglas, excavated ancient gravesites for skeletal remains and other artifacts (61–62). Although astronomical research remained the primary purpose of Harvard's Arequipa Observatory, the station also served as a center of investigations into Andean culture and history. Through interactions

with his visitors, Pickering would have been well aware of the value of the pictographic texts for Aymara ethnography.

The two texts, Pickering 1 (figs. 3 and 4) and Pickering 2 (fig. 5), are on what appear to be goat hides, measuring 76 cm × 64 cm and 78 cm × 72 cm, respectively. Most of the characters appear to have been written with black ink derived from a plant known as *ñuñumayo* (*Solanum nitidum*), which the scribe applied using a small stick. On Pickering 1, lines 9, 10, 11, and 12 are written in red ink. According to Ibarra Grasso, the red ink on pictographic hides derives from a certain cactus, presumably from the cochineal insects that live on the cactus plants. Pickering 1 has sixteen lines of text, filling the entire hide. Pickering 2, however, possesses only nine lines of text, leaving the lower portion of the hide blank. The pictographic lines are read in a boustrophedon fashion, beginning from the lower left.

<Insert Figure 3 here>
<Insert Figure 4 here>
<Insert Figure 5 here>

The Pickering texts clearly share the same pictographic script as the Libreta de la Luna, recorded by Ibarra Grasso (fig. 6). In 1940, when Ibarra Grasso arrived in Bolivia, he met with the archaeologist Arthur Posnansky, who in 1910 had published a brief description of the pictographic hide in La Paz (Ibarra Grasso 1953: 299–309). Posnansky showed Ibarra Grasso a notebook with pictographic writing from the Island of the Moon, written with violet ink on lined paper. Posnansky allowed Ibarra Grasso to copy the text, which the latter published in its entirety in his 1953 book. The lines in the Libreta de la Luna are read from right to left, not boustrophedon.

<Insert Figure 6 here>

The Pickering manuscript contains more items than the Libreta de la Luna, including the following, which are absent from the latter text: the Our Father; the Hail Mary; the Consecration to the Sacred Heart; the Three Enemies of the Soul; and the Four Last Things.

The similarity between the Pickering manuscript and the Libreta de la Luna can be seen, for example, by comparing the depiction of the Five Commandments of the Church in each text.

<Insert Figure 7 here>

Each text begins with an image of a church, signified by a building with a cross and a priest. This is followed by large hollow circles—two in the Libreta, and four in Pickering 1—which indicate commands. After this we see five hash marks representing the cardinal number 5. This phrase is the name of the text: the five commands of the church. Next comes an eye, called *naira* in Aymara, a rebus sign for "beginning," which is also *naira*. The list commences with the command to attend Mass, shown by parishioners kneeling by the priest in the church. The text then proceeds through a simplified version of the rest of the commands, which are numbered from 2 to 5: (2) to go to confession, especially when dying; (3) to celebrate Easter; (4) to fast on the appointed days; and (5) to give tithes. Both versions adhere to this order of the commands, which differs from that of official church teaching. The signs used by each scribe are very similar, although the Libreta provides more details of the Pascual celebrations than does the Pickering manuscript. In the Pickering text, food is represented by solid circles, distinct from the hollow circles, which means "command" or "word." The scribe for the Libreta, however, made no such distinction, employing an empty circle to signify "food," "command," and "Eucharist." Despite these minor differences, both texts pertain to the same style of pictography.

This similarity is also evident when one compares the Sampaya script in the Tschudi hide with the Pickering manuscript. In figure 1, line 8, one can see the Five Commandments of the Church in the Sampaya script. While the characters in the Tschudi hide are simpler and less elaborate than those of the Pickering manuscript, they are essentially similar. The Tschudi pictographs begin with an image of a church, followed by a priest and an empty circle, and then five hash marks: in other words, the five commands of the church. Next

comes a simple oval to represent the eye—the "beginning"—followed by commands that are depicted by signs like those of the Koati script. Attending Mass is shown by people kneeling outside the church; going to confession is shown by highly schematic drawings of a person kneeling before a priest, and a prone figure who is dying; celebrating Easter is depicted by people dancing; for fasting, we see people kneeling before the church, while giving tithes is shown by people bringing produce to the church. As in the Pickering manuscript, the foodstuffs are depicted by solid circles. Although the Sampaya and the Koati scripts look quite distinct at first glance, the signs are essentially the same.

The Koati Variant: Rebus and Wordplay

The Koati script consists primarily of logographic signs with at least one determinative, although a significant portion of the signs are glottographic. This description fits the most conservative and traditional definition of writing. Determinatives are "signs indicating the semantic sphere of the items they accompanied" (Daniels 1996: 45). Determinatives could be broad in their application and may add nonlinguistic information, as Amalia Gnanadesikan (2009: 41) has noted in the case of Egyptian hieroglyphs: "For example, the word for 'mother' would normally be written with a 'woman' determinative, but if a divine mother was being referred to, the determinative would be that for a goddess." The Koati script employed a determinative in the shape of a small cross to indicate that the associated sign was "divine." For example, at the beginning of the Pater Noster, the sign for "God the Father" is a hunched over elderly man with a cane who has a cross sticking out of his back (fig. 8). The cross indicates that this elderly man is in fact God. In the Koati script, the cross as a determinative signifying "divinity" was attached to numerous symbols. For example, a cross rising from the back of a condor represented the Holy Spirit; a cross attached to the top a heart symbolized the Sacred Heart of Jesus, while a cross sticking out of a young man's

head indicated Christ. The Island of the Sun's Yumani script utilized a unique determinative consisting of little spikes sticking out of a sign, like spider legs, to indicate joyfulness.

<Insert Figure 8 here>

Rebus—the indication of sound using homonyms—also played a significant role in the Koati script. Robert Randall (1987) has described how the understanding of puns and wordplay was central to Andean notions of knowledge and spiritual power. Citing colonial dictionaries along with his own ethnographic experiences, Randall argues that words in Quechua and Aymara are believed to possess creative power. As he writes: "The pun utilizes language to link and relate objects and ideas, generally considered to have no affinity with each other. Thus, within any worldview that assumes the creative power of the word, the pun is one of the highest forms of affirmation of the basic interrelation of all things. The wisest men of the Inka Empire were, in that sense, masters of the pun" (Randall 1987: 270).

Randall emphasizes that each word in Quechua or Aymara possesses many meanings, and that a person's skill in linking the multiple meanings of words, especially through the art of making puns, lies at the heart of divining spiritual insights. The puns that exist within the rebuses of Andean pictographic writing are not merely random coincidences of sound; the images chosen to represent the particular sound of a word convey significance in their own right. This is evident in one of the most common rebus signs in Andean pictographic writing—an "eye" to mark the beginning of a prayer or catechetical text. The word for "eye" in Aymara (*naira*) and in Quechua (*ñawi*) is a close homonym for "beginning" (*naira* and *ñawpa*, respectively). However, the reference to sight also refers to the importance of the visualized words for achieving insight. The significance of sight for acquiring knowledge in the Andes has deep roots; the issue of visibility appears, for example, in the letter of an Indigenous leader, Mauricio de la Cruz, who stated, "One can never understand without the ministry of the eyes" (Nunca se puede venir a su inteligencia sin el ministerio de los ojos).[7]

Cruz's memorable phrase, "the ministry of the eyes," is an appropriate description for the powerful visual impact of the pictographic symbols themselves. The image of an eye at the start of each sequence (see figs. 6 and 7, for example) has a dual meaning, being simultaneously a phonetic homonym for "beginning" as well as a reference to the visual nature of the inscription.

Another example of a phonetic rebus sign in the Koati script is the drawing of a *t'ika* flower in the Lord's Prayer to convey the second syllable of the word *sutikiy*, which means "your name." The phrase occurs as part of the prayer: "Our Father, who art in Heaven, hallowed be your name." On figure 8, one can observe the image of the flower after the depiction of God in heaven (a cross that is being worshipped by a kneeling supplicant in an upper world). Following the flower comes a representation of the honoring of this word, the divine name, by showing a cross with an empty circle (the divine word) and a person kneeling in reverence before another cross. "T'ika" partially replicates the sound of the "your name," but it also reinforces the idea of honor and celebration. A "t'ika" refers specifically to a flower that is worn in one's hat during a ceremony in honor of the beings in the mountain peaks and the earth (Mulvaney 1994: 191). Decorating one's hat with flowers remains a vital aspect of Andean ceremonies, as can be seen in modern celebrations of Easter in rural Bolivia (Gaillemin 2017: 63). The image of the flower is a poetic evocation of how to honor the divine, as God's name is glorified in the prayer.

Another phonetic rebus in the Koati script is the word for joy, *kusi*, which is represented by a spider, *kusi-kusi* (Ibarra Grasso 1953: 121, 196). In addition to its phonetic value as a homonym for "joy," the spider's appearance before rainfall is associated with happiness. Other rebuses also contain ideographic overtones, such as the pleasing fragrance of God's will—"will" is *munaña* in Aymara—as depicted by the aromatic *muna* plant. *Muna* as the name of a plant, incidentally, is a Spanish loan word into Aymara. This mixture of

semantic associations with phonetic homonymy was found also in the early cuneiform scripts of ancient Mesopotamia (Daniels 1996: 42). This principle of using semantic associations with phonetic homonymy is also found in Aztec writing (see, e.g., Whittaker 2018) and probably other scripts. Writing systems that combine semantic associations and phonetic rebuses tend to possess a large repertoire of possible signs, as multiple signs can indicate a single phonetic unit.

This brief review of homonymy in Andean pictographic writing reveals some of the principles that underly the creation of legible rebus signs in this system:

1. The homonymic equivalence ignores glottal stops; this is apparent in *p'acha* and *pacha* and *t'ica* and *sutiki*.
2. The homonymic equivalence may be for more than one syllable; this can be seen in *muna* and *kusi*, for example. Also, the sound indicated may be a syllable plus the first consonant of the following syllable, as in *t'ika*, dropping the final vowel.
3. The sound represented in the script is not necessarily that of the first syllable in the represented word; this can be seen in case of *t'ika* for *sutiki*.
4. The homonymic equivalence may not extend to the vowels; there may be a vowel shift if the consonants are identical, such as in *kuchu* to represent *kachun*.
5. When the homonymic equivalence ends in a consonant, the consonant may be dropped, as in the case of *kuchu* and *kachun*.
6. The homonymic equivalence may include words from Spanish.

These principles reveal an implicit Andean understanding of wordplay and punning, as expressed in a pictographic writing system that was created and maintained by local peoples without undue interference from outsiders.

Comparison to the Yumani Pictographic Script

In his 1953 book, Ibarra Grasso published photos of three pictorial catechisms from the Yumani hacienda on the Island of the Sun (Ibarra Grasso 1953: 311–15). Father Antonio Sempere, the director and founder of a natural history museum at the Jesuit Colegio de San Calixto in La Paz, had collected the catechisms that were on display in the museum. The

pictographic hides belonged to the museum’s section on ethnology and archaeology, which also exhibited sixty skulls from pre-Hispanic burials, khipus from the Island of the Sun, stone arrowheads, bows and arrows from the Amazon, and other assorted objects (Hyland and Lee 2021: 417–20). Father Sempere was a friend and colleague of Alberto Perrin Pando, whose mother, Leonora Pando de Perrin Guarachi, owned the Yumani hacienda (424–25). Both men shared similar interests in Andean archaeology and ethnography, and together they attended the first and second roundtables on Bolivian archaeology, exclusive events where fewer than two dozen people were invited. Perrin Pando allowed Sempere to collect ethnographic items from the Yumani hacienda, including the three pictographic hides.

The catechetical hides date from 1949, 1950, and 1953. Because they were so recent, Sempere was able to speak with the individuals who created them and to record the prayer represented by the 1950 hide. This prayer presents a uniquely local view of Christianity:

> In the beginning the Father (God) pardoned all his children in the world; the poor man was happy because on the third day after [Christ’s] death, he whom the Devil killed, he forgot their evil; on (the next) day, joy and he pardoned [and] they would dance. In the house, because of making the incense burner (asking for pardon), we will go upwards (to heaven) when all of us die.
>
> Our Mother (the Virgin) was happy; he who was crying (mistreated, calumnied) forgave (he was hoping for forgiveness; because he who hopes for pardon must first forgive others). His children, free from worries, left (they were tranquil, in peace). The evil man and the thief are going to Hell (the house of the Devil). When we leave this world, because of having prayed to God (the incense burner), because of having suffered, we will go (be liberated) from Hell and from his authority (the Devil). With our first happiness, we will rejoice with God the Father (the old man). To go to

heaven, we pray with all our being; so that we will ask pardon for having punished our children, and we will kill the Devil. Thus, it will be.[8]

<Insert Figure 9 here>

Two of the symbols—the "eye" for "beginning" and the "spider" for "joy"—are similar in both the Koati and the Yumani pictographic texts. These two signs are common in many of the Andean pictographic writing variants. Most other symbols, however, differ between the Koati and Yumani hides. For example, the Virgin Mary (fig. 9, line 4, right-hand side), is depicted in the Yumani pictograph as a doll-like figure who faces forward and has little lines radiating out from her, like the legs of a spider, indicating her happiness. The Virgin Mary in the Koati script (fig. 4, line 1, middle; also see fig. 10), in contrast, is shown sideways as two women, each holding a baby. The doubling of the Virgin is meant to portray that she was a virgin before and after giving birth; this refers to the Catholic doctrine that Mary remained a virgin throughout her life, despite having given birth to the Christ child.

<Insert Figure 10 here>

The two signs to represent "God the Father" in the Yumani script begin with an image of twin mountain peaks, followed by a male figure who stands upright, facing forward with his arms outstretched (fig. 9, line 1, second and third signs from the left). The title of "Father" is indicated by the drawing of twin peaks, which signifies the deities associated with mountains, known as "Tayta," or "Father." The figure of God is garbed in priestly vestments with a cross on his chest. This is quite unlike the Koati "God the Father," who is shown from the side, hunched over with a cane, and with a cross sticking out of his back (fig. 8, first sign, and fig. 10, second sign from the left); the Koati script also lacks an image of mountains as a rebus for the male earth beings called "Tayta." Yet another difference lies in the depiction of prayer. In the Yumani script, a schematic drawing of an Indigenous incense burner represents "praying to God" (fig. 9, line 3, sixth sign from the left). In the Koati script, praying to God is

indicated by two figures kneeling before the Crucifixion (fig. 5, line 3, symbol on the right-hand side). In yet another example, ordinal numbers—as in the "third day" to denote Christ's resurrection after death—are shown in a different manner in each script. In the Pickering rendition of the creed, (fig. 10), the "third day" after the Crucifixion is indicated by three solid circles in a vertical line; each circle represents a "day." In the Yumani script, a half-filled circle for "day," followed by three hash marks connected by a line underneath (fig. 9, line 2, symbols 1 and 2 from the right), represents "the third day." This reveals two distinct concepts of numeracy; in the Koati example, three of the actual items ("day") are depicted, while in the Yumani text, the item ("day") plus the number 3 are shown.[9]

In general, the Yumani script is more schematic and abstract than the Koati variant. Just as the Yumani characters are for the most part unique and highly local, so the text represented by the Yumani pictographs is a very idiosyncratic version of the Christian catechism. Despite the geographic proximity of the Yumani hacienda on the Island of the Sun to the Island of the Moon, the pictographic writing styles are very different from each other, suggesting a close correspondence between the pictographic variation and the familial and ritual ties among its practitioners. The distinction between the two variants also indicates the need to recognize the existence of subdivisions within the broader category of "La Paz style" pictographic writing as defined by Castro.

Conclusion

While the Koati script reveals strong similarities to the pictographic writing of Sampaya, which could also be read on the Challa hacienda on the Island of the Sun, it is very distinct from the Yumani script used only a few miles away. This pattern of variation is similar to that found among khipus on the Island of the Sun in the early twentieth century, in keeping with kinship and interaction zones among the local users of these forms of inscription (Hyland and Lee 2021). These differences underscore the extent to which the pictographic writing was

created and circulated by local individuals rather than being a system imposed by outsiders. If Andean pictographic script had been developed by Catholic missionary orders such as the Jesuits, one would expect a much higher degree of uniformity in the signs.

Emergent scripts, like Andean pictographic writing, tend to develop in situations of "graphic pluralism," where multiple systems of inscription were used within the same linguistic community (Salomon and Hyland 2010). Such scripts are often seen as replicating the conditions for the original development of writing (Kelly 2018; see also Bohaker 2010). Certainly, visual puns and homonymic associations play a significant role in the Andean pictographic writing system, just as they do in original scripts like the early cuneiform writing of ancient Mesopotamia (Daniels 1996: 42).

It is possible to identify the principles that determine the phonetic limits of successful homonymic equivalences within the Andean rebus system. Many of the characters within the Andean pictographic scripts appear to draw upon an Indigenous repository of visual signs, derived from the long history of using visual symbols such as "tokapu" to indicate meaning in Andean textiles, ceramics, and other media (Quispe-Agnoli 2005; Burger 2021). A more precise understanding of the relationship among puns, rebuses, and meaning in the pictographic script may reveal insights that could be applied to other genres of Andean visual culture. Recent investigations of contemporary funerary khipus, for example, have demonstrated that puns and rebuses can play a vital role in interpreting khipu features (Hyland, Lee, and Aldave 2021). Colonial-era khipus preserved in the community of San Juan de Collata, Peru, appear to be at least partially phonetic (Hyland 2017). Further research on the emergent pictorial scripts of Peru and Bolivia may provide insights into the meaning of visual signs in other forms of Andean inscription.

Notes

1. Peabody Museum Ledger, 21–50–30/F294, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, MA.

2. William Henry Pickering, “Observations and Sketches,” 1891, William Pickering Papers, HUG 1691, Harvard University Archives, Cambridge, MA, pp. 34–37.

3. William Henry Pickering, “Sketches,” 1891–92, William Pickering Papers, HUG 1691, Harvard University Archives, Cambridge, MA, pp. 16–17.

4. Pickering, “Observations and Sketches,” 1891, pp. 33, 38.

5. William Henry Pickering, “Observations and Sketches,” 1892, William Pickering Papers, HUG 1692, Harvard University Archives, Cambridge, MA, p. 62.

6. It is worth noting that William Pickering had become world-famous by 1893 because of his observations of the planet Mars during his sojourn in the Boyden Station. Pickering’s quest for alien-made “canals” on the surface of Mars had been covered by the *New York Herald*; when he telegrammed the paper in August 1892 with the news that he had “discovered” such canals, it caused a worldwide sensation (Nall 2017).

7. Mauricio de la Cruz, “Letter by Mauricio de la Cruz, alcalde del pueblo de Santiago de Pamparomas,” June 25, 1806, vol. 4, fol. 26, Pamparomas Community Archives, Peru.

8. Original Spanish: “Al principio el Padre (Dios) a sus hijos y en el mundo perdonó; el pobre se alegró, porque de días tres de su muerte, que el diablo lo mató, olvidó sus males; día uno (enseguida) la alegría y el bailarían perdonó. En la casa por hacer el sahumerio (pidiendo perdón) iríamos arriba (al cielo) cuando nos muramos todos. Nuestra madre (la Virgen) se alegró; el que lloraba (el ofendido, calumniado . . .) perdonó (esperó para perdonar; por que al esperar él su perdón, tiene primero que perdonar él).

Sus hijos de la preocupación salieron (quedaron tranquilos, en paz). Al infierno (la casa del diablo) el hombre malo y el ladrón están yendo. Cuando nos vayamos del mundo, por haber rogado a Dios (el sahumerio), por haber sufrido, del infierno, de su autoridad (el demonio) nos iremos (nos libraremos). De nuestra primera alegría nos alegraremos con Dios Padre (Viejo). Para ir al cielo (la cruz arriba, el demonio abajo) rezaremos con todo nuestro ser; de que a nuestros hijos hemos castigado pediremos perdón, y al demonio mataremos. Así sea." (The author is responsible for all translations into English).

9. For an in-depth discussion of these two different kinds of numeracy within the development of literacy, see Chrisomalis 2012.

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References

Arnold, Denise. 2015. "Algunos debates sobre los sistemas escriturarios indígenas en torno a la escritura testereana." In Garcés and Sánchez 2015: 149–57.

Bandelier, Adolph. 1910. *The Islands of Titicaca and Koati*. New York: Hispanic Society of America.

Bastian, Adolf. 1895. "Auf Briefen Herrn Dr. Uhle's." In *Notizblatt*, 80–83. **{Au: Please provide full bibliographic info (there is no other reference list entry called *Notizblatt* to cross-reference)}**

Bohaker, Heidi. 2010. "Reading Anishinaabe Identities: Meaning and Metaphor in Nindoodem Pictographs." *Ethnohistory* 57, no. 1: 11–33.

Burger, Richard L. 2021. “The Survival and Transformation of Annular Pacchas in Cusco: An Example of Artistic and Ideological Continuity and Change.” *Boletín del Museo Chileno de Arte Precolumbino* 26, no. 1. http://doi.org/10.4067/S0718-68942021000100135.

Castro Molina, Daniela. 2015. *Escritura Signográfica Andina*. Thesis, Universidad Mayor de San Simón, Cochabamba, Bolivia.

Chrisomalis, Stephen. 2012. “The Origins and Co-evolution of Literacy and Numeracy.” In *The Cambridge Handbook of Literacy*, edited by David R. Olson and Nancy Torrance, 59–74. Cambridge: Cambridge University Press.

Daniels, P. T. 1996. “The Invention of Writing.” In *The World’s Writing Systems*, edited by P. T. Daniels and W. Bright. 579 – 586, Oxford: Oxford University Press.

Gaillemin, Berénice. 2017. “D’argile, de fleurs et de laine: Catechismes multisensoriels dans les hauts plateaux boliviens.” *Gradhiva*, no. 26: 46–71.

Garcés, Fernando. 2015. “Solo con cabeza no se puede recorder: Oralidades, escrituras y memorias enmarañadas en San Lucas (Chuquisaca).” In Garcés and Sánchez 2015: 61–93.

Garcés, Fernando. 2017. *Escrituras andinas de ayer y hoy*. Cochabamba, Bolivia: INIAM-UMSS.

Garcés, Fernando, and Walter Sánchez, eds. 2015. *Textualidades: Entre textiles, cueros, papeles y barro*. Cochabamba, Bolivia: INIAM-UMSS.

Gnanadesikan, Amalia E. 2009. *The Writing Revolution: Cuneiform to the Internet*. Maiden, MA: Wiley-Blackwell.

Hartmann, Roswith. 1991. “Christian Religious Pictographs from the Andes: Two Examples.” *Latin American Indian Literatures Journal* 7, no. 2: 172–91.

Holmer, Nils M., Porfirio Miranda Rivera, and Stig Ryden. 1951. “A Modelled Picture Writing from the Kechua Indians.” *Ethnos*, no. 3–4: 171–84.

Hyland, Sabine. 2017. “Writing with Twisted Cords: The Inscriptive Capacity of Andean Khipu Texts.” *Current Anthropology* 58, no. 3: 412–19.

Hyland, Sabine, and Christine Lee. 2021. “Indigenous Record Keeping and Hacienda Culture in the Andes: Modern Khipu Accounting on the Island of the Sun, Bolivia.” *Hispanic American Historical Review* 101, no. 3: 409–32.

Hyland, Sabine, Christine Lee, and Roberto Aldave. 2021. “Khipus to Keep Away the Living Dead.” *Anthropology News* 64, no. 5: 10-13.

Ibarra Grasso, Dick Edgar. 1953. *La escritura indígena Andina*. La Paz, Bolivia: Biblioteca Paceña.

INIAM-UMSS. 2014. *Escritura Andina: Pictografía e ideografía en cuero, papel y barro*. Cochabamba, Bolivia: IANIAM-UMSS.

Jaye, Barbara H., and William P. Mitchell. 1999. *Picturing Faith: A Facsimile Edition of the Pictographic Quechua Catechism in the Huntington Free Library*. Bronx, NY: Huntington Free Library.

Kelly, Piers. 2018. “The Invention, Transmission, and Evolution of Writing: Insights from the New Scripts of West Africa.” In *Paths into Script Formation in the Ancient Mediterranean*, edited by Silvia Ferrara and Miguel Valério, 189-209. Rome: Edizioni Quasar.

McGrath, Alex. 2019. *You Take Our Stars: Harvard Astronomers in Peru, 1889–1900.* MA thesis, Simmons College, Boston.

Mitchell, William P., and Barbara H. Jaye. 1996. "Pictographs in the Andes: The Huntington Free Library Quechua Catechism." *Latin American Indian Literatures Journal* 12, no. 1: 1–42.

Mulvaney, Eleanora N. 1994. "Posibles fuentes de alucinógenos en Wari y Tiwanaku: Cactus, Flores, y Frutos." *Chungara* 26, no. 2: 185–209.

Nall, Joshua. 2017. "Constructing Canals on Mars: Event Astronomy and the Transmission of International Telegraphic News." *Isis* 108, no. 2: 280–306.

Quispe-Agnoli, Rocío. 2005. "Cuando Occidente y los Andes se encuentran: Qellqay, escritura alfabética, y tokhapu en el siglo XVI." *Colonial Latin American Review* 14, no. 2: 263–98.

Randall, Robert. 1987. "La lengua sagrada: El juego de palabras en la cosmología andina." *Allpanchis* 19, no. 29/30: 267–305.

Reclus, Elisée, E. G. Ravenstein, and A. H. Keene. 1885. *The Universal Geography*. Vol. 18. London: J. S. Virtue.

Rioja Montaño, Greby Uriel. 2017. "Dick Edgar Ibarra Grasso y la Escritura Indígena Andina." *Identidades: Aportaciones para la educación boliviana* 2, no. 2: 89–122.

Rioja Montaño, Greby Uriel. 2020. "Sistemas escriturarios indígenas en torno a los catecismos pictográficos y signográficos aimaras y quechuas en cuero y papel." *Vestígios* 14, no. 2: 37 - 60.

Salomon, Frank, and Sabine Hyland. 2010. "Guest Editors' Introduction." *Ethnohistory* 57, no. 1: 1–12.

Whittaker, Gordon. 2018. “Aztec Hieroglyphics: A Name-Based Writing System.” *Language and History* 61, no. 1–2: 60–76.

Wiener, Charles. 1880. *Pérou et Bolivie*. Paris: Hachette & Co.

Figure 1. The first eight lines of the Tschudi catechism, created by an Indigenous scribe from Sampaya, Bolivia. From Ibarra Grasso 1953: 65.

Figure 2. The Copacabana Peninsula with the Isla Titicaca (Island of the Sun) and the Isla Coati (Island of the Moon). From Reclus, Ravenstein, and Keene 1885: 360.

Figure 3. Top half of Pickering 1. Image by Manuel Medrano, from the collection of the Peabody Museum of Archaeology and Ethnology, Harvard University, 21–50–30/F294.

Figure 4. Lower half of Pickering 1. Image by Manuel Medrano, from the collection of the Peabody Museum of Archaeology and Ethnology, Harvard University, 21–50–30/F294.

Figure 5. Top half of Pickering 2; the writing on Pickering 2 is faded, although still legible. Image by Manuel Medrano, from the collection of the Peabody Museum of Archaeology and Ethnology, Harvard University, 21–50–30/F295.

Figure 6. The Five Commandments of the Church in the Libreta de la Luna. The text is read from right to left. From Ibarra Grasso 1953: 303.

Figure 7. The Five Commandments of the Church, Pickering 1. This is read boustrophedon from the lower left. Image by Manuel Medrano, from the collection of the Peabody Museum of Archaeology and Ethnology, Harvard University, 21–50–30/F294.

Figure 8. The beginning of the Pater Noster, Pickering 1. Image by Manuel Medrano, from the collection of the Peabody Museum of Archaeology and Ethnology, Harvard University, 21–50–30/F294.

Figure 9. Yumani catechism 2, written in 1950. The text begins in the upper left and continues in a boustrophedon direction. Redrawn by the author from Ibarra Grasso 1953: 314.

Figure 10. The beginning of the Nicene Creed, Pickering 1. Image by Manuel Medrano, from the collection of the Peabody Museum of Archaeology and Ethnology, Harvard University, 21–50–30/F294.