

Coca Leaves in the Context of the Central Andean Wari State

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Coca, of the genus Erythroxylum (family Erythroxylaceae) is a stimulant and painkiller that at the time of the Spanish conquest was widely used in the Central Andean region. Despite its undisputed position within the Andean society in general, archaeologically coca remains little investigated, particularly in the Peruvian central highland region. Consequently, it is uncertain, for instance, when coca leaves began being used in this region. This uncertainty is largely due to the difficulties of finding coca leaves at highland archaeological sites. New evidence coming from the northern part of Ayacucho Valley in the Peruvian central highlands which consists of several coca leaves represents the first direct proof for the presence of coca leaves in an archaeological context that, based on ceramic stylistic grounds, dates sometime between the end of the Early Intermediate Period (ca. 1 – 550 CE) and the beginning of the Middle Horizon Period (ca. 550 – 1100 CE). This unprecedented finding demonstrates that as early as the Middle Horizon, therefore several centuries before the rise of the Inka State, coca leaves were already used in the Peruvian central highlands. This paper presents the new evidence and discusses its immediate implications.

Introduction

The central Andean Middle Horizon (ca. 550 – 1100 CE) was a period during which the Wari State emerged in the Peruvian central highland valley of Ayacucho and established political and economic control over most of current Peru. Throughout this large territory, the Wari State built a series of provincial administrative centres, potentially to better manage the newly incorporated territories. Moreover, the inhabitants of the recently conquered territories often were relocated near more productive ecological zones, likely to better access local resources (Rowe 1956; Lumbreras 1974; Menzel 1964; McEwan

2005; Schreiber 1992, 2001). These changes strongly indicate that Wari's expansion beyond its heartland was to maximize access over the resources of other regions.

Ever since the finding of some Wari settlements in the tropical rain forest valley of Apurimac, east of the Ayacucho Valley and the Wari capital, it has been suggested that the colonization of the tropical valley may have been in order to establish access to coca leaves (Raymond 1973, 1988, 1992). In addition, Raymond observed that all Wari settlements found in the Apurimac Valley – identified as Wari outposts – were located at elevations

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suitable for coca cultivation. This suggestion directly implies that coca leaves were already consumed in the central highlands of Peru as early as the Middle Horizon. As discussed further below, several centuries later the Inka State had coca plantations in the tropical rain forest region.

This paper reports evidence of the presence of coca leaves in an early Wari context. The information comes from the site of Convento in the Peruvian central highlands region, about 90 km north of the ancient Huari capital. Considering that no similar finding has been reported from elsewhere the Peruvian central highlands, this is the first tangible evidence of coca leaves in an early Wari context; as such, this finding is unique and provides an unparalleled opportunity for elucidating the role of coca leaves within the Wari State. To contextualize our discussion, first a brief consideration of *Erythroxylum* is in order. This is followed by an overview of the role of coca leaves within the Inka State and a brief assessment of the use of coca leaves by contemporary inhabitants of the Peruvian central highlands.

Coca (*Erythroxylum*)

The plant commonly named coca belongs to the genus *Erythroxylum* (family Erythroxylaceae) (Plowman 1979:103-104; Mortimer 1901:227; Towle 2007:58). Researchers argue that *Erythroxylum* contains between 230 and 250 species of tropical trees and shrubs, most of which are indigenous to the American tropics (Plowman 1979:104; Plowman and Hensold 2004:1). Most of the wild species are found mainly below 1000 m of elevation, but cultivated species can be found as high as 2000 m a.s.l.; above this elevation the plant does not grow because it does not tolerate frost (Plowman 1979:104; Allen 1988:221; Raymond 1992:23; Gade 1999:139). In South America members of the genus *Erythroxylum* are found scattered all

over the continent, although the majority of them are found in present day Brazil (Plowman and Hensold 2004). Some of the species also grow on the eastern slopes of the Andes and along the Pacific coast. The latter location indicates that some coca species tolerate drought.

Plowman (1979:104) asserts that many of the species of *Erythroxylum* are difficult to distinguish, due to several reasons, including a lack of well-defined taxonomic characters and the enormous variety of the species that discourages botanists. When this is the case among plant specialists, the issue is even more complicated among archaeologists, who often work with small specimens or only with chewed coca quid. As a result, often the reference provided by the archaeologists is only the broad name (coca), without specifying the species.

Nevertheless, “cultivated cocas belong to two closely related species of *Erythroxylum*.” 1) *Erythroxylum coca* var. *coca* Lam (*E. c.* var. *coca*) and its variety *Erythroxylum coca* var. *ipadu* Plowman (*E. c.* var. *ipadu*) (Plowman and Hensold 2004:56), and 2) *Erythroxylum novogranatense* var. *novogranatense* (Morris) Hieron (*E. n.* var. *novogranatense*) (Plowman 1979:104) and its variety *Erythroxylum novogranatense* var. *truxillense* [Rusby] Machado (*E. n.* var. *truxillense*) (Plowman 1979:111; Plowman and Hensold 2004:56; see also Johnson et al. 2005:601). Except for the *E. ipadu* variety that reproduces asexually, all the others propagate sexually (from seeds). Plowman (1979) asserts that the ancestral form of *E. coca* occurs wild on the eastern slopes of the Andes; therefore, initial cultivation of this plant must have occurred somewhere in that region. When this domesticated species was moved to the western side of the Andes and eventually to the Pacific coast, it developed into a distinct variety that is better adapted to drier conditions, the *E. novogranatense* var. *truxillense*. Finally,

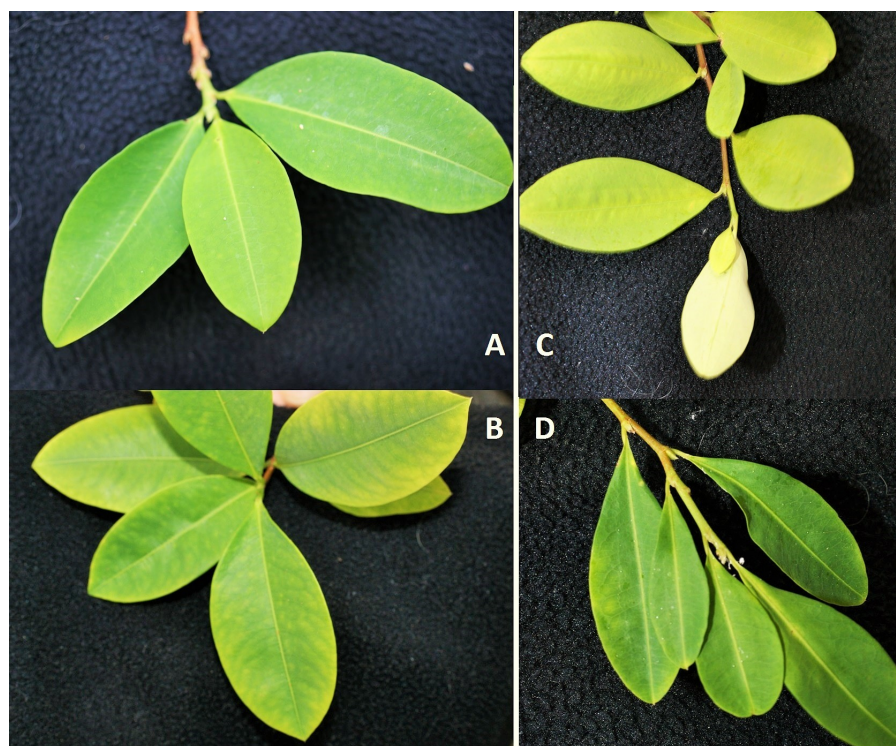


Figure 1: The four varieties of domesticated coca leaves: A, *E. coca*; B, *E. ipadu*; C, *E. novogranatense*; D, *E. novogranatense* var. *truxillense* (Photo courtesy of Lyndel W. Meinhardt).

northward spread of *E. novogranatense* var. *truxillense* resulted in *E. novogranatense*. More recent studies by Johnson et al. (2005:604-605, 607, Fig. 2; Emche et al. 2011:126; Johnson et al. 2003) show that genetically these two coca species are indeed very similar and that the “rationale of recognizing *E. n.* var. *truxillense* as a different variety is questionable.”

Geographically, *E. coca* Lam. (also known as coca Huánuco or Bolivia) is native to the eastern slopes of the Andes (Peru and Bolivia) and grows in wet conditions between 500 and 1500 m of elevation (Mortimer 1901:228; Plowman 1979:114). Outside of South America this species is not cultivated. *C. ipadu* (also known as coca Amazonas) grows only in the Amazon region. Meanwhile, *E. novogranatense* (also known as coca Colombia) is mainly found in the northern section of South America, but since the end of the nineteenth century has been widely cultivated

beyond South America (Plowman 1979:109-110). *E. novogranatense* var. *truxillense* (also known as coca Trujillo) is the one that grows along the Pacific coast and as such is adapted to drier environments.

Despite the difficulties in distinguishing one species from another, the shape of their leaves is relatively different (Figure 1). First, the leaves of *E. coca* (Figure 1A) are “characteristically large and thick, broadly elliptic in shape, more or less pointed at the apex and dark green in color” (Plowman 1979:106; see also Mortimer 1901:258) and this species is the main source of cocaine (Plowman 1979:105; Johnson and Emche 1994:645). Second, the leaves of *E. ipadu* (Figure 1B) are “apically rounded” (Plowman 1979:108). Third, the leaves of *E. novogranatense* (Figure 1C) tend to be “smaller, thinner, bright yellowish-green” usually rounded at the apex (Plowman 1979:110). As this species is not deciduous,

physically the plants are bushier than *E. coca*. In contrast to *E. coca* which grows in wet environments, *E. novogranatense* is more drought resistant and can also grow in cooler climates. Finally, *E. novogranatense* var. *truxillense* (Figure 1D) is similar to *E. novogranatense*, but its leaves are smaller, narrower although slightly thicker and once mature they turn green (Plowman 1979:113); reportedly this is the variety with better flavor than *E. coca* (Mortimer 1901:258; Moore 2014:145). In comparison to *E. novogranatense*, *E. novogranatense* var. *truxillense* is more drought resistant and that explains its successful cultivation in a desert environment such as the Peruvian coast. However, to grow successfully, the plant requires irrigation and human assistance (Plowman 1979:114; Davis 1996:442).

Coca Leaves in the context of the Inka State and contemporary Andean Society

Coca grows in the tropical lowlands and on the Pacific coast, but cannot be cultivated in a highland valley, such as the Wari heartland (Allen 1988:221; Raymond 1992:23; Gade 1999:139). Despite being non-native to the highlands, coca leaves are second to none because of their multi-purpose uses (Mayer 2002). For example, within the Inka State coca leaves had different uses (Rowe 1946:311; D'Altroy and Earle 1992:58; Malpass 2009:99-100; McEwan 2006:150) and during public festivities coca was "the single most important vegetable offering" (Rowe 1946:307; see also Cobo 1990:116). Furthermore, important landmarks within the empire also received offerings of the "precious herb called coca" (Sarmiento de Gamboa 1999:130).

Pedro Cieza de León provides one of the most valuable accounts about the use of coca leaves within the Inka Empire. Cieza de León pointed out that "throughout Peru the Indians

carry this coca in their mouths; from morning until they lie down to sleep they never take it out. When I asked, some of these Indians why they carried these leaves in their mouths, which they do not eat, but merely hold between their teeth, they replied that it prevents them from feeling hungry, and gives them great vigor and strength" (cited by Mortimer 1974:151; see also Cieza de León 1973:221).

In addition to the living, who sustained themselves chewing the precious herb, even the dead carried coca leaves in their mouths (Guaman Poma de Ayala 1980:267; Murúa 1946:267; Ramos Gavilán 1976:26), emphasizing again the high value of this tropical product. Reinhard and Ceruti (2010:123, 156; Reinhard 2005) have reported the finding of coca leaves near the mouth of the *capacocha* sacrificial victims, thus confirming the account of the Spaniards. Coca leaves were of such importance that the Inka State established coca fields, east and north of Cuzco, the Inka capital, in order to cultivate their own coca supply (Bowman 1916:73, 77; Le Moine and Raymond 1987; Gade 1999:139; Hanna 1974:291; Murra 2002:262; Niles 2004:50). Likewise, coca was extensively cultivated in the Pacific coastal valleys, at least in late pre-Hispanic times (Rostworowski de Diez Canseco 1973, 2002; Murra 1986; Julien 1998; Marcus and Silva 1988).

Rostworowski de Diez Canseco (1973) mentions that at the height of the Inka Empire two varieties of coca were known in the region: one was named *mamacoca* and was brought from the eastern slopes of the Andes and characterized by its bigger dark leaves; the other was named *tupa* and came from the *llanos*, the Pacific coastal valleys and was highly valued because it was full of flavor. Plowman (1979) asserts that *mamacoca* was *E. coca*, while *tupa* coca was *E. novogranatense* var. *truxillense*. Furthermore, before, during and after the Inka, there were coca



Figure 2: Coca leaves used to barter products in the Huanta market, Ayacucho Valley (Photo L. M. Valdez).

plantations in coastal valleys such as Chillón, Rímac, Lurín and Cañete (Murra 2002:368; Murphy and Boza 2012:171). As noted by Rostworowski de Diez Canseco (1973), coastal coca plantations declined thereafter as a consequence of efforts to eradicate the plant and curb coca chewing practices among the Indigenous Peoples (see Mortimer 1901:148; Kubler 1946:394; Davis 1996:417, 425).

In more recent times, coca leaves continue to be used throughout the central Peruvian highlands, in most cases in the same way they were used in Inka times. Indeed, over the years several researchers have shown consistently that coca leaves play a central role in contemporary central highland communities (Hanna 1974:283; Bastien 1978:112; Allen 1988:21-22; Valderrama and Escalante 1996:156; Bolin 1998:15, 222). For

instance, the sacred mountains (*Wamanis*) and other significant spots in the landscape still receive coca leaf offerings (Arnold 1993:67; Hyslop 1984:312). Furthermore, rituals, such as *herranza* (Isbell 1978:155; Hastorf 1993:53), divination (Allen 1988:133; Bastien 1978:14-15), birth, marriage (Isbell 1978:155), funerals (Bastien 1978:153), and sharing and socializing (Allen 1988:17), to name some, all require the use of coca. Therefore, in the Peruvian central highland region, life itself, from birth to death (Allen 1988:57), is deeply immersed in the use of coca leaves (Davis 1996:421-423).

Since coca acts as a stimulant and a painkiller (Steward and Faron 1959: 142; Hadingham 1987:171; Allen 1988:221; Bolin 1998:15; Kendall 1973:92; Mitchell 2006:14-15; Burchard 1974, 1992), anyone engaged in labor and travel, for instance, chews coca leaves. Consequently, at high altitudes in particular the use of coca leaves is nearly universal (Hanna 1974:283). Labor itself is exchanged for coca (Arnold 1993:117; Valdez 2012:77), and during work projects, the toiling parties must be provided with coca leaves because labor and coca chewing are non-separable.

Furthermore, coca is a highly valued commodity that is used in the exchange (barter) of goods (Hanna 1974:292; Stern 1982:36; Arnold 1993:132; Valdez 1997:68; Mayer 2002:176). Currently, coca leaves are still used to barter for products in the Sunday market in Huanta (Figure 2) and other neighbouring communities in the Ayacucho Valley, in central Peru (Valdez 1997). The few examples highlighted here demonstrate that coca leaves maintain a privileged position within Central Andean culture and cannot be matched and/or replaced by anything else (Mayer 2002).

Use of Coca Leaves before the Inka State

The Peruvian central highlands receive rain

for about 4 and 5 months every year; as a result, organic remains such as coca leaves seldom survive in archaeological contexts (Hastorf 1987:297). Due to the poor preservation of organic remains, it is uncertain when exactly coca leaves were first used in the region. Not surprisingly, the earliest archaeological evidence for coca chewing in the central Andes comes from the arid Pacific coast. Archaeological research in the region has uncovered evidence indicative of coca chewing from pre-ceramic and early ceramic contexts (Engel 1957, 1963; Cohen 1978; Dillehay et al. 2010; Hadingham 1987:171; Lanning 1967:79). According to Plowman (1979:112; Pearsall 2006:196) all coca samples coming from coastal archaeological contexts from northern Peru to northern Chile belong to the coca species adapted to the dry region: coca Trujillo.

For the central highland region, direct botanical evidence for the presence of coca leaves in archaeological contexts is almost unknown. Even for the case of the Inka State there is little archaeological evidence. Therefore, without the written records left by Spaniards such as Cieza de León (1973), Cobo (1990), Murúa (1946), Ramos Gavilán (1976) and Sarmiento de Gamboa (1999), to name some, it would have been very difficult to appreciate the extent of coca use within *Tawantinsuyo*.

Despite the absence of tangible evidence, researchers have long suggested that coca was likely already in use by the time the Wari State flourished several centuries before the rise of the Inka State (see Bergh and Jennings 2012:7). The idea that not only was coca chewing practiced during the time the Wari State flourished, but also that the Wari administration cultivated their own coca supply is largely supported by the finding of Wari settlements in the tropical forest valley of Apurimac, east of the Ayacucho Valley. In 1968 and 1970 Scott Raymond carried out an



Figure 3: Wari coca bag found at Pacheco in the Nazca Valley of the south coast of Peru (Photo courtesy of Susan Bergh).

archaeological survey of the lower Apurimac Valley, locating several archaeological sites, some of which were identified as highland Wari outposts (Raymond 1973, 1988). On the basis of those findings, Raymond (1985:42, 1992:30) has suggested that Wari colonization of the Apurimac Valley likely was in order to secure coca leaves.

An additional observation made by Raymond (1992) was that all known Wari settlements in the Apurimac Valley were found at elevations suitable for coca cultivation. That is, at elevations ranging between 550 and 650 metres above sea level, which is below the cloud forest area. As a

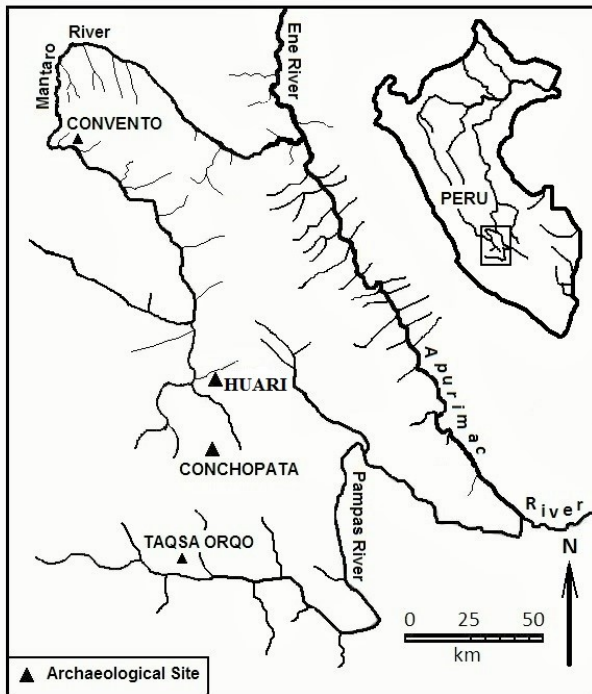


Figure 4: Location of the archaeological site of Convento in relationship to the Huari urban center in the Ayacucho Valley (Drawing by L. M. Valdez).

tropical forest plant coca needs moisture and plenty of sunshine. Moreover, coca develops better on the slopes, in areas where rainwater drains quickly. Otherwise, on flat terrain without natural drainage, the roots of coca plants develop fungus and the plants die.

Indirect evidence supports the idea that coca leaves were already used by the time the Wari State flourished. For example, an offering pit excavated at the Wari provincial center of Pikillaqta in the Cuzco region (Arriola Tuní 2008:34-36) reveals the careful placement of a series of artifacts that include several miniature Wari warriors (Arriola Tuní 2008:34-36; Arriola Tuní and Tesar 2011: Figures 16 & 19; Bergh 2012: Figure 226a). An interesting aspect of the miniature warriors and relevant for the purposes of this discussion is their bulging cheeks that is even more pronounced than the bulged cheeks of the Inka gold and silver male statues that



Figure 5: Cruz Pata ceramic vessel found at Convento (Photo L. M. Valdez).

Reinhard and Ceruti (2010:139, Fig. 7.9; see also Gibaja Oviedo et al. 2014: Figure 47) interpret as indicative of coca chewing.

As pointed out by Cieza de León (1973:221) and largely substantiated by ethnographic studies, it is well known that coca chewers held the coca leaves between the mouth and gums, resulting in bulging cheeks (Allen 1988; Isbell 1978; Plowman 1979:103). Therefore, it is more than likely that the bulging cheek of the Pikillaqta miniature warriors represent coca chewing and that as early as the Middle Horizon – if not earlier – the chewing of coca leaves already was known in the Peruvian central highlands.

Additional evidence of the use of coca leaves during the height of the Wari State is represented by a Wari coca bag (Figure 3) housed at the Cleveland Museum of Art (Bergh and Jennings 2012: Figure 18) that was reportedly found by the late Junius Bird at the site of Pacheco in the

Nasca Valley. Susan Bergh (personal communication, November 2014) notes that the bag from Pacheco contained coca leaves, further demonstrating that coca indeed was known by this time period.

Coca Leaves in an Early Wari Context

Recently, at the site of Convento, in the locality of Puerto San Antonio at an elevation of 3450 metres above sea level (in Tayacaja, Huancavelica) and about 90 km north of the ancient Huari capital (Figure 4), workers building a school unearthed archaeological remains associated with stone walled burial cists. As the workers opened trenches in order to establish the foundation of the new school building, several burial cists and their contents were smashed, while others were removed and taken away by the work party.

One burial cist was exposed shortly before the arrival of the junior author, who upon realizing the importance of the archaeological finding decided to intervene. The burial was already open and some of its offerings also broken; among the broken ceramic vessels there were fragments of what appeared to be pieces of an anthropomorphic vessel. Human skeletal remains, all poorly preserved, had also been crushed. However, a ceramic vessel was recovered intact and consists of a small bottle decorated in the distinctive Cruz Pata style (Figure 5) that dates to the end of the Early Intermediate period and the beginning of the Middle Horizon (Lumbreras 1974:137; Knobloch 1991:248).

We must emphasize that Cruz Pata is a ceramic style indigenous to the Ayacucho Valley. It first emerged sometime late during the Early Intermediate period following the interaction established between the Huarpa culture of the Ayacucho Valley and the Nasca culture of the Peruvian south coast (Lumbreras 1959, 1960;

Menzel 1964:7; Knobloch 1991:248). The style not only continued being manufactured during the early phases of the Middle Horizon, but also was the source of Middle Horizon Wari ceramics (Knobloch 1991:248). Therefore, Cruz Pata is a transitional ceramic style between the late Early Intermediate period and the beginning of the Middle Horizon period (Lumbreras 1974:137).

In association with the Cruz Pata bottle, and as part of the burial offering, were also two copper *tupu* pins (Figure 6), one placed over the other. Copper *tupus* pins already existed in Wari times (Lechtman 1997:157) and have been found associated with the remains of female individuals (Tung and Cook 2006:79). In Inka times, *tupus* had a strong gender association as they were used to fasten women's clothing (Kendall 1973:36-37, 170; Malpass 2009:78). Thus, the artifacts noted here likely represent the grave goods of a female individual. The most important findings, however, had been placed between the two *tupu* pins and consist of coca leaves. This fortuitous finding is extraordinary and provides the first ever direct evidence of coca use in the central highland region in early Wari context.

The archaeological evidence coming from the site of Convento shows clearly that as early as the time the Cruz Pata ceramic style was produced, the inhabitants of the Ayacucho Valley were already familiar with coca leaves. However, future research and future similar findings in the region more likely will modify this observation because there is the potential that the coca leaves were used in the region even earlier. Considering that coca findings from the Pacific coast are coming from much earlier contexts (see Dillehay et al. 2010) and that coastal and highland populations were in contact from very early times (Topic 2013), the practice of using coca leaves likely was practiced in both regions.

An important issue that deserves some clarification is the origin of the coca leaves found



Figure 6: Tupu pins found in association with the Cruz Pata ceramic vessel of Figure 5 (Photo L. M. Valdez).

at Convento. Or rather which coca variety is the one found at Convento? Without further analysis of the coca leaf samples, such as DNA (Emche et al. 2011), it is difficult to determine the coca species with certainty. However, relying solely on the leaf shape that enable botanists to differentiate morphologically the cultivated coca species (Plowman 1979), here we make a cautious identification, with the hope that further analysis will clarify this issue.

Considering that the samples are coming from a highland archaeological site, the state of preservation of the coca leaves found at Convento is surprisingly good. This enables us to readily distinguish it from *E. coca* Lam. (Huánuco or Bolivian coca), characterized by its much larger leaf and “broadly elliptic in shape, more or less pointed at the apex” (Plowman 1979:106). As noted, *E. coca* Lam. comes from the eastern

slopes of the Andes. The leaves from Convento are not elliptic; instead, they are more lanceolate (or narrow obovate) and more or less rounded at the apex, with two well pronounced lines parallel to the midrib. These are some of the salient characteristics of *E. novogranatense* var. *truxillense* (Trujillo coca) (Plowman 1979:113; Mortimer 1901:258).

Although the leaves of *E. novogranatense* var. *truxillense* and *E. novogranatense* are “morphologically similar” (Plowman 1979:113), it is important to consider the geographic distribution of *E. novogranatense*, which is found mainly (or only) in present day Colombia and Venezuela (Plowman 1979:109). This observation leaves *E. novogranatense* var. *truxillense* (coca Trujillo), the species adapted to the drier Pacific coast, as the only potential candidate for the coca leaves used at Convento.

Previously no archaeological coca of the species *E. novogranatense* var. *truxillense* had ever been reported in the highlands. In contrast, the single coca leaf fragment found by Hastorf (1987:197) has been positively identified as *E. coca* (Huánuco or Bolivian coca) brought from the eastern lowlands.

Given that Convento is only two-days walking distance from the tropical rain forest valley of Apurimac, it is surprising that the coca leaves at the site have no link to the eastern lowland region. As noted, the presence of Wari settlements in the tropical valley of Apurimac (Raymond 1992) opened the possibility that highland colonization of the region was to access tropical rain forest resources, including coca leaves. As noted above, at least based on leaf shape, the coca leaves found at Convento appear to have no connection with the eastern lowlands.

Of course, the presence of coastal coca leaves in the highlands does not necessarily imply that *E. coca* from the eastern lowlands was not available to highland inhabitants, including those of the Ayacucho Valley. The Wari outposts in the Apurimac Valley perhaps were part of the vertical archipelago system (see Murra 1985:17-19) that enabled highland populations accessing locally non-available resources, coca leaves being one of them. As demonstrated by the findings from Hatunmarka in the Mantaro Valley, by the Late Intermediate Period coca leaves from the eastern lowlands were certainly consumed by highland inhabitants (Hastorf 1987). When exactly did such an exploitation of the eastern tropical lowlands begin is an interesting issue that only future research will clarify.

Although *E. novogranatense* var. *truxillense* is cultivated at relatively higher elevations, at this point it remains uncertain whether the plant was actually cultivated anywhere in the Peruvian central highlands. In the state of our current knowledge, the more likely scenario is that the

coca leaves were introduced to the Peruvian central highlands from the Pacific coast perhaps following the cultural interaction established between the highland Huarpa culture and the south coast Nasca culture. As already mentioned, by the late Early Intermediate Period the inhabitants of these two regions were in contact (Rowe et al. 1950:128; Lumbreras 1960:156; Menzel 1964:7). Following this interaction, the ceramic making technology of the Ayacucho Valley witnessed significant change that included better finishing, the incorporation of new vessel shapes that resemble late Nasca vessels, the use of more colours, and the addition of late Nasca designs (Lumbreras 1980:30; Schreiber 2012:38). Cruz Pata is precisely one such ceramic style that at times appears to have been manufactured by Nasca hands. Thus, Cruz Pata vessels stand apart from the ceramics produced in the region prior to the interaction with the south coast.

Strongly suggesting that the peoples of the south coast had access to coca leaves about the time the Nasca began interacting with the central highlands, Nasca artisans produced for the first time modeled effigy vessels with bulging cheeks and holding coca bags (Silverman and Proulx 2002:55; Proulx 2006:174, Plate 37). As in the case of the Pikillaqta miniature warrior figurines, the bulging cheeks of the Nasca effigy vessels (Figure 7) suggest coca chewing. Prior to late Nasca, coca leaves are absent on the south coast (Piacenza 2002:9; Valdez 2009:264); the earliest known evidence of coca leaves in the region comes from Middle Horizon contexts, from the lower Ica Valley (Beresford-Jones 2011:97-99). In light of the late Nasca effigy vessels with bulging cheeks, it can be argued that coca leaves and therefore the concept of coca chewing were already present by late Nasca times. It is of interest that once the Wari State began to expand from the Ayacucho Valley, the south coast was one of the first regions incorporated into the Wari



Figure 7: Late Nasca effigy vessel depicting a coca chewer (Collection Museo Nacional de Arqueología, Antropología e Historia del Perú, Lima, photo courtesy of Donald Proulx).

domain. Hence, there is the possibility that the main reason that motivated the early Wari expansion toward the south coast was to gain direct access to coca leaves.

What is evident at present is that by the time Cruz Pata ceramics were manufactured in the Ayacucho Valley, coca leaves were accessible to highland populations. The burial offering from Convento also shows that by then highlanders already had a preference towards the plant, probably because they were familiar with its unique properties. Considering that there were countless other plant types available, yet none seemingly were included as part of the offering strongly signals that coca may have been already regarded as a special plant. Such a familiarity with coca's properties would have emerged only from a long term human – plant relationship.

Therefore, there is the possibility that highland populations had been utilizing coca leaves since much earlier times, but poor preservation of plant remains at highland sites prevents a full appreciation of its uses in the ancient past.

Finally, a word must be said about the association of the Convento coca leaves with what appears to be a female individual. It is certainly difficult to make any conclusive statement based on one sample; as a result, the finding from Convento raises some questions. For instance, it would be interesting to know if other female burials also had coca leaf offerings. Likewise, it would be important to know if male burials and those of children also carried similar offerings.

Concluding Comments

The coca leaves found at the Convento site provide the first direct evidence of the use of this product in a context that is associated with the Cruz Pata ceramic, a style that corresponds to the transitional phase between the Early Intermediate Period and the Middle Horizon. The mortuary context in which the coca leaves were found also strongly indicate that the leaves were already highly valued. To the best of our knowledge, it is unknown if coca leaves were treated in this manner before the Middle Horizon. If so, it may be that this practiced was started by Wari and carried on by later cultures, more notably by the Inka.

It is interesting that the source of the coca leaves found at Convento seemingly was the Pacific coast. This is in sharp contrast to previous expectations that coca leaves likely came the tropical rain forest valley of Apurimac (Raymond 1988, 1992). As noted, this idea was put forward following the discovery of Wari outposts in the Apurimac Valley. The initial identification of the coca leaves from Convento as coca Trujillo coming from the Pacific coast does not exclude

totally Wari's use of coca from the eastern slopes of the Andes (coca Huánuco). Instead, there is the possibility that the Wari – perhaps – had access to two different coca types, just like the Inka State did centuries later.

At present, the more likely scenario is that coca perhaps was introduced to the central highlands by the Nasca following the interaction established between the peoples from the south coast and the central highlands. As discussed in the preceding sections, there are also suggestions that peoples from the south coast migrated to the Ayacucho Valley and carried to the highlands their cultural practices that included coca chewing. Again, due to the presence of Wari settlements in the Apurímac Valley, it is also possible that the inhabitants of the Ayacucho Valley were already familiar with coca leaves. If so, the Nasca may have just introduced a different variety of coca leaves.

To sum up, the evidence coming from Convento is unprecedented and demonstrates that the use of coca leaves in the Peruvian central highlands goes back at least to the beginning of the Middle Horizon. Future research may demonstrate that the relationship between the coca leaves and the inhabitants of the central highlands goes back to much earlier times, perhaps to pre-ceramic times as in the coastal region. Future research will have much to say in this regard. Until then, it is clear that as early as the end of the Early Intermediate Period and early Middle Horizon coca was already available to the peoples of the Peruvian central highlands.

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