THE WAYWAKA GOLD: NEW CHRONOMETRIC EVIDENCE

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INTRODUCTION

This article provides new evidence for the antiquity of early gold working technology in the south-central Andes. As part of my dissertation research conducted from 1969 to 1971, I collaborated in a joint Peruvian-United States sponsored expedition to the south-central highlands of Peru. This work focused on the excavation of Waywaka, a hill-top settlement above the town of Andahuaylas in the Apurímac Region (Grossman 1972a, 1972b, 1983).[1] Waywaka contains a three thousand year sequence of pre-Inca cultural deposits representing a series of superimposed settlements (Figure 1).

Site stratigraphy shows the clear superposition of the main ceramic styles at Waywaka, first identified in the 1950s by John H. Rowe and Oscar Núñez del Prado on the basis of survey and surface collection (Rowe 1954-55:69, 79, 1956:143-144; see Bauer *et al*. 2010:50, 59 for a review of archaeological research in Andahuaylas). These include the Initial Period Muyu Moqo style, the Early Intermediate Period Qasawirka style, the local Late Intermediate Period Waywaka style, and Huari and Inca styles. Stratigraphy also was used to define the three phases (A, B, and C-D) of the Initial Period Muyu Moqo ceramic style not mentioned by Rowe in his 1956 article (Grossman 1972a, 1972b, 1983; Rowe 1956:143-144; Figure 2).[2] Each succeeding Muyu Moqo phase, in addition to being stratigraphically defined, was distinguished from the former by new ceramic design attributes, some of which continued into later phases, and some of which did not. The antiquity of the Initial Period Muyu Moqo style, its three phase subdivision, and its placement relative to the Early Intermediate Period Qasawirka style established a chronological template for further archaeological studies in Andahuaylas Province (Bauer *et al*. 2010; Kellett 2010; Kellett *et al*. 2013; Kurin 2012).

Besides manufacturing Muyu Moqo pottery, the earliest occupants of the site produced gold and a gold worker's tool kit. The kit consisted of a mushroom-shaped anvil stone, three cylindrical stone hammers, and two pieces of gold foil (Figure 3) within two bowls of a tuff-like soft stone known locally as *cheqo*. In all, fifty-three flakes of gold foil and fifty-eight beads of blue stones, probably including lapis lazuli from Chile's Atacama Desert, were recovered from the lowest Muyu Moqo levels (Figure 4). The gold and the gold worker's tool kit are unambiguous evidence of early metallurgy in the south-central Andes (Grossman 1972a, 1972b, 1983).

[1] Waywaka was designated as site Ap2-2 by John H. Rowe and as site PAA72 by Brian S. Bauer (Bauer *et al*. 2010: figure 4.3).

[2] Rowe does, however, define and discuss the Muyu Moqo style in his field notebook containing observations he made while conducting survey in Andahuaylas Province. At that time he thought the Muyu Moqo style a later variant of the Qasawirka series which he thought to be the earliest pottery in Andahuaylas (Rowe 1954-1955, pp. 69, 79).

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THE RECOVERY OF GOLD AT WAYWAKA

Gold foil was first recovered from the mouth of Burial 4, an adult male (Grossman 1972a). Burial 4 lay on the bedrock in Level IX of Unit C (Figures 1, 5). The gold tool kit also rested on bedrock. No pit was identified before its exposure in Level IX of Unit G. Several burial pits, identified by compaction differences in the dark soil, cut down from about the 127 centimeter depth. The tops of these were used to divide Level VIII from Level VII in Unit C. The stratigraphic distinction between Levels VI and VII was marked by a lens of ash covering much of Unit C. This lens does not appear in Unit G to the north, but its depth at c. 103 centimeters was used to distinguish Level VII from Level VIII in Unit G here as well. After the initial discovery of gold foil, I began micro-screening all deposits from Levels VII, VIII, and IX in Unit G using one-sixteenth inch window screen. Gold was found in these levels.

A total of ten fragments of gold foil and two sets of eight probable lapis lazuli beads were recovered from Burial 4 and Burial 15, an adult female. The beads were identified by staff of the Geology Museum at the Universidad Nacional de Ingeniería (National University of Engineering) in Lima (Grossman 1972a, 1972b: 146-150). In addition to the lapis lazuli beads, other blue stone beads recovered were made of chrysocolla, turquoise, dumortierite, and aquamarine according to Geology Museum staff (Grossman 1983:70). In addition to the burial associations, forty-two blue beads were recovered from general refuse.

This article is a follow-up to the more in-depth treatment of the chronology and settlement history of Waywaka already published in *Ñawpa Pacha* (Grossman 1983). In addition to presenting a multi-phase chronology from the early Initial Period (IP) through the Late Intermediate Period, that article documents the nature of the EIP Qasawirka settlement superimposed upon the Muyu Moqo levels.

DATES PROPOSED FOR THE WAYWAKA GOLD AND THEIR SIGNIFICANCE

The discovery of the gold foil and tools documented for the first time that metallurgy was practiced in the south-central Andes by at least 1500 B.C. (Grossman 1972a, 1983). The finds also demonstrated that the earliest New World metal technology took place not in Mesoamerica, but far to the south, in what is now Peru. As stated by Heather Lechtman "New World metallurgy means Andean metallurgy, for it is the Andean area alone that developed complex and sophisticated metallurgical technologies. . . From the Andes metallurgy moved north, where it flourished among the cultures of present-day Panama to Mexico" (Lechtman 1980:267). While now dated to the turn of the second millennium B.C. in the southern Andes (Aldenderfer *et al.* 2008), metallurgy first appeared as a developed technology in western Mexico around A.D. 700 (Hosler 1999:11). As one would expect from a south-to-north dissemination, it was earlier in Central America and what is now Colombia (c. 100 B.C.) and was practiced in what is now Ecuador around 500 B.C. (Hosler 1988:834).

The first radiocarbon measurements made on charcoal from the Waywaka excavation used non-AMS radiometric techniques performed at the University of California at Los Angeles to date the finds (Table 1). At the time of its discovery, on the basis of the initial radiocarbon results, it was estimated that the gold worker's tool kit dated to between 1500 and 1000 B.C. (Grossman 1972a, 1983). Because of the large errors associated with the early radiocarbon measurements (c. ±100 to 250 years), it was difficult, if not impossible, to ascribe a specific period to the Waywaka gold working technology.

Lab	Sample Number	Ceramic Phase	$\delta^{13}C$	Radiocarbon years BP (1950) Conventional radiocarbon age*	Low 2σ (95% probability)	High 2σ (95% probability)	Low 1σ (68% probability)	High 1σ (68% probability)
UCLA-1971	1808E	Muyu Moqo A	na	3550 ± 100 BP	2190	1630	2030	1750
UCLA-1971	1808A	Muyu Moqo A	na	3440 ± 110 BP	2030	1500	1890	1620
UCLA-1971	1808J	Muyu Moqo A	na	3185 ± 160 BP	1875	1015	1625	1295
UCLA-1971	1808F	Muyu Moqo B	na	2660 ± 250 BP	1430	200	1120	410
UCLA-1971	1808I	Muyu Moqo B	na	3240 ± 210 BP	2030	980	1750	1300
Beta-2013	AMS-348077 (Sample 1)	Muyu Moqo A (AMS)	-24.4	3190 ± 30 BP	1510	1410	1500	1430
Beta-2013	AMS-348078 (Sample 2)	Muyu Moqo A (AMS)	-23.2	3310 ± 30 BP	1680	1510	1620	1530
Beta-2013	AMS-348079 (Sample 3)	Muyu Moqo A (AMS)	-22.7	3280 ± 30 BP	1620	1500	1610	1510
Beta-2013	AMS-348503 (Sample 4)	Muyu Moqo C-D (AMS)	-21.4	3050 ± 30 BP	1410 1230	1260 1220	1380	1270

*Conventional radiocarbon age represents the measured radiocarbon age corrected for isotopic fractionation, calculated using $\delta^{13}C$.

Table 1. Radiocarbon results from Waywaka.

Some scholars questioned the antiquity of the Waywaka finds. For example, Izumi Shimada doubted the age of the Muyu Moqo ceramic style itself and its associated gold worker's tool kit, writing that, "improved understanding of the associated ceramics now suggests a date closer to 1000 BC" (Shimada 1994:45). Mark Aldenderfer and colleagues took a similar position in discussing the antiquity of the Waywaka materials. They concurred with Shimada and stated, citing Shimada, that, ". . . the dating of the ceramic assemblage has been revised downward and may be no earlier than 1000 cal yr B.C." (Aldenderfer *et al.* 2008:5002). They concluded, "We have chosen to be conservative in our assessment of the age of the [Waywaka] gold" (*ibid.*).

Redating Muyu Moqo Ceramics and the Waywaka Gold Working Kit

Reevaluation of the Muyu Moqo materials was stimulated by improvements that have developed in chronometric methods over the past twenty years. Recently the recalibration by Beta Analytic Radiocarbon Laboratory of the old Waywaka radiocarbon dates according to Intcal09 indicated that the radiocarbon measurements made in the 1970s predate 1500 B.C. at the very least. The recalibrations of the original determinations suggest that the Waywaka gold and pottery could be earlier than initially thought, but the wide spread in the standard deviation of each of the early samples makes it difficult to project by just how much. In other words, when plotted at the two-sigma range (ninety-five percent probability), the spread is so broad that the determinations were of limited value (Table 1).

The 2013 Samples

Since the 1970s, with later testing in mind, I have preserved all the radiocarbon samples taken at Waywaka not consumed in making the original determinations. Samples were stored in air-tight aluminum film canisters. Four samples were submitted to Beta Analytic in 2013 for Accelerator Mass Spectrometry (AMS) dating. These samples were used for the first time, and were not split samples from the original radiocarbon assays. Samples are small chunks of wood charcoal of undetermined genus. The parts of the plants they represent (*i.e.* heartwood, outer rings, twigs, roots, etc.) were not

determined. No more than half of each sample was submitted for AMS testing.

All of the radiocarbon samples, both from the 1970s and from 2013, came from two one-by-two meter units excavated at the crest of Waywaka. The first one-by-two meter unit was designated C. The second one-by-two meter unit, Unit G, was placed adjacent and to the south of Unit C to create a combined one-by-four meter long stratigraphic cut. A third unit, Unit D was added as a one-meter square extension to the east of Unit C to expose a deep Muyu Moqo Phase C-D refuse pit (Figure 6; for a plan of the Waywaka excavations see Grossman 1983: figure 3).

The pit contents included a high density of both stones and diagnostic ceramics. Stratigraphic levels were assigned Roman numerals (I-IX) in each unit to a maximum depth of 172 centimeters below which bedrock (sterile) was encountered. When deposits were thicker than ten centimeters, they were subdivided by ten centimeter intervals within each stratum. During excavation, deposits were exposed and recovered following stratigraphic divisions (Grossman 1983; Figure 1).

All of the AMS samples came from Units C and D (Table 2), whereas three of the six original radiocarbon series came from Unit G (Grossman 1983: table 2)[3]. Each of the AMS samples was collected from throughout a context or major stratum. None of the 2013 AMS samples represented any identifiable features, such as a hearth or pit, and all can only be ascribed to the entire matrix of each major stratum dated. Sample 1 (Beta 348077) and Sample 2 (Beta 348078) came from two different areas of Level VIII in Unit C (Table 2). Sample 1 came from a depth range of 125-140 centimeters below the surface. Sample 2 came from a depth of about 140 centimeters below the surface.

Below the intrusive pit (Unit D, Layer VII; Figure 6) were undisturbed Muyu Moqo Phase A deposits which produced Sample 3 (Beta 348079) from between 130 and 146 centimeters in depth. Samples 1-3 are associated with Muyu Moqo Phase A pottery in the lowest levels of the excavation. Sample 4 (Beta 348503) was collected from Level III in Unit C, the uppermost level that yielded Muyu Moqo Phase C-D pottery, the latest in the Muyu Moqo sequence, within a 10 centimeter depth range (40 to 50 centimeters) within the c. 20 centimeter thick deposit (Figure 1, Table 2).

[3] One sample, UCLA 1808D proved to be an outlier at a two sigma uncalibrated range of 2200±430 B.P. (Grossman 1983: table 2) and is not discussed further in this article.

Sample Number	Lab Number	Material	Unit	Level	Depth	Notes/Context	Ceramic Phase Associations
1	Sample 1 Beta 348077	Wood charcoal	W27 N0 - C	Level VIII	125-140 cm.	Possibly mixed with burial matrix	Muyu Moqo A
2	Sample 2 Beta 348078	Wood charcoal	W27 N0 - C	Level VIII	ca. 140 cm.	Burial 7 Matrix in SE Corner of unit	Muyu Moqo A
3	Sample 3 Beta 348079	Wood charcoal	W27 S1 - D	Level VII	130-146 cm.	Outside of DVII pit	Muyu Moqo A
11	Sample 4 Beta 348503	Wood charcoal	W27 N0 - C	Level III	40-50 cm.	Taken from matrix of Level III in Unit C	Muyu Moqo C-D

Table 2: Provenience Table of 2013 Waywaka Radiocarbon Samples (see Figure 1 for full four meter profile of both Units C and G).

This sample is important because it defines the latter part of the Initial Period Muyu Moqo style at Waywaka. The first three Phase A samples define early, but not necessarily the earliest, epochs of the Initial Period ceramic tradition. Together, these four samples delimit the beginning and end of the Initial Period Muyu Moqo pottery tradition at this site. None of the determinations can be taken as either the "earliest" or "latest" temporal indicators for the Muyu Moqo style. This ceramic tradition may have begun earlier, or continued later, at another Muyu Moqo site, yet to be investigated. Other Muyu Moqo sites have been identified in Andahuaylas Province, but have not yet been excavated (Bauer *et al.* 2010: table 3.1, figure 3.3).

The new AMS results provide a five to ten-fold increase in resolution compared with the old radiocarbon determinations (Table 1). They also show that the entire Muyu Moqo sequence was shorter and earlier than the original conservative interpretation of low-precision dates suggested (Figure 2). Collected in association with 53 fragments of gold foil, the gold worker's tool kit, 58 probable lapis lazuli beads (Grossman 1972a, 1972b, 1983), and with the earliest phases (Phases A and B) of the Muyu Moqo pottery style, two of the determinations returned uncalibrated radiocarbon ages of 3310±30 BP (Sample 2: Table 1) and 3280±30 years BP (Sample 3: Table 1). Together, when calibrated to the second sigma, these two dates from Samples 2 and 3 suggest that the initial phase of the Muyu Moqo style dated between cal B.C. 1680 to 1510 and cal B.C. 1620 to 1500, respectively (Table 1). Sample 1 was more recent by nearly a century. This sample returned an uncalibrated date of 3190±30 B.P. (Table 1). When calibrated and computed to the second sigma, this more recent date suggests that there was a ninety-five percent probability that the actual date fell somewhere between cal B.C. 1510 and 1410. Together, these three earliest AMS determinations now allow the Phase A ceramics to be dated to between cal B.C. 1680 and 1410. This, in turn, suggests at least a 270 year spread for Muyu Moqo Phase A ceramics and associations. The three determinations indicate that the early (Phase A and B) Muyu Moqo pottery, and associated gold foil, the gold worker's tool kit, and the human interments found without ceramic offerings but with similar blue stone (probable lapis lazuli) beads and gold foil, date to between c. 1680 and 1410 B.C.

The end of the Muyu Moqo C-D three phase ceramic tradition at Waywaka was dated with a single AMS determination (Sample 4) from Level III, the uppermost of the Muyu Moqo C-D deposits, and immediately below Level II, which contained the subsequent EIP Qasawirka style artifacts. Although no AMS samples were processed for the Qasawirka deposit at Waywaka, Qasawirka ceramics have

been dated from 300 B.C. to A.D. 1000 by others (Bauer *et al.* 2010:57-61). The vertical sequence appears to have lacked deposits spanning the gap of about 1000 years between the latest Muyu Moqo date and the earliest evidence for Qasawirka occupation in Andahuaylas. The AMS date range for this sample (Sample 4) fell between two intercepts on the correction curve. One two sigma date range covered the time span of cal B.C. 1410 to 1260. The second intercept indicated a two sigma age range of cal B.C. 1230 to 1220. Both ranges are equally plausible. Together, the two dates cover a span from cal B.C. 1410 to 1220. This date range for the final phase of the Muyu Moqo tradition at Waywaka is both relatively short and relatively early, especially when compared to that suggested by the original dates (Table 1). When the four AMS age ranges are combined, the time span of the Muyu Moqo style is less than 460 years, and it is apparent that the three phases of the Muyu Moqo style can now be dated to between cal B.C. 1680 and 1220.

The four AMS age ranges together are consistent with the stratigraphy-based tripartite sequence (Phases A, B and C-D) of the Muyu Moqo style (Grossman 1972b, 1983; Figure 1). The four dates show that the Phase A deposits were earlier than the overlying Phase C-D deposits. Although it looks as though the close determinations have "squeezed out" the intervening Muyu Moqo B Phase, no samples associated with Muyu Moqo B Phase ceramics were tested in the recent round of AMS determinations.

This range is nearly seven hundred years earlier than that suggested by some for the antiquity of the Muyu Moqo style and its associated gold foil (Aldenderfer *et al.* 2008:5002; Shimada 1994:44). The Waywaka finds predate by nearly a thousand years the reported radiocarbon ages for North Coast Cupisnique style gold and copper objects (Shimada 1994:44) and are at least several hundred years earlier than the find of gold foil at the late Initial Period Mina Perdida site in the Lurín Valley (Burger and Gordon 1998:1108). They also predate the gold casting technology identified at the Chavín-influenced highland Ayacucho site of Campanayuq Rumi by some 1000 to 1200 years (Matsumoto and Cavero 2009; Matsumoto and Palomino 2012). Yuichi Matsumoto recovered a gold casting mold fragment from Campanayuq II phase deposits dating to between 600 and 400 B.C. (Matsumoto 2010; Matsumoto and Cavero 2009:342; Matsumoto and Palomino 2012:122). The discovery of hammered gold and stone beads dating to between 2155 to 1936 cal B.C. by Aldenderfer *et al.* in a Terminal Archaic burial at the Jiskairumoko site in the Titicaca Basin (2008: 5002) suggests that the technology of hammering gold had its roots in the Preceramic.

The finds at Mina Perdida document annealing and hammering of native metals by c. 1100 B.C., prior to the Early Horizon (Burger and Gordon 1998). Based on the new Waywaka dates, we can state that the hammering of presumably placer gold into thin foil with stone anvils and hammers, found in undisturbed association with now tightly-dated Muyu Moqo Phase A ceramics, was being accomplished in the south-central highlands of Peru by as early as 1680 cal B.C. (Burger 1992:127; Grossman 1972a: 274-275; Matsumoto and Palomino 2012:115). Most likely annealing also occurred. Clair Patterson of the California Institute of Technology pointed out in the early 1970s that most native gold contains about ten percent silver. This makes annealing virtually necessary in the production of thin foil (Grossman 1972a: 275).

The discovery of a hammered gold bead necklace in the southern highlands dating to the fourth millennium B.P. now firmly establishes that early metal working technology was not

isolated in Andahuaylas. The multiple finds of early hammered and annealed gold demonstrate that metal working as a skilled craft had its roots in the south-central and southern highlands earlier than elsewhere in the Andes and the Americas. As Burger stated "The . . . discovery of a metal worker's kit indicates that the precious metal was actually produced at Waywaka" (Burger 1992:127). Together, the three finds, the Waywaka toolkit and gold, the Mina Perdida gold, and the Preceramic southern Andean gold necklace, document consumption and production, specialized and localized manufacture, and a temporal depth of c. 1000 years before the Early Horizon for metallurgical craftsmanship in the Andes.

Discussion

Gold foil and stone beads near the mouths and hands are associated with human burials at Waywaka, but there is no pottery in these contexts. Similar burial patterns were identified in late Initial Period deposits at Campanayuq Rumi to the north. Here flexed burials without ceramic associations have been dated to the earliest phase of occupation, around 1000 B.C. (Matsumoto 2010; Matsumoto and Cavero 2009). Burials recorded at Waywaka included seven adult males, three adult females, three individuals who died when they were between six and twenty years of age (one, Burial 13, a child or adolescent of undetermined sex, was represented by a single severed forearm), and two infants (Grossman 1972b: table III, 1983:66). One of the adult burials (Burial 14), a ceremonial deer burial (*ibid.*: figure 98), and the severed forearm were found cut into the upper Phase C-D surfaces (Grossman 1983:66; Figure 1: Layers III-V) and were capped by Muyu Moqo C-D deposits (Unit C, Levels III, IV). The rest of the burials were found associated with the deeper levels containing Phase A and B ceramic deposits. The uniformly flexed and shallow interments were discovered with field stones placed over the torsos and abdomens. Six of the fifteen human burials were found with offerings of gold foil, shell beads and beads identified as lapis lazuli in the vicinities of their hands or mouths. In the mouth of one (Burial 4, a slightly built 25-35 year old male) was a large lapis lazuli bead with a folded 4.1 centimeter length of gold foil in its perforation (Grossman 1972a: 273). Four offerings, or sets of offerings, were with men,[4] and one was with a woman.[5] In addition Burial 13 was found with two shell beads (Grossman 1972b: table I). Besides the offerings placed in the human burials, the deer skeleton (Burial 1) was found lying on its back and with a chunk of turquoise or chrysocolla in its mouth (Grossman 1983: figure 98).

Bioarchaeological analysis of the Muyu Moqo human remains sheds light on the life and health of this ancient community. These early people were not passive, nor were they in perfect harmony with nature and each other. Apart from the implications of the severed forearm, at least one individual died from a violent blow (blunt force trauma) to the jaw, exhibiting a perimortem mandibular fracture. At least one individual experienced deliberate cranial modification, anterior/posterior skull flattening (Grossman, 1972b: plate XXVII, no. 33). Many individuals suffered from extensive dental carries, tooth loss, and alveolar recession (Grossman 1983: 66). One showed severe *osteomeyelitis* (an infection of the bone marrow) or *melorheostosis* (a genetic disorder) of the proximal fibula. The latter is known as "dripping candle wax disease" because the affected bone forms cascading wavelets of deformed bone (Aufderheide and

[4] These included eight probable lapis lazuli beads and nine gold flakes with Burial 4, one drilled bone spatulate object with Burial 5, one shell bead with Burial 6, and two gold flakes with Burial 16.

[5] Eight probable lapis lazuli beads, one chrysocolla bead, and one gold flake were found with Burial 15.

Rodríguez-Martín 1998; Grossman 1972b: plate XXVI, nos. 32a and 32b, 1983:66; Danielle Kurin, personal communication, 2013).

Wattle and daub was found in the lowest Phase A Muyu Moqo levels (Figure 7). This is important because it suggests sedentary, or nearly permanent, residence. Wattle and daub structures are not built to be moved. In addition, the crippling skeletal maladies identified in the Muyu Moqo burial sample constitute evidence against full, community-wide mobility. The presence of chipped pottery spindle whorls and bone spatulate needles indicates that the earliest Phase A people were spinning and making textiles, probably using netting techniques. The new Muyu Moqo age determinations suggest that as early as cal B.C. 1680 the Muyu Moqo people were living in settled, or at least semi-sedentary communities, were spinning thread for textiles, making pottery, and producing gold foil. The presence of textile-making tools and faunal remains suggests that they were dependent upon camelids. I postulate that they controlled multiple ecological zones. Trade brought them precious objects from far distances (Bauer *et al.* 2010; Kellett 2010; Kellett *et al.* 2013; Grossman 1983). By Muyu Moqo Phase C-D, evidence of long-distance contacts included pottery with similarities to that made on the coast and elsewhere in the highlands, marine mollusc shells, obsidian objects from multiple sources hundreds of kilometers from Waywaka (Kellett *et al.* 2013), and colored stones from other regions of Peru and the Atacama Desert of what is now Chile (Grossman 1983:69-71). Although metalworking may at first appear to be an unexpected feature of a society this early in the process of sedentization and social and economic differentiation, the recovery of worked gold from a terminal archaic burial in the Lake Titicaca Basin suggests that "hereditary elites and significant food surpluses" are not requisites for the development of metalworking (Aldenderfer *et al.* 2008:5002). The presence of gold-working in an early Initial Period context at Waywaka lends additional support to the conclusion that a complex society is not necessary to support metalworking.

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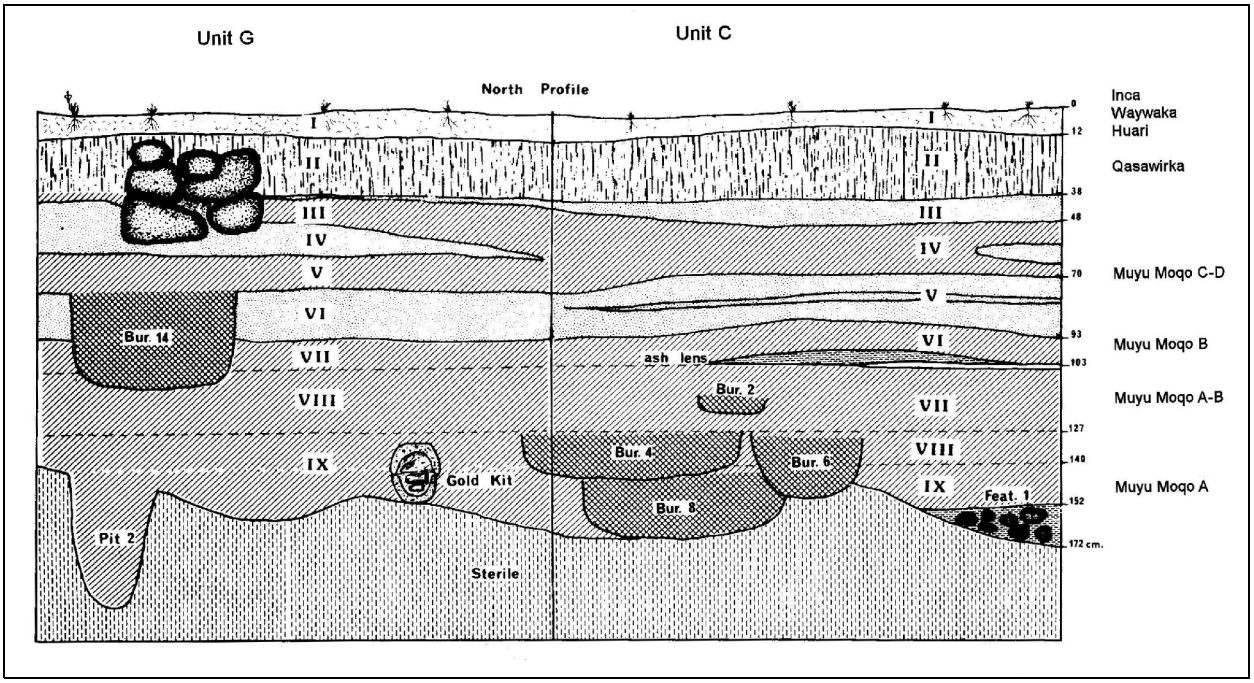

Figure 1: Section of the Waywaka site showing ceramic styles by depth. After Grossman 1983: figure 4. Not to scale.

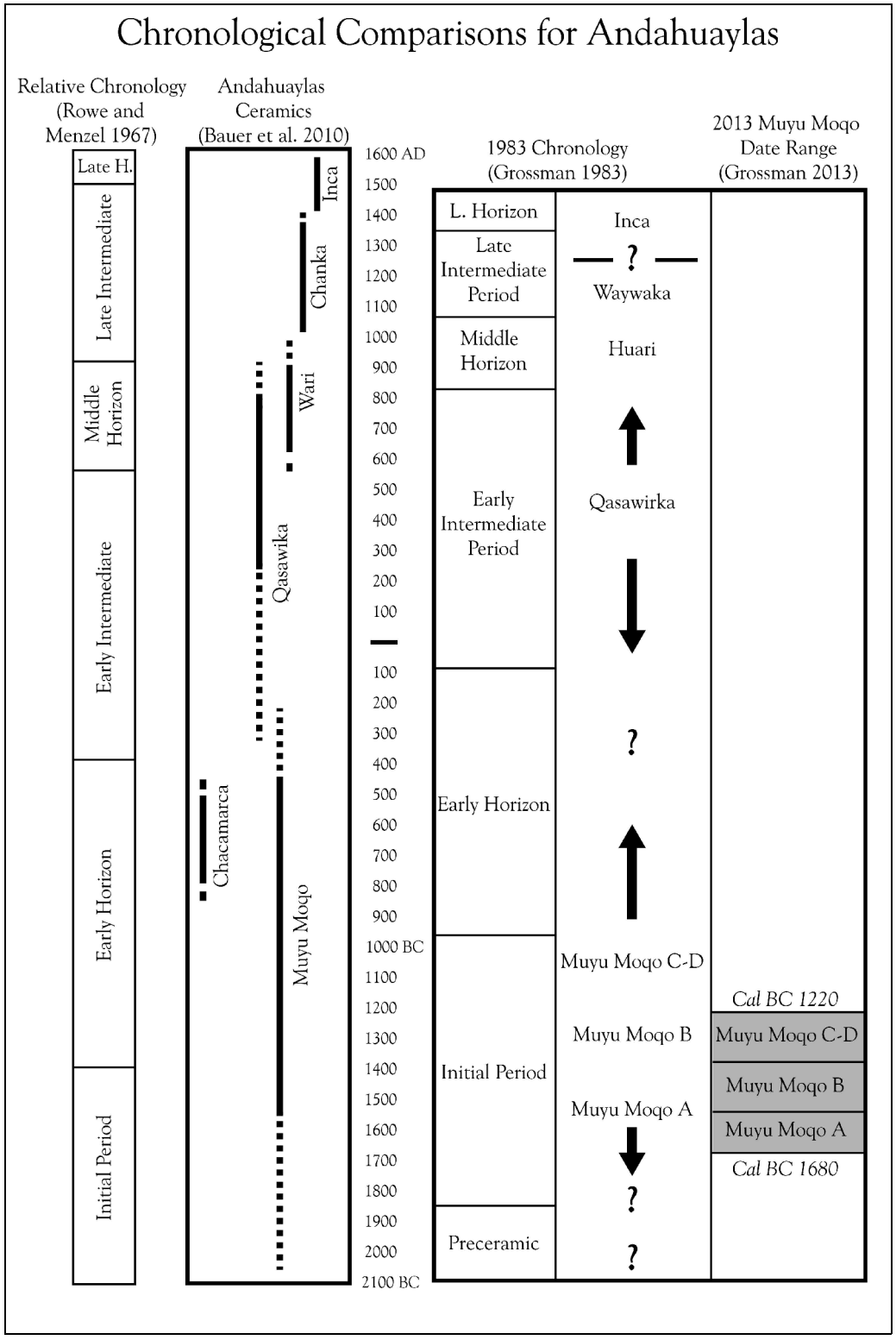

Figure 2: Chart showing relationships between various chronologies for Peru and the Andahuaylas region including the refined temporal definition of the Initial Period Muyu Moqo style reported in this article.

Figure 3: Stone anvil (top), two flakes of gold and an unidentified stone fragment (viewer's right), and three cylindrical hammers (bottom) from the gold worker's tool kit found at Waywaka. Scale is in one centimeter intervals.

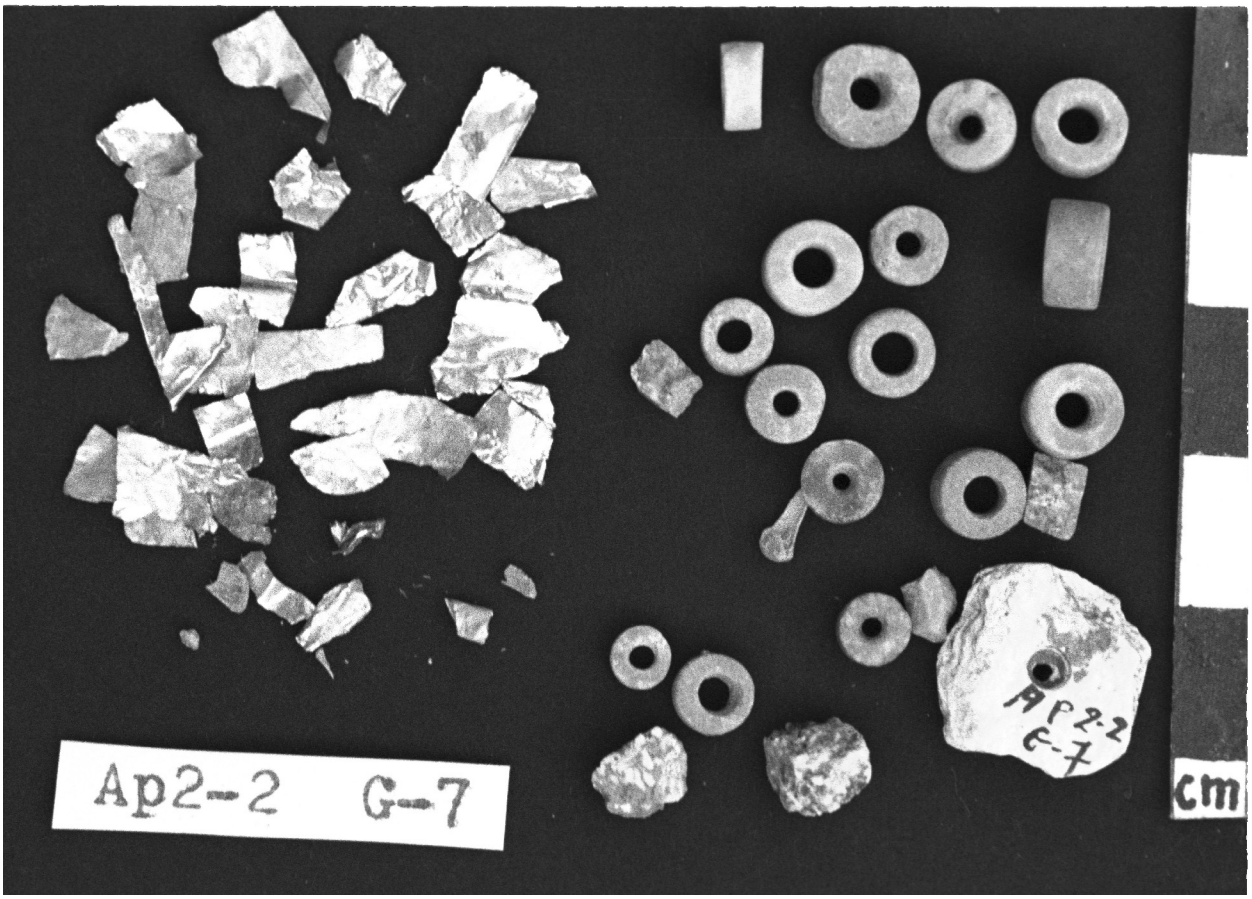

Figure 4: Sixteen blue stone (probably lapis lazuli) beads (viewer's right), one large flat bead of possible chrysocolla or turquoise (viewer's lower right), c. twenty-five fragments of gold foil (viewer's left), and fragments of unidentified stone found in association with Muyu Moqo Phase B style pottery in Level VII of Unit G, excavated at the crest of Waywaka. Identical beads and foil were recorded from Levels VIII and IX in association with only Muyu Moqo Phase Phase A pottery (Grossman 1972a: 272). Scale is in one centimeter intervals.

Figure 5 : View looking north at Unit C showing three human burials (Burial 4, top; Burial 5, lower left; and Burial 6, lower right) at the base of a 3,000 year sequence of stratified deposits at Waywaka. The lowest band of dark midden of the c. 170 centimeter deep profile represents deposits containing Muyu Moqo Phases A and B pottery.

Figure 6: Unit D extension unit, looking south. Note the Muyu Moqo Phase C-D pit filled with stones and pottery. The pit contents provided the largest and most diverse sample used to define the Muyu Moqo C-D phase. Radiocarbon Sample 3 came from the undisturbed Muyu Moqo Phase A deposits below the pit (Unit D, Level VII). Scale is in five centimeter intervals.

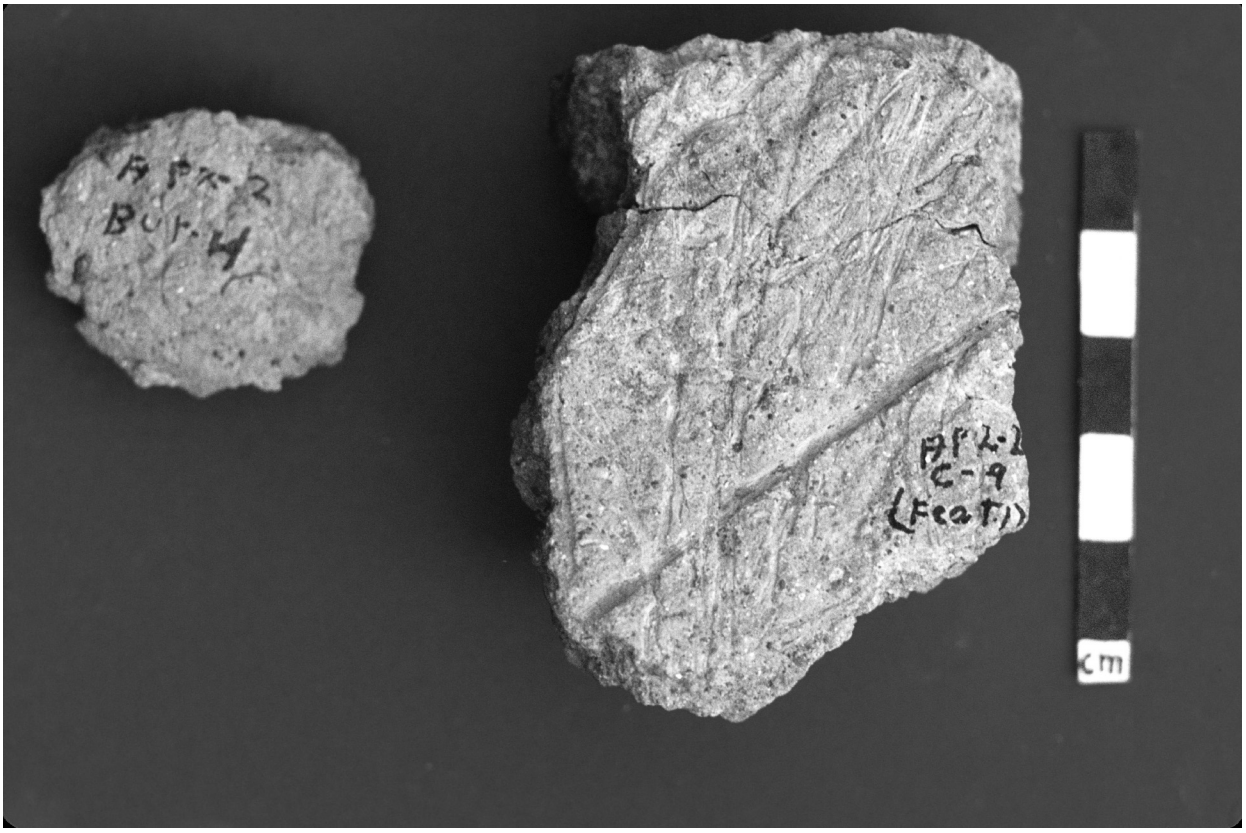

Figure 7: Two chunks of daub recovered from the lowest Level (IX of Unit C) of the Muyu Moqo Phase A deposits (and from the matrix of burial 4) with plant impressions indicating use as mud plaster over a latticework of wattle. Scale is in 1 centimeter intervals.