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^{14}C ABSOLUTE CHRONOLOGY OF PYRAMID III AND THE DYNASTIC MODEL AT PACHACAMAC, PERU

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ABSTRACT. Pachacamac, covering an area of about 600 hectares (ha) near the Pacific shore, is one of the largest and most important archaeological sites in Peru. Most of the monumental adobe-made buildings of the later pre-Inca period (or Late Intermediate Period, about 10th–15th century AD) are so-called pyramids with ramps (the role of the ramps has been interpreted in different ways). Precise dating of the pyramids appears as a crucial step in defining the functions of Pachacamac in pre-Inca times. In this paper, we present the results obtained from 3 field campaigns at Pyramid III, one of the biggest buildings of the site. A total of 24 radiocarbon datasets from 4 different laboratories will help us to place the various steps of development of Pyramid III on a timescale, defined on the basis of the excavations. More absolute dates are available from another pyramid with ramps, which allow us to make comparisons and propose a new model of interpretation for the Pachacamac site during the Late Intermediate Period (LIP).

INTRODUCTION

Pachacamac is one of the biggest and most important sites of the ancient Andes. It is situated 30 km south of Lima and about half a km from the Pacific Ocean, on the right bank of the Lurín river and close to its mouth (see Figure 1). Covering an estimated area of about 600 hectares (ha), its permanent occupation probably began during the first centuries of our era and continued until the Spanish Conquest and forced abandonment in AD 1535 (Eeckhout 1999a). Furthermore, Pachacamac is especially important for the history of Peruvian archaeology because it was there in 1896 that the German archaeologist Max Ühle made the first scientific excavation on Peruvian soil and uncovered a stratigraphy that has formed the basis for all subsequent prehistoric chronology in the Central Andes (Ühle 1903; Menzel 1977). Four main successive cultural stages can be distinguished on the basis of excavated material: the Lima Period (about AD 200–550), the Wari Period (about AD 550–900), the Ychsma Period (about AD 900–1470), and the Inca Period (about AD 1470–1533). Surprisingly, very few absolute dates are available from the site (Eeckhout 1999a; Shimada 1991; Ziółkowski et al. 1994) and some of them are without a precise documented provenience. This helps to explain why so little progress has been made in the chronology at Pachacamac since Ühle's pioneer work. Refinement of the chronology is one of the goals of the Ychsma Project[5], especially for what concerns the post-Wari occupation at the site. Indeed, during the Ychsma Period (or Late Intermediate Period=LIP), the site experienced a remarkable growth seen in the construction of a number of pyramids with ramps. These buildings all have the same ground plan, which comprises one or more multilevel platforms linked by a ramp to a lower-level, rectangular, walled enclosure, with restricted access. A series of rooms is arranged in a "U" shape around the top of the platform. Adjoining these are other structures, usually interpreted as storerooms, living quarters, kitchen courtyards, etc. (Bueno Mendoza 1982; Eeckhout 1999a; Franco Jordan 1998; Jiménez Borja 1985; Paredes Botoni 1988). There are 14 of these pyramid complexes, taking up about 75 ha (i.e., more

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[5]The Ychsma Project (Archeological Investigation and Restoration Studies at Pachacamac) has been designed to answer questions about the function, development, and influence of Pachacamac during the Late Prehispanic Periods. Within the framework of a convention between the Instituto Nacional de Cultura del Perú and the Université Libre de Bruxelles, the project team led by Peter Eeckhout has made excavations and surveyed the site since 1999.

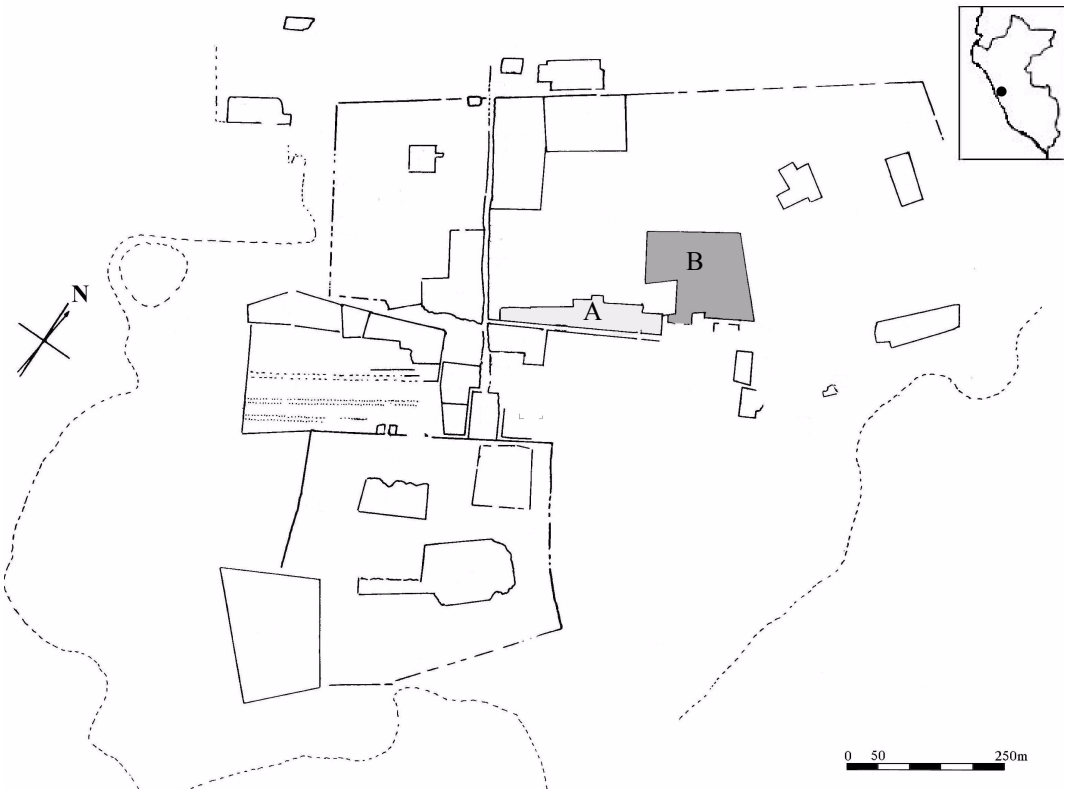

Figure 1 Location of Pachacamac in Peru (inset, top right) and location of Pyramid II (A-light grey area) and Pyramid III (B-dark grey area) within the site. Other elements represent main structures of the monumental area.

than one-third of the monumental part of the archaeological area). Considering the importance of pyramids at the site, it is obvious that if we are to understand Pachacamac during the LIP, the reasons for the building of these pyramids must be established, who occupied them, whether they were occupied simultaneously, the duration of the occupation of each, and their relationships with one another and with the outside world. One current hypothesis proposes that the Pachacamac pyramids were outposts or embassies of different foreign ethnic groups affiliated with the cult of the site's tutelar deity, and/or temples serving kin of the same deity. Pyramids in outlying areas could be local temples corresponding to each ethnic group represented at Pachacamac. This religious network would have had economical, and possibly political, implications (Agurto Calvo 1984; Bueno Mendoza 1982; Burger 1988; Franco 1998; Hyslop 1990; Jiménez Borja 1962–63, 1985; Jiménez Borja and Bueno Mendoza 1970; Keatinge 1988; Negro 1977; Paredes Botoni 1988, 1990a; Patterson 1983; Rostworowski 1972, 1989, 1992, 1993). Such a model is referred to here as the *embassy model*. On the basis of field research at Pachacamac and in the Lurín Valley, an alternative interpretation has been proposed in which the pyramids were the palaces of local chiefs who succeeded one other according to the rules of their particular dynasty (Eeckhout 1999a, 1999b, 1999–2000, 2000a). This is the *palace model*. The building and the sequence of occupation are crucial in the sense that the embassy model is only acceptable if all pyramids were in use at the same time and particularly at the apogee of the Ychsma polity, just before the Inca conquest of the Central Coast (Bueno Mendoza 1974–75; Franco 1998; Hyslop 1990; Jiménez Borja 1985; Jiménez Borja and Bueno Mendoza 1970; Paredes Botoni 1988). This does not mean that all pyramids were actually built during a single

phase of the LIP but that most can be shown to be occupied simultaneously. In the palace model, the pyramids should be shown to have been constructed one after the other and to have functioned successively according to the dynastic interpretation. Precise dating of the pyramids, thus, appears to be a crucial step in defining of the functions of the whole site of Pachacamac in pre-Inca times. In this paper, we present the results obtained from 3 field campaigns at Pyramid III, one of the biggest buildings of the site. A total of 24 ^{14}C datasets from 4 different laboratories will help us to place the various steps of development of Pyramid III on a timescale, defined on the basis of the excavations.

It has to be noted that more absolute dates are available, either from other (non-monumental) sectors of Pyramid III and from another pyramid with ramps.

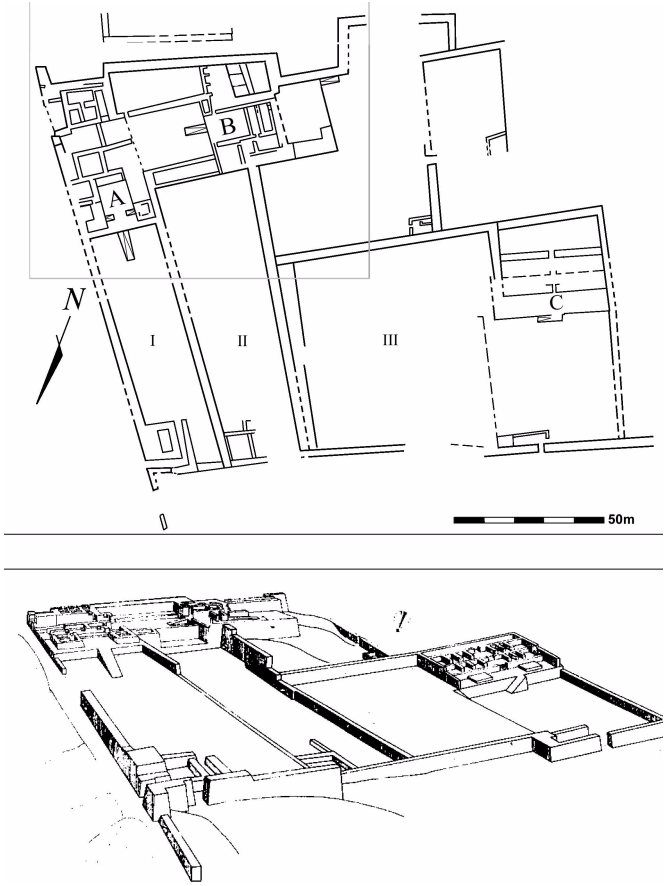

Figure 2 Plan of Pyramid III complex (with indication of partial plan in Figure 4). Letters A, B, and C indicate 3 main pyramids of the compound. The lower part of the figure presents a three-dimensional reconstruction of the whole (after R Franco Jordan 1998).

PYRAMID III AT PACHACAMAC

Pyramid III is located in the northeast sector of the site (see Figures 1 and 2). On the east and north, it is bound by large, open spaces; on the west, by rooms associated with Pyramid II; and on the south, by the end of the East street (the main part of the street being displaced by the pyramid). It dominates the whole site (with the exception of the Temple of the Sun) and covers a surface area of about 16,000 m^2. The building is composed of 2 main pyramidal complexes (A and B), an adjoining structure to the northwest (C), and 2 large plazas (II and III) surrounded by walls. The south portion of the pyramid (complexes A and B) is built on a promontory called "hill Z"; it dominates the

remaining structures by between 2–7 m, according to their level. We shall here focus on the southern part of this complex. Results of 3 excavation campaigns (led in 1993, 1995, and 1999) indicate that these buildings were occupied by restricted elites who organized feasts and other punctual meetings, thus, implying a huge number of participants (Eeckhout 1999b, 2001). Pyramids are also sites of production (of textiles, ceramics, etc.), breeding (of guinea pigs), and storage (of agricultural and possibly other products). Previous research has put in evidence 3 successive phases within the monumental compound (see Figure 3). The last two are pyramids with ramps that have been constructed successively (first, Pyramid III-B and then, Pyramid III-A). Traces of ritual abandonment including the covering of certain structures with selected sand, the offering of deposits, and the sealing of access points have been observed in Pyramids A and B, as well as in Phase D (the oldest one). This evidence, jointly with the available ^{14}C dates from the first 2 campaigns, have led us to suggest that Pyramids B and A had been constructed, occupied, and abandoned one after the other. The 1999 campaign strategy has been designed to check this hypothesis through further excavations and recollection of more ^{14}C samples from the most crucial zones (Figure 4). Within the framework of this paper, we develop an in-depth analysis of whole samples that should allow us to propose an absolute chronology to the archaeological sequence at Pyramid III.

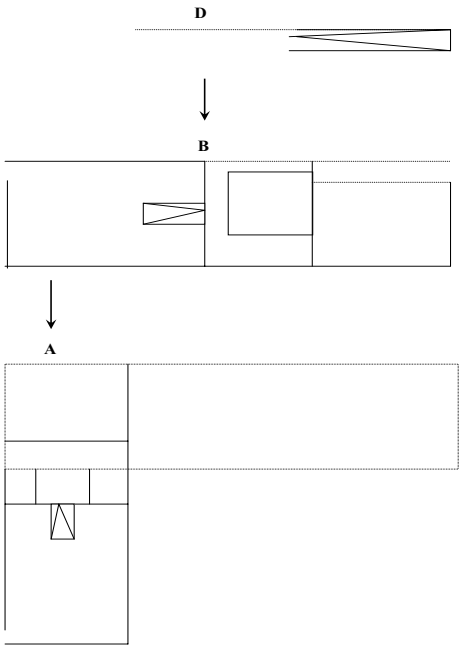

Figure 3 Sketch of the successive constructive D, B, and A phases of Pyramid III. Phases A and B correspond with parts of Pyramid III indicated in Figure 2 by letters A and B. It can be seen that Phase D (the earliest one) has been covered by Phase B, which in turn has been partially covered by Phase A (the latest one). In absolute terms, occupation of Phase B corresponds with STEP 2 and occupation of Phase A corresponds with STEP 4.

METHODS AND RESULTS OF ^{14}C DATING

^{14}C dating was carried out using organic material (wood, charcoal, grains, plant remains, etc.). Most of the samples were dated in the Gliwice Radiocarbon Laboratory using the gas proportional counting method (Lab. No. Gd-; Pazdur et al. 2000) with the standard sample pretreatment (Pazdur and Pazdur 1986). Only 1 sample (GdA-90; Table 1) was dated with the AMS technique (Goslar and Czernik 2000). All conventional ^{14}C dates are corrected for $\delta^{13}C$ according to the Stuiver and Polach procedure (1977). Complete information about the samples and the results from ^{14}C dating appear in Table 1. Apart from the Gliwice Radiocarbon Laboratory dates, there are 4 dates from the Utrecht

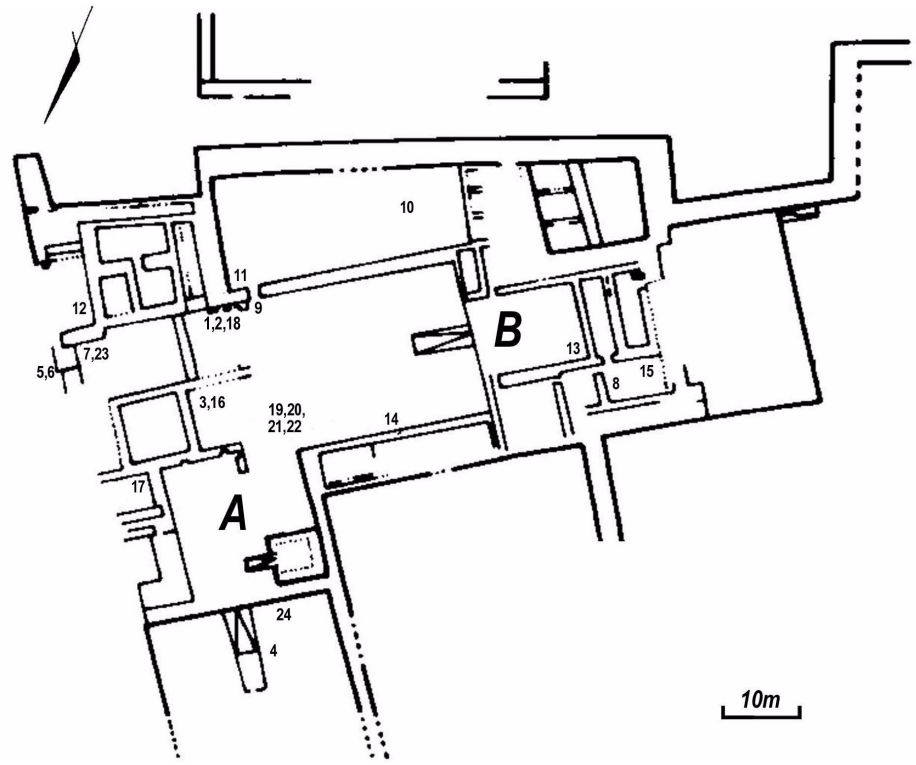

Figure 4 Partial plan of Pyramid IIIA–B with sample provenience locations for ^{14}C dating

van de Graaff Laboratory, the Netherlands (Lab. Code UtC-) and 1 date from the Royal Institute of Cultural Heritage, Belgium (Lab. Code IRPA-). The ^{14}C dates have been calibrated using the program GdCALIB, developed in the Gliwice Radiocarbon Laboratory (Pazdur and Michczyńska 1989) with a new calibration curve (Stuiver et al. 1998). The calendar age is represented by 68% and 95% narrowest confidence intervals.

PROPOSED MODEL OF THE CHRONOLOGY

Excavations have allowed us to define 7 successive steps on the basis of the following: both architectural analyses, stylistic features of encountered material, and absolute dating.

Here are the 7 successive steps:

- STEP 1: Refuse deposit on Hill Z, with association of various kinds (architecture, domestic occupation)
- STEP 2: Construction and occupation of Pyramid B or Phase B (about 30 yr maximum)
- STEP 3: Voluntary abandonment of Pyramid B (a very short event)
- STEP 4: Construction and occupation of Pyramid A or Phase A (about 30 yr maximum)
- STEP 5: Voluntary abandonment of Pyramid A (very short event, before Inca conquest, i.e., AD 1470)
- STEP 6: Intrusive reoccupation of funerary (between AD 1470–1533?) and domestic nature (after AD 1533, i.e., date of Spanish conquest?)
- STEP 7: Definitive abandonment and looting (after AD 1533?)

Table 1 Conventional ^{14}C and calibrated ages of the samples from Pyramid III, Pachacamac, Peru. STEP 3/4 indicates the border between STEP 3 and STEP 4

Sample	Lab Nr	^{14}C age [BP]	Calibrated age [BC/AD]	
			68% narrowest confidence intervals	95% narrowest confidence intervals
STEP 1				
1 PAC III-12-j-9 Lat 12°12′S Long 76°54′W Material: charcoal $\delta^{13}C = -20.77‰$	Gd-16039	770 ± 120	[1355 AD, 1386 AD] 7.56% [1158 AD, 1305 AD] 53.67% [1124 AD, 1137 AD] 3.10% [1067 AD, 1083 AD] 3.77%	[1027 AD, 1401 AD] 95.47%
2 PAC III-12-j-6 Lat 12°12′S Long 76°54′W Material: charcoal and grains $\delta^{13}C = -23.38‰$	Gd-17040	980 ± 180	[1231 AD, 1238 AD] 1.20% [892 AD, 1223 AD] 67.13%	[686 AD, 1302 AD] 94.77%
4 PAC III-6-u-9 Lat 12°12′S Long 76°54′W Material: charcoal $\delta^{13}C = -25.69‰$	Gd-15132	650 ± 65	[1347 AD, 1392 AD] 38.75% [1291 AD, 1326 AD] 29.28%	[1265 AD, 1414 AD] 95.45%
5 PAC III-10-4 Lat 12°12′S Long 76°54′W Material: piece of *lucuma* wood	IRPA-1131	640 ± 35	[1352 AD, 1388 AD] 44.19% [1299 AD, 1319 AD] 24.02%	[1340 AD, 1397 AD] 57.72% [1291 AD, 1331 AD] 37.52%
STEP 2				
6 PAC III-22-a-3 Lat 12°12′S Long 76°54′W Material: charcoal $\delta^{13}C = -26.11‰$	Gd-12263	510 ± 50	[1400 AD, 1441 AD] 63.21% [1333 AD, 1338 AD] 5.15%	[1387 AD, 1471 AD] 76.80% [1306 AD, 1354 AD] 18.32%
7 PAC III-22-a-2 Lat 12°12′S Long 76°54′W Material: grains-carbonized corn $\delta^{13}C = -18.61‰$	Gd-11548	490 ± 30	[1418 AD, 1438 AD] 69.48%	[1405 AD, 1445 AD] 95.40%

Table 1 Conventional ^{14}C and calibrated ages of the samples from Pyramid III, Pachacamac, Peru. STEP 3/4 indicates the border between STEP 3 and STEP 4 *(Continued)*

	Sample	Lab Nr	^{14}C age [BP]	Calibrated age [BC/AD]	
				68% narrowest confidence intervals	95% narrowest confidence intervals
8	PAC III-12-a-á-5 Lat 12°12′S Long 76°54′W Material: charcoal $\delta^{13}C = -26.15‰$	Gd-11554	545 ± 50	[1392 AD, 1432 AD] 45.48% [1326 AD, 1348 AD] 22.54%	[1382 AD, 1440 AD] 53.39% [1303 AD, 1369 AD] 42.05%
9	PAC III-30-a-2 Lat 12°12′S Long 76°54′W Material: wood $\delta^{13}C = -29.07‰$	Gd-12274	425 ± 35	[1438 AD, 1479 AD] 68.71%	[1596 AD, 1620 AD] 6.90% [1423 AD, 1518 AD] 88.73%
10	PAC III-24-a/b-4 Lat 12°12′S Long 76°54′W Material: wood $\delta^{13}C = -27.67‰$	Gd-12270	410 ± 35	[1604 AD, 1607 AD] 2.56% [1439 AD, 1489 AD] 65.58%	[1575 AD, 1626 AD] 15.54% [1431 AD, 1521 AD] 80.08%
11	PAC III-25-m-2a Lat 12°12′S Long 76°54′W Material: charcoal and plant remains $\delta^{13}C$ = assumed to be equal –28‰	Gd-15136	540 ± 105	[1378 AD, 1445 AD] 34.44% [1301 AD, 1373 AD] 33.77%	[1556 AD, 1631 AD] 7.30% [1277 AD, 1525 AD] 88.12%
12	PAC III-25-f-3 Lat 12°12′S Long 76°54′W Material: charcoal $\delta^{13}C = -18.98‰$	Gd-15134	255 ± 75	[1930 AD, 1950 AD] 3.20% [1730 AD, 1810 AD] 17.00% [1610 AD, 1680 AD] 22.50% [1510 AD, 1600 AD] 25.40%	[1910 AD, 1950 AD] 6.60% [1830 AD, 1890 AD] 4.40% [1720 AD, 1820 AD] 22.10% [1450 AD, 1710 AD] 62.40%
13	PAC III-23-Hornacina 2 Lat 12°12′S Long 76°54′W Material: plant remains $\delta^{13}C = -29.90‰$	Gd-12261	550 ± 50	[1390 AD, 1430 AD] 42.99% [1324 AD, 1349 AD] 25.28%	[1381 AD, 1439 AD] 50.60% [1303 AD, 1369 AD] 44.86%
		Gd-15150	560 ± 75	[1387 AD, 1427 AD] 30.58% [1306 AD, 1354 AD] 34.59%	[1286 AD, 1453 AD] 95.19%

Table 1 Conventional ^{14}C and calibrated ages of the samples from Pyramid III, Pachacamac, Peru. STEP 3/4 indicates the border between STEP 3 and STEP 4 *(Continued)*

Sample	Lab Nr	^{14}C age [BP]	Calibrated age [BC/AD]	
			68% narrowest confidence intervals	95% narrowest confidence intervals
14 PAC III-3-15 Lat 12°12′S Long 76°54′W Material: charred seeds $\delta^{13}C = -26.2‰$	Utc-4463	552 ± 33	[1395 AD, 1420 AD] 44.71% [1329 AD, 1343 AD] 23.36%	[1387 AD, 1434 AD] 56.92% [1306 AD, 1354 AD] 38.26%
15 PAC III-4-c20-7 Lat 12°12′S Long 76°54′W Material: charred corn ear $\delta^{13}C = -25.69‰$	Utc-4467	586 ± 32	[1388 AD, 1404 AD] 20.58% [1314 AD, 1353 AD] 47.55%	[1381 AD, 1411 AD] 28.31% [1302 AD, 1370 AD] 67.01%
16 PAC III-30-c-1 Lat 12°12′S Long 76°54′W Material: wood $\delta^{13}C = -28.55‰$	Gd-12269	540 ± 30	[1399 AD, 1423 AD] 57.54% [1333 AD, 1338 AD] 10.11%	[1391 AD, 1436 AD] 72.90% [1325 AD, 1349 AD] 22.53%
STEP 3/4				
17 PAC III-6-u-4 Lat 12°12′S Long 76°54′W Material: charcoal $\delta^{13}C = -27.46‰$	Gd-12262	610 ± 40	[1384 AD, 1396 AD] 13.07% [1342 AD, 1368 AD] 27.17% [1304 AD, 1330 AD] 27.74%	[1298 AD, 1405 AD] 95.52%
STEP 4				
18 PAC III-14-f-2c Lat 12°12′S Long 76°54′W Material: wood $\delta^{13}C = -28.26‰$	Gd-12271	510 ± 35	[1409 AD, 1434 AD] 67.81%	[1397 AD, 1443 AD] 89.59% [1331 AD, 1341 AD] 5.69%
19 PAC III-12-h-2 Lat 12°12′S Long 76°54′W Material: plant remains $\delta^{13}C = -27.05‰$	Gd-11547	450 ± 30	1428 AD, 1455 AD] 68.33%	[1420 AD, 1478 AD] 95.45%

Table 1 Conventional ^{14}C and calibrated ages of the samples from Pyramid III, Pachacamac, Peru. STEP 3/4 indicates the border between STEP 3 and STEP 4 *(Continued)*

Sample	Lab Nr	^{14}C age [BP]	Calibrated age [BC/AD]	
			68% narrowest confidence intervals	95% narrowest confidence intervals
STEP 5				
20 PAC III-24-k-2C Lat 12°12′S Long 76°54′W Material: charcoal $\delta^{13}C = -28.14‰$	Gd-11552	445 ± 30	[1432 AD, 1461 AD] 68.75%	[1422 AD, 1480 AD] 95.12%
21 PAC III-24-h-2B Lat 12°12′S Long 76°54′W Material: charcoal $\delta^{13}C = -27.40‰$	Gd-12273	345 ± 30	[1606 AD, 1628 AD] 15.89% [1564 AD, 1604 AD] 28.01% [1489 AD, 1523 AD] 24.66%	[1477 AD, 1637 AD] 95.29%
22 PAC III-24-h-2 Lat 12°12′S Long 76°54′W Material: charcoal $\delta^{13}C = -30.02‰$	Gd-12268	400 ± 40	[1600 AD, 1614 AD] 9.71% [1500 AD, 1513 AD] 7.78% [1442 AD, 1494 AD] 50.99%	[1555 AD, 1631 AD] 27.45% [1434 AD, 1526 AD] 68.17%
23 PAC III-6-g-5-H21 Lat 12°12′S Long 76°54′W Material: charred seeds $\delta^{13}C = -11.1‰$	Utc-4464	450 ± 43	[1424 AD, 1472 AD] 68.67%	[1599 AD, 1616 AD] 3.74% [1406 AD, 1516 AD] 91.57%
STEP 6				
24 PAC III-12-a-2(H6) Lat 12°12′S Long 76°54′W Material: plant remains	GdA-90 (KIA13736)	485 ± 25	[1422 AD, 1438 AD] 68.70%	[1412 AD, 1443 AD] 95.19%
25 PAC III-10-Cx1 Lat 12°12′S Long 76°54′W Material: maize grains	Utc-3686	379 ± 31	[1599 AD, 1617 AD] 15.44% [1453 AD, 1516 AD] 52.96%	[1558 AD, 1630 AD] 35.02% [1444 AD, 1525 AD] 60.14%

As can be seen, Phase B and Phase A are very short and one succeeds the other directly. It has to be added that Phase A partially covers Phase B. The hypothesis is that Pyramids B and A are successive palaces of kings that succeeded one another following a dynastic-like rule. Hereafter (see Table 1 and Figure 5), we propose an ideal relationship between the results of ^{14}C dating and the successive steps.

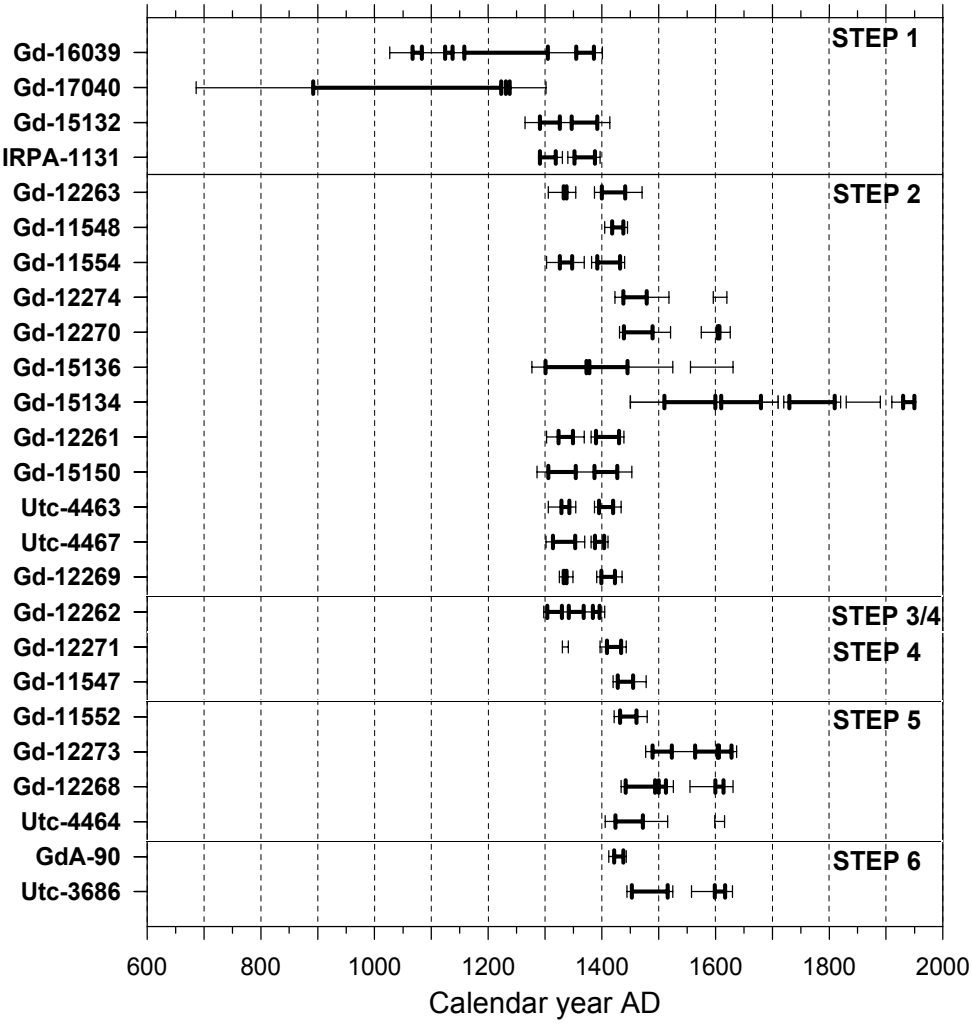

Figure 5 Successive steps of the proposed model of the Pyramid III chronology with calendar (calibrated) ages of individual samples belonging to these steps. STEP 3/4 indicates the border between STEP 3 and STEP 4.

STATISTICAL ANALYSIS OF RESULTS

Figure 6 shows probability distributions obtained from ^{14}C dates presented in Table 1 with division of these on the steps according to proposed model. We decided to exclude from our analysis Sample PAC III-25-f-3 (date Gd-15134), which we assume to be aberrant. All distributions, except STEP 5, are cumulative (composite) probability distributions and they were calculated by summarizing on probability distribution of calendar age of samples, which belongs to the same phase (STEP). Probability distribution for STEP 5 was calculated using another method. Based on what we know from

the ethno-historical information, this step—voluntary abandonment of Pyramid A—must have been a very short event (<1 yr). Therefore, we assumed that the ^{14}C dates from STEP 5 date the same event and we calculated the probability distribution of the weighted mean of these dates. Results of the ^{14}C dating of samples for Pyramid II are presented in the Table 2.

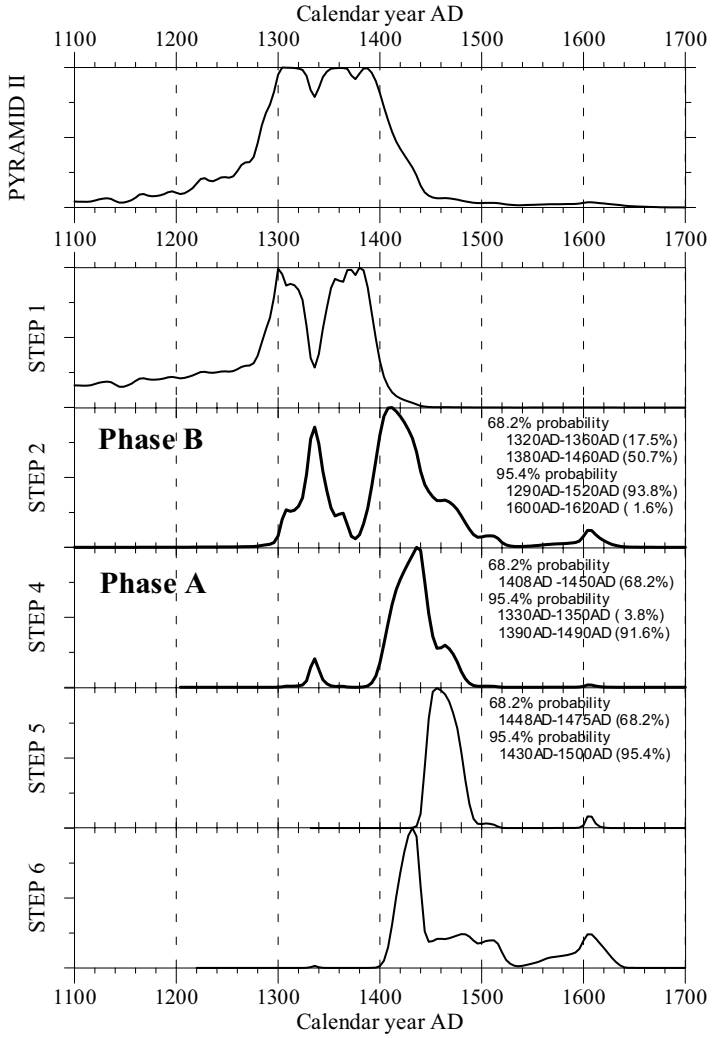

Figure 6 Probability distributions of calendar ages of all samples, which belong to the same steps (phases).

Table 2 Results of ^{14}C dating of samples for Pyramid II at Pachacamac (Paredes and Franco 1987). Samples dated by the Pontifica Universidad Catolica del Peru, Lima.

Event	^{14}C Age (BP)	Context and material
last Ychsma occupation level	600 ± 70	Upper platform of Pyramid II-A, square C4, wood lintel
Ychsma occupation level	654 ± 80	Upper platform of Pyramid II-B, square D4, post buried in ground
not precise	660 ± 160	Annex buildings, square E6, charred wood

We notice that the cumulative probability distribution for samples from Pyramid II show that this pyramid is older than Pyramid III. This result enables us to assume that Pyramid II and III functioned successively. The cumulative probability distribution for STEP 1 agrees with the proposed model of relationships and covers similar time intervals as the distribution for Pyramid II. STEP 1 represents a phase when hill Z was covered with refuse and free of any architecture; material there apparently accumulated during almost a century and was then used as constructive fill for Pyramid III-B at the beginning of 15th century. Because of wiggles on the calibration curve, the distribution for STEP 2 (Phase B) has two maxims of likelihood. However, we can assume that the limits of Phase B are defined by a second maximum of probability distribution (AD 1380–1460) and that the first maximum (AD 1320–1360) is only an effect of the wiggles. The border between STEP 1 and STEP 2, based on the probability distribution for STEP 1, agrees well with this based on the second peak of the probability distribution for STEP 2 and is equal to about AD 1400. On the other hand, probability distributions obtained for STEP 2 and STEP 4 show that Phases A and B are contemporaneous or indistinguishable, but Phase B seems to start somewhat earlier than Phase A. The distribution for STEP 5 may be treated as the *terminus ante quem* age of Phase A (STEP 4) and clearly shows that this phase ends about AD 1460–1470. The same value arises from time intervals calculated on the basis of the probability distribution of STEP 4. It agrees very well with the supposed length of occupation and the idea of pre-Inca abandonment.

DISCUSSION

Probability distribution of calibrated ^{14}C dates seem to confirm the proposed chronology model of the 7 successive steps of building of Pyramid III at Pachacamac, formulated on the basis of both the architectural analysis and the stylistic features of encountered material. Even if there remain some difficulties in distinguishing Phases A and B, these could be explained by visits to the ancestors buried in Phase B by those dwelling in Phase A. Ethnohistoric accounts of such practices inform us that important deceased leaders, such as lords and emperors, were consulted on a regular basis through divinination practices and that food and vestments were offered—some probably burned—at these occasions (Cieza de León 1994; Cobo 1956; Valera 1968). Considering this context, one can imagine that even if the old palace was replaced by a new one and did not function anymore as the living rulers' apartments, it was not totally abandoned. Architectural features seem to support such an interpretation since a narrow corridor between the elite residential rooms of Pyramid A and the main plaza of Pyramid B were discovered in 1999 (Eeckhout 2001). This corridor was built during Phase A and ritually sealed (with caches of offerings) at the end of that phase.

Another point to be addressed is the surprisingly remote dating of Step 6, specifically Sample 23 (see Table 1). First, both Samples 23 and 24 come from intrusive burials containing local and Inca-influenced material, something that has led us to suggest that they were posterior to the abandonment of the pyramid and culturally related to the Late Horizon or Inca period of occupation of the site (Eeckhout 1999b). Second, Sample 23 is composed of plant remains found inside an *in situ* intact pot related to the Chimu-Inka style (Eeckhout 2000b: Figure 10). This means that from an archaeological point of view, the context of the sample is absolutely safe and secure. The only possibility then would be that the plant remains that were used for dating were older than the rest of the burial context, something that seems difficult to demonstrate since we have no more samples of the same kind. Nevertheless, there were other organic remains in the same context, so the future dating of these samples could help us solve the problem.

CONCLUSIONS AND FURTHER HYPOTHESIS

Comparison of the dating of Pyramids II and III confirms the hypothesis of a successive occupation and abandonment of these buildings. This constitutes a total breakthrough in the current understanding of the function of the site of Pachacamac during the pre-Inca period. The length of the occupation of these buildings strengthens the hypothesis of a dynastic type of succession, with each king/curaca having a new palace built upon the death of his predecessor. This hypothesis has the advantage of relating the archaeological field data to written sources from the 16th and 17th centuries, as they refer to how power is exercised in the Andes. It places Pachacamac in a specifically Andean setting [cf., the successive places of the Inca emperors in Cuzco (Rowe 1967) and the citadels of the different Chimu sovereigns in Chan Chan (Conrad 1981; Kolata 1982)]. It also agrees with the model of progressive secularization of Andean authority structures, which has been put forward recently by an increasing number of investigators (McEwan 1990; Moseley 1985; von Hagen and Craig 1998).

If one pushes the generational hypothesis a little further, it also helps to explain the special distribution of the pyramids with ramps at Pachacamac. In fact, in the course of the architectural analysis made on the field (Eeckhout 1999a), it has become apparent that numerous pyramidal complexes were really composed of several pyramids. The study of the circulation system showed that at the heart of a single complex, there was never more than 1 main entrance (Eeckhout 2000a). In other words, only 1 of the pyramids was directly accessible from the exterior. Access to the other pyramids was subordinated to that of the main pyramid (cf., Pyramids I, VII) or else blocked by the construction of the latter (cf., Pyramids III, XII). On the basis of the results of the excavations in Pyramid III and the chronological evidence for Pyramids II and III, we would suggest that several pyramids in the same pyramidal complex form successive stages in construction, occupation, and voluntary abandonment, and correspond to the successive reigns of several kings. The size differences among the pyramids would correspond to the fluctuations of power across the years, according to whether the king had access to a larger or smaller work force. Pyramids that are apparently unfinished (IV, V, and VIII) would reflect the unexpected death of a king during the construction of the same, which would have then been interrupted. If one accepts this working hypothesis, it must be understood that there are 18 pyramids with central ramps at Pachacamac (some isolated, some included in multi-pyramidal compounds) and it seems clear that they were not all simultaneously functioning entities. Hence, 2 possible interpretations can be advanced: single generational succession or multiple generational succession.

In single generational succession, it must be understood that 1 pyramid at a time was in use at Pachacamac and that the pyramids have been built, occupied, and abandoned in succession by kings who ruled alone over the site. The period covered by the total of the successive pyramids with ramps would be in the order of about 400–450 yr (15 completed pyramids multiplied by 25–30 yr). If, as all authors seem to agree, the construction of pyramids with ramps was interrupted by the Inca conquest (around AD 1470), this would place the first potential pyramid in the 11th century (i.e,. at the beginning of the LIP). On the other hand, multiple generational succession assumes that several lineages built their own pyramids in succession at Pachacamac and that certain kings were then contemporaneous with one another. It is impossible in such a case, given the current state of research, to estimate the duration of the period covered by pyramids with ramps. It is, however, probable that the start of the building phases commenced later than that of the model for single generational succession.

These crucial issues are (in the present state of research) largely speculative but we are confident in the fact that in the future years the new data collected on the field at Pachacamac will shed new light on the prehistory of this important site of the Central Andean area.

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