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LAPA VERMELHA IV HOMINID 1: MORPHOLOGICAL AFFINITIES OF THE EARLIEST KNOWN AMERICAN

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ABSTRACT

Several studies concerning the extra-continental morphological affinities of Paleo-Indian skeletons, carried out independently in South and North America, have indicated that the Americas were first occupied by non-Mongoloids that made their way to the New World through the Bering Strait in ancient times. The first South Americans show a clear resemblance to modern South Pacific and African populations, while the first North Americans seem to be at an unresolved morphological position between modern South Pacific and Europeans. In none of these analyses the first Americans show any resemblance to either northeast Asians or modern native Americans. So far, these studies have included affirmed and putative early skeletons thought to date between 8,000 and 10,000 years B.P. In this work the extra-continental morphological affinities of a Paleo-Indian skeleton well dated between 11,000 and 11,500 years B.P. (Lapa Vermelha IV Hominid 1, or "Luzia") is investigated, using as comparative samples Howells' (1989) world-wide modern series and Habgood's (1985) Old World Late Pleistocene fossil hominids. The comparison between Lapa Vermelha IV Hominid 1 and Howells' series was based on canonical variate analysis, including 45 size-corrected craniometric variables, while the comparison with fossil hominids was based on principal component analysis, including 16 size-corrected variables. In the first case, Lapa Vermelha IV Hominid 1 exhibited an undisputed morphological affinity firstly with Africans and secondly with South Pacific populations. In the second comparison, the earliest known American skeleton had its closest similarities with early Australians, Zhoukoudian Upper Cave 103, and Taforalt 18. The results obtained clearly confirm the idea that the Americas were first colonized by a generalized *Homo sapiens* population which inhabited East Asia in the Late Pleistocene, before the definition of the classic Mongoloid morphology.

INTRODUCTION

It is widely accepted that modern *Homo sapiens* appeared in Africa around 120,000 years B.P. and spread throughout the Old World, arriving in the Near East soon after appearing in Africa, spreading to Europe around 45,000 years B.P., and to Australia by at least 50,000 years ago (Stringer and Andrews, 1988; Stringer,1989a,b, 1990; Lahr, 1994, 1996; see O'Connell and Allen, 1998, for a recent review). Modern humans soon replaced archaic forms of hominids in those regions (Stringer, 1985, 1990), although there are some scholars who suggest that anatomically modern humans lived in sympatry with *Homo erectus* in Southern Asia until late in time (Swisher *et al.*, 1996).

In this scenario, the settlement of Australia is seen as the result of a natural expansion of *Homo sapiens* eastward, who probably took a southern path following the more tropical regions of Asia (Stringer, 1985; Lahr, 1996). We also know that the settlement of modern human populations in Australia implied the use of some aquatic means of transportation, since Australia was never connected to mainland Asia by a terrestrial bridge (Allen and Kershaw, 1996).

The occupation of the Americas, however, has not generally been viewed as part of this early expansion of our species. The view traditionally held is that anatomically modern humans arrived in the New World only very late in time, much after the initial expansion out of Africa, and, most importantly, after Northern Asian populations had made significant adaptations to their environment. As exemplified in the Three Migration Model, the biological source of the first Americans is Northern Asia, with the earliest Americans being just an extension of the spread of Mongoloid people at the end of the Pleistocene (Turner, 1983; Greenberg *et al.*, 1986; Lahr, 1995). Recent comparative studies of the cranial morphology of Paleo-Indian and Early Archaic skeletons from North and South America, however, have shown that the occupation of the New World could have been a much more complex biological process than the waves of expansion depicted in the Three Migration model.

In a series of previous publications (Neves and Pucciarelli, 1989, 1991, 1998; Neves and Blum, in press; Munford *et al.*, 1995; Munford, 1999; Neves *et al.*, 1996a,b, 1997, 1999; Powell *et al.*, in press) we have demonstrated that the cranial morphology of the earliest South Americans cannot be classified as typical Mongoloid and that, in fact, it closely resembles the craniofacial morphology typically seen in modern South Pacific populations and in Africa. In these several comparisons, multivariate statistical analyses have demonstrated a strong morphological simi-

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larity between the oldest Americans and modern Australians and only a slightly weaker morphological similarity to modern Africans. When the comparisons are made using Pleistocene fossil hominids as comparative samples, the same pattern of biological resemblance is obtained.

A similar phenomenon seems to occur with the earliest North American skeletons. In a series of contributions, Steele and Powell demonstrated that the morphology of the North American Paleo-Indian and Early Archaic populations in no way resembles that of modern Mongoloid populations of North Asia (Steele and Powell, 1992, 1993, 1994; Powell and Steele, 1992). The oldest North American remains, when treated with multivariate analytical tools, seem to occupy an unresolved morphological position between modern South Pacific and European populations.

All this information indicates that the Americas were first occupied by a generalized population of *Homo sapiens* very similar to the one that departed from East Asia to Australia around 50,000 B.P., and whose remote origins ultimately can be traced back to Africa (Lahr, 1995; Munford *et al.*, 1995; Neves *et al.*, 1997). This morphology is primarily characterized by very long and narrow skulls, short and narrow faces, with short orbits and noses. A process of *in situ* microevolution leading to mongolization cannot be ruled out to explain what is seen in terms of cranial morphology in later native American populations, namely broad faces and vaults, tall faces with tall orbits and noses. As Lahr (1995) emphasized, this would have implicated a tremendous amount of convergent evolution in Asia and in the Americas. This becomes even more difficult to accept if we recall that Sutter (1997) has suggested that dental morphology has also changed from a sundadont to a sinodont pattern in prehistoric coastal Chile and Peru during the Middle Holocene. Another indicator that weakens the local microevolution argument is that, at least in South America, the evidence seems to point to a major population replacement around 8,000 to 9,000 years B.P., when the generalized morphology was abruptly replaced by the classic Mongoloid morphology (Munford *et al.*, 1995; Neves *et al.*, 1996a).

The central idea of this paper is to strengthen our recent discoveries about the extra-continental biological similarities of the first Americans, bringing into the analysis what we think is the oldest known American skeleton: Lapa Vermelha IV Hominid 1, also known as “Luzia”. Most of our previous works were based on cranial samples not pre-dating 10,000 years B.P. It is our belief that the older the skeletal material used in the comparative analysis, the more we can learn about the ancestral populations of the first Americans in the Old World.

MATERIAL AND METHODS

The material used in this work consists of a South American Paleo-Indian skeleton recovered in 1974 and 1975 from the site of Lapa Vermelha IV, during excavations carried out by the French-Brazilian mission under the leadership of the late Annette Laming-Emperaire.

The rock-shelter of Lapa Vermelha IV is located in the county of Pedro Leopoldo, Lagoa Santa region, State of Minas Gerais, central Brazil (Figure 1), and is part of a karstic complex of caves, shelters and underground water channels (Laming-Emperaire *et al.*, 1975). The scientific excavation of Lapa Vermelha IV started in 1971 and was interrupted suddenly in 1976 with the unexpected death of Laming-Emperaire (Prous, 1986, 1991). For this reason, the published material regarding the site is meager (Laming-Emperaire *et al.*, 1975; Laming-Emperaire, 1979; Prous, 1986), and few archaeologists outside Brazil are aware of the site, its stratigraphy, or dating.

The rock-shelter was filled by a thick layer of Pleistocene and Holocene sediments, of which 13 meters were excavated. Radiocarbon dates from these deposits revealed a long process of deposition, extending from modern times to at least 25,000 years B.P. Unquestionable evidence of human occupation of the site, as indicated by the presence of a quartz flake, scattered charcoal and a human skeleton, was observed in deposits dating as far back as the Pleistocene-Holocene boundary (around 12,000 years B.P.), as is also the case with several other sites in central Brazil (Prous, 1980, 1986, 1991; Schmitz, 1984, 1987; Dillehay *et al.*, 1992). An isolated scraper and a few flakes of questionable provenience were also found in a layer dated to between 15,000 and 20,000 years B.P.

The site is significant in a number of ways. In addition to indicating the presence of humans in Central Brazil as early as the beginning of the Holocene, the excavations carried out in Lapa Vermelha IV also generated the first incontestable evidence of contemporary humans and extinct fauna in the region. Bones and coprolites of a giant sloth (*Glossoterium gigas*) were found in deposits as deep as 11 meters, and dated to 9,580 ± 200 years B.P. (uncalibrated) (Laming-Emperaire, 1979).

Approximately 2 meters below the remains of the giant sloth, unarticulated scattered remains of a human skeleton were found bracketed by two archaeological levels which produced radiocarbon dates on charcoal of 10,220 and 12,960 B.P. (uncalibrated), respectively. Although Laming-Emperaire (1979) and Prous (1986) described the skeleton as *in situ*, Cunha and Guimarães (1978) questioned its original position because the bones were not found in total articulation. Recent trials to directly date the skeleton by AMS methods proved unsuccessful, due to the absence of collagen in the sample (Darden Hood, personal communication, 1996; Thomas Stafford, personal communication, 1997). However, an AMS date run on carbon found in the acid washes of the sample generated a minimum date of 9,330 ± 60 B.P. (uncalibrated) (Beta Analytic sample 84439). For this reason, and accepting the original stratigraphic position described by the archaeologists responsible for the excavation, Hominid 1 of Lapa

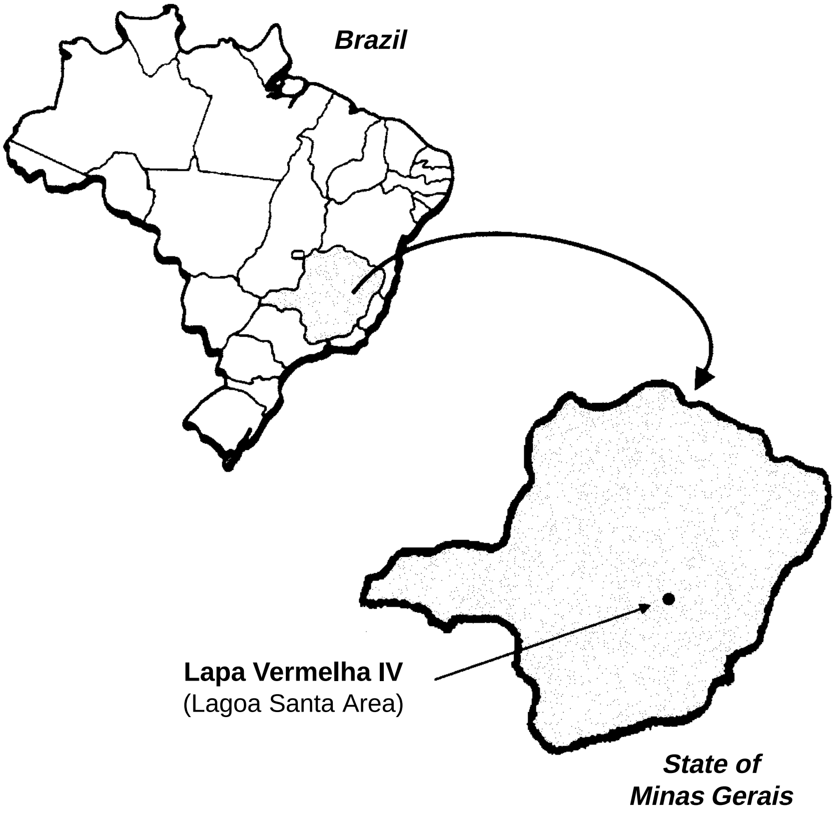

Figure 1 - Geographic location of Lapa Vermelha IV.

Vermelha IV is presented here as the oldest human remains found in the Americas, dating between 11,000 and 11,500 years B.P.*

Recently, two of us (W.A.N. and J.F.P.) were able to study the specimen, and concluded that all of the bones belonged to a single individual, a female aged 20 and 25 years, confirming previous independent assessment carried out by Alvim (1977). The nearly complete skull was metrically characterized using the standard measurements and points of reference recommended by Howells (1973). The morphology of Lapa Vermelha IV Hominid 1 was compared with modern human cranial variation and also with morphological variation in Late Pleistocene fossils from the Old World.

For the first comparison we used the Howells (1989) female craniometric data bank and for the second case we employed data adapted from Habgood (1985), with males and females pooled. The comparison with Howells' (1989) data was carried out by means of a canonical variate analysis, using 45 craniometric variables as input. This procedure minimizes within-group variation and maximizes between-group variation, making regional groups as distinct as possible (Manly, 1994). Individuals were grouped by population rather than region in this analysis, and the resulting population centroids were plotted using the first three canonical variates. Because the "population" of fossil hominid material was often represented by a single specimen, we were unable to carry out a canonical variate analysis on these data. Instead, we performed a principal component analysis on 16 craniofacial variables (Tables I and II). This descriptive technique, which employs the pooled variance-covariance matrix for all samples regardless of their geographic origin, attempts to summarize the variation present in the total data set into a series of orthogonal vectors (Manly, 1994). In both cases, the initial raw craniometric data were size-corrected, using the strategy recommended by Darroch and Mosimann (1985).

RESULTS

Table III presents the main parameters of the canonical variates with eigenvalues greater than 1.000, while Table IV presents the scores for the centroid of each popu-

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*In fact Laming-Emperaire (1979: 71) states that "Un crâne humaine fut trouvé à la cote -12 m 90 qui peut être considéré comme vieux de plus de 12000 années (A.P.)".

Table I - Old World Pleistocene and Early Holocene fossil hominids used for comparison (adapted from Habgood, 1985, where the complete references for the sources can be found).

Hominid identification	Abbreviation	Measurement source
Australia		
Early Australians[1]	EA	Thorne, 1976; Freedman and Lofgren, 1983; Thorne and Wolpoff, 1981
Keilor	Ke	Freedman and Lofgren, 1979
East Asia		
Liujiang	Lj	Coon, 1962
Zhoukoudian Upper Cave 101	UC101	Coon, 1962
Zhoukoudian Upper Cave 103	UC103	Coon, 1962
Wadjak 1 (old reconstruction)	Wa1	Coon, 1962
Africa		
Fish Hoek	FH	Coon, 1962
Afalou 9	Af9	Stringer, C.B. (pers. comm.)
Afalou 29	Af29	Stringer, C.B. (pers. comm.)
Taforalt 9	Ta9	Stringer, C.B. (pers. comm.)
Taforalt 18	Ta18	Stringer, C.B. (pers. comm.)
Western Europe		
Chancelade	Ch	Morant, 1930
Solutré 5	So5	Morant, 1930
Abri Patau 1	AP1	Habgood (original data)
Le Placard 5	LP5	Habgood (original data)
Central Europe		
Oberkassel 1	Ob1	Habgood (original data)
Oberkassel 2	Ob2	Habgood (original data)
Eastern Europe		
Dolni Vestonicé	DV	Jelinek, 1953
Brno 3	Br3	Stringer, C.B. (pers. comm.)
Mladec 1	Ml1	Habgood (original data)
Southwest Asia		
Hotu 2	Ho2	Habgood (original data)

[1] The Gracile and Robust means of Habgood (1985) were substituted by a general mean of early Australian fossils (Lake Mungo 1, Lake Tandou, Cohuna, Know Swamp 1, 3, 5, 9, 14, 15).

Table II - Craniometric data for the 22 fossil hominids used in the analysis (adapted from Habgood, 1985).

ID	GOL	BNL	BBH	XCB	XFB	STB	AUB	ASB	NPH	NLH	OBH	OBB	NLB	FRC	PAC	OCC
Af29	185	98	127	137	119	117	119	116	62	46	31.1	38	27	110	118	95
Af9	189	100	142	152	127	124	135	112	71	53	30	41	25	118	121	100
AP	182.5	98	131	138	117	117	122	109	62	48	32	39	26	111	107	97
Br3	199	104	139	141	124	122	123	113	66	49	29	40	25	113	125	104
Ch	194	113.5	148.5	137.5	115.5	115	128	113	78	58	31.9	39	26	115.5	127.5	97.5
DV3	184	104	129	130	119	119	114	111	64	51	31	37	24	103	123	97
EA	199.2	104.7	141.5	137.2	109.3	116.7	124.9	112.3	75.1	53.6	31.6	43.7	28.1	121.6	118.1	99.6
FH	198	94	130	150	121	119	125	125	51	43	31	37	25	123	126	90
Ho2	184	103	142	133	112.5	109	116	104	62	47	27.5	35.5	21	111	120.5	98
Ke	197	109	142	144	122	116	134	113	71	51	30	41	27	114	121	105
LP5	174	96	128	140	109	108	122	104	57	43	26	35	22	103	108	97
LV	185	102	133	126	108	103	118	106	61	46.5	33	39	26	109	112	93
Lj	189	103	135	142	125	124	127	116	66	46	29	38	27	117.2	118	91.5
Ml1	199	103	139	142	125	125	129	114	70	49.5	31	39	25	114	118	104
Ob1	195	103	138	144	114	114	125	118	62	51	30	43	24	114.5	118	103
Ob2	183	96	134	129	112	110	118.5	107	66	46	31	36	25	106	125	93
So5	182	98.2	123.5	147.5	121	119	121.5	116	58	46.2	32.2	43	23.8	106.9	102.9	99.1
Ta18	182	98	130	135	113	109	123	104	65	50	30	39	28	98	114	103
Ta9	197	113	149	139	121	109	129	114	71	55	32.4	42	27	109	130	101
UC101	204	109	136	143	128	122	137	112	72	58	32	48.5	32	113	118	96
UC103	184	108	138	133	123	118	125	105	70	48	31.5	43.5	25.5	108	122	95
Wa1	191	109	129	151	130	112	132	108	66	52	36	43	30	119	113	91

For abbreviations see Table I. LV, Lapa Vermelha.

Table III - Main characteristics of the generated canonical variates with eigenvalues greater than 1.0.

Canonical variates	Eigenvalue	Proportion explained	Cumulative proportion explained
1	3.8182	0.2406	0.2406
2	2.9998	0.1890	0.4296
3	2.8180	0.1776	0.6072
4	1.1784	0.0703	0.6814

Table IV - Scores of the centroids for each analyzed population for the first three canonical variates.

Population	CAN1	CAN2	CAN3
Arikara	-2.3103	0.3332	-0.0147
Australian	1.5903	-3.6500	0.9510
Berg	-2.3085	0.2008	1.8206
Dogon	3.8408	2.6024	0.7595
Easter Island	1.3049	-0.6802	-3.5590
Hainan	-0.3185	2.5155	0.5294
Lapa Vermelha	3.4863	1.3634	0.8066
Mokapu	-0.0502	0.9523	-3.4076
Moriori	-1.3105	-0.2448	-2.7555
North Japan	-0.3711	1.8020	0.2581
Norse	-0.7591	0.0618	1.4719
Peru	-2.6061	0.8903	0.3713
South Japan	-0.0316	1.9314	-0.1542
Santa Cruz	-2.7327	-1.1367	1.1212
Tasmania	1.0416	-3.3313	-0.6475
Teita	3.2064	0.4449	1.7187
Tolai	1.0199	-1.9271	-0.5184
Zalavar	-0.8446	-0.1404	1.5230
Zulu	2.6881	0.8167	1.4647

lation. The scores regarding the first three canonical variates were used for the construction of the graph in Figure 2. As can be seen in Table III, the first three canonical variates account for approximately 61% of the total dispersion. The first canonical variate is mainly influenced by the projection of glabella and alveolar prognathism. So individuals with large positive scores show very projecting glabellae and very prognathic maxillae. The second canonical variate is also very influenced by glabella projection. However, in this case, individuals with high positive scores exhibit a flatter glabella. The third canonical variate relies heavily on the projection of the face in relation to the transmeatal plane. Individuals with large positive scores for this axis show very projecting prosthions.

The analysis of Figure 2 allows us to conclude that Lapa Vermelha IV Hominid 1 presents a strong similarity firstly with Africans and secondly with South Pacific populations. It is also important to note that one of the Polynesian populations (Easter Island) approximates the area occupied by Lapa Vermelha IV Hominid 1, Africans and Australians, especially if only variates 1 and 2 are considered. No resemblance was found between Lapa Vermelha IV Hominid 1 and either Asians or Late Holocene American Indians.

Table V presents the main parameters of the principal components with eigenvalues greater than 1.000, while Table VI presents the scores for each hominid included in the analysis. The scores regarding the first three components were used to build the graph presented in Figure 3. As can be seen in Table V, the first three components reflect approximately 62% of the total variance contained in the 16 original variables. The first principal component can be described as a direct relation of cranial breadth with facial height. In other words, individuals with large positive values for PC1 have relatively broad skulls and short faces. PC2 can be synthesized as a direct relation of cranial height and length against orbital and nasal breadth. So individuals with large positive scores for this component exhibit long high skulls and narrow noses and orbits. The third component shows a relationship of cranial base breadth and occipital length versus overall cranial length and orbital height. So individuals with large positive values have broad cranial bases, short skulls and short eyes.

The analysis of Figure 3 indicates that Lapa Vermelha IV Hominid 1 is surrounded by the following fossil hominids: Early Australians, Taforalt 18, Keilor and Zhoukoudian Upper Cave 103. This relation is even more clear when only principal components 1 and 2 are taken into account. Lapa Vermelha IV Hominid 1 presents a very peculiar PCA score for the third component.

DISCUSSION

Richard Shutler, Jr. (1983) argued more than 10 years ago that the occupation of the New World could parallel the peopling of Australia in several aspects. There are, however, two main constraints to this view: time of entry and the ancestral Old World populations involved. In the beginning of this paper we stated that the settlement of the Australian continent is currently seen as a direct expansion of early modern people from Africa (Lahr, 1996), while the settlement of the Americas is viewed as part of a much later colonization event, namely the expansion of the specialized Mongoloids from North Asia in relatively recent times (Turner, 1983; Greenberg *et al.*, 1986).

If this view is accepted, it becomes clear that Native Americans had an ancestral population in mainland Asia which was not shared with Native Australians. While the first Australians were derived from a generalized *Homo sapiens* population in East Asia, whose ultimate ancestors can be traced back to Africa, the first Americans have been thought to be derived from an already specialized population of *H. sapiens* (Mongoloids) from northern Asia. While humans seem to have entered Australia during the middle part of the Late Pleistocene, archaeologists have been un-

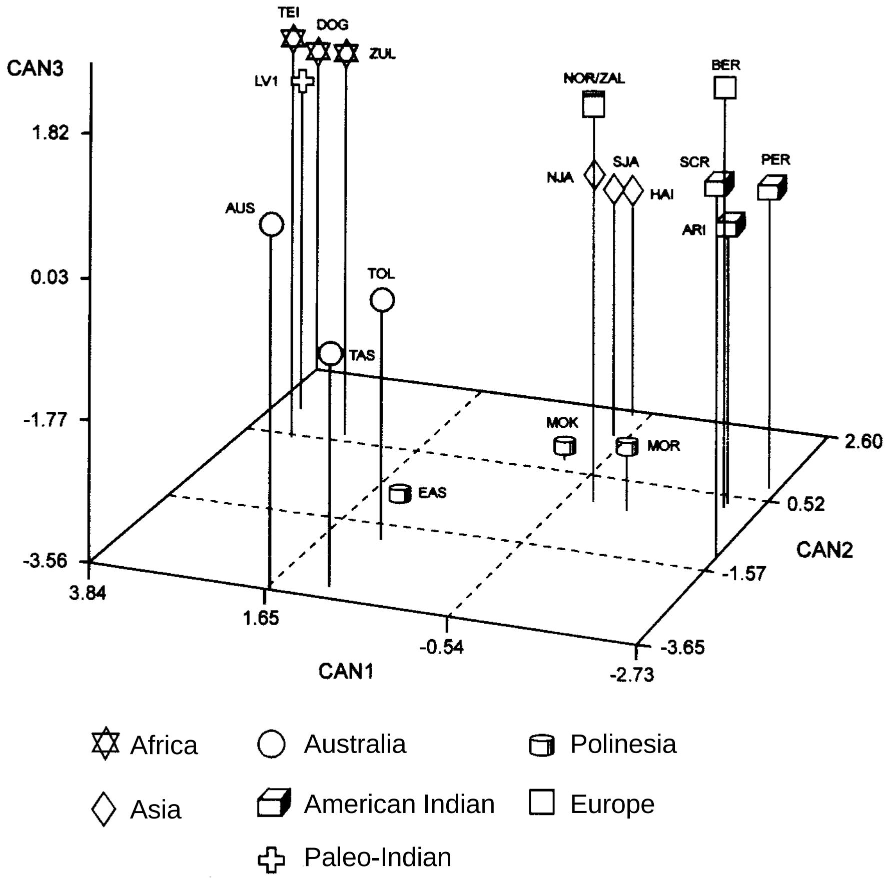

Figure 2 - Three-dimensional graph based on the first three canonical variates, showing the morphological relationships among modern human populations and Lapa Vermelha IV, Hominid I.

able so far to present incontestable evidence for the presence of man in the Americas at the same time, although the timing of genetic differentiation of American Indians from populations in Asia may have occurred as early as 26,000 to 43,000 years ago (Torroni *et al.*, 1992).

Despite the fact that our research, past and present, does not address time of entry, it has significant consequences for the problem of the ancestral populations involved. The results obtained in this work confirm our previous findings that the first Americans have no special bio-

Table V - Main characteristics of the generated principal components with eigenvalues greater than 1.0.

Principal component	Eigenvalue	Proportion explained	Cumulative proportion explained
1	4.7777	0.2986	0.2986
2	3.3987	0.2124	0.5110
3	1.8302	0.1143	0.6254
4	1.2898	0.0806	0.7060
5	1.1600	0.0725	0.7785

Table VI - Estimated scores for the 22 fossil hominids included in the analysis in accordance with the first three principal components.

Fossil hominid	PC1	PC2	PC3
Afalou 29	1.5138	-0.7120	-1.1973
Afalou 9	0.7593	-0.4754	2.5714
Abri Pateau	0.6871	-1.3993	0.1007
Brno 3	0.9412	1.7108	0.2470
Chancelade	-3.6594	1.7897	-0.3901
Dolni Vestonicé 3	-0.7160	1.0829	-1.8463
Early Australians	-2.1271	0.1495	-1.4245
Fish Hoek	6.2802	0.5613	-2.5060
Hotu 2	-0.0877	4.0155	0.3627
Keilor	-0.7464	0.4239	1.3578
Le Placard 5	1.9767	1.2304	2.7502
Lapa Vermelha	-1.3773	-0.0890	-2.3965
Liujiang	1.9724	-0.2646	0.2509
Mladek	1.0341	0.7192	0.8744
Oberkassel 1	0.6371	0.8419	-0.0150
Oberkassel 2	-0.3690	1.3196	-1.2370
Solutré 5	2.5031	-2.6431	0.8905
Taforalt 18	-1.6760	-0.9331	1.1604
Taforalt 9	-3.0115	1.1023	-0.4564
Zhoukoudian UC 101	-2.1404	-3.5024	0.1906
Zhoukoudian UC 103	-1.8184	-0.6345	0.5845
Wadjak 1	-0.5756	-4.2937	-0.8738

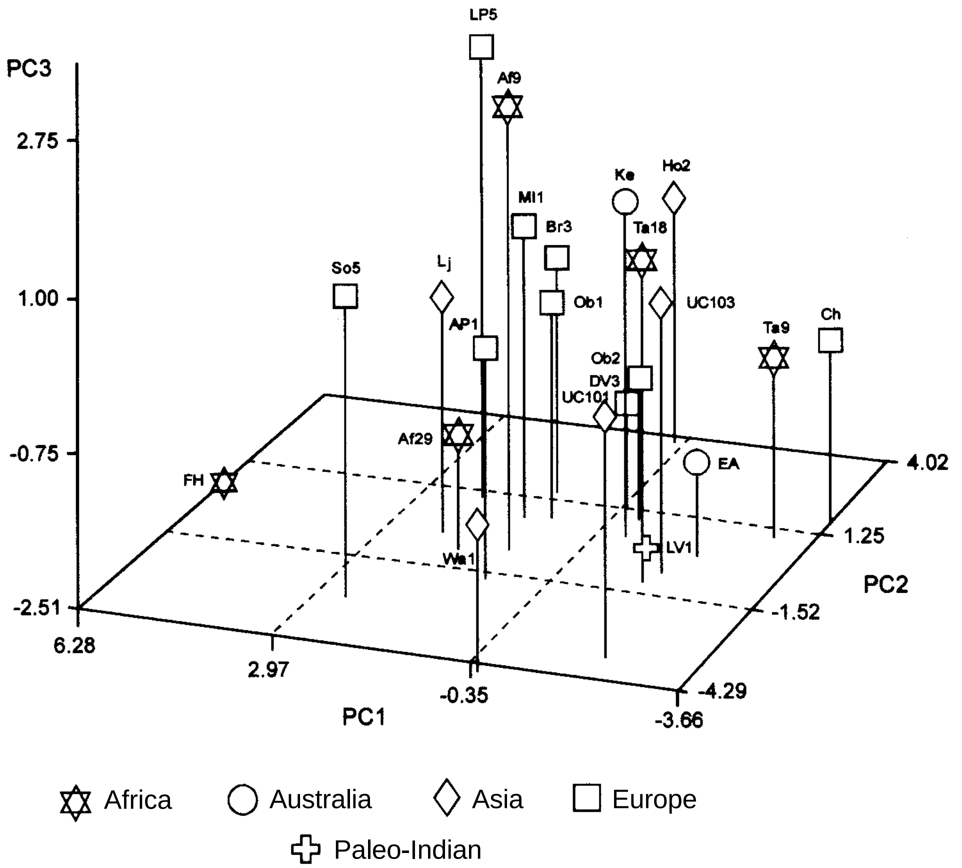

Figure 3 - Three-dimensional graph based on the first three principal components, showing the morphological relationships among Old World fossil hominids and Lapa Vermelha IV, Hominid I.

logical resemblance to modern northern Asians. As can be seen in Figure 2, the oldest human skeleton of the Americas shows a strong similarity with modern Africans and Australians. When the comparison is made with Late Pleistocene and Early Holocene fossil hominids (Figure 3), the first known American is surrounded by early Australians and Zhoukoudian Upper Cave Hominid 103.

There is no necessity of invoking the occurrence of trans-oceanic migrations to explain the pattern of biological affinities we have been finding for the first Americans. The best way of reconciling the pattern of morphological similarities found in this work with common knowledge about human evolution in East Asia is to assume that both the first Australians and the first Americans shared a common ancestral population in mainland Asia. This ancestral population could well be represented by hominids similar to the Zhoukoudian Upper Cave people (Kamminga and Wright, 1988; Wright, 1995; Neves and Pucciarelli, 1998) and its ultimate origin can be traced back to Africa.

The idea that East Asia was occupied by an Australian-like population by the end of the Pleistocene has gained more support recently. Matsumura and Zuraina (1999) described a very well-preserved skeleton from Gua Gunung, Malaysia. The specimen is aged 10,200 B.P. and is said to be a late representative of a non-specialized morphology, similar to Australian Aborigines, in East Asia.

If our inferences are correct, the Americas could ultimately be seen as part of the first expansion of anatomically modern humans out of Africa, which started during the beginning of the Upper Pleistocene. Recent acceptance of Late Pleistocene dates for the occupation of the site of Monte Verde, Chile (Meltzer *et al.*, 1997), now suggests that populations colonizing the New World may have crossed the Bering Strait earlier than previously thought. This makes our suggestion still more plausible.

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RESUMO

Diversos estudos sobre afinidades morfológicas extracontinentais de esqueletos paleoíndios, executados independentemente na América do Sul e do Norte, têm indicado uma ocupação inicial do continente americano por não-mongolóides. Os primeiros sul-americanos demonstram uma clara semelhança com populações sul-pacíficas e africanas, enquanto os primeiros norte-americanos parecem encontrar-se em uma posição indefinida entre sul-pacíficos e europeus. Em nenhuma destas análises os primeiros americanos demonstraram qualquer similaridade com populações modernas do nordeste asiático ou com índios americanos atuais. Até então, estes estudos haviam incluído esqueletos datados de 8,000 a 10,000 anos atrás. Neste trabalho, as afinidades extra-continentais de um esqueleto paleoíndio bem contextualizado entre 11,000 e 11,500 anos atrás (Lapa Vermelha IV Hominídeo 1, ou Luzia) são investigadas, usando como amostras de referência as séries mundiais de Howells (1989) e a coleção de fósseis de hominídeos do Pleistoceno tardio de HabGood (1985). A comparação entre Lapa Vermelha IV Hominídeo 1 e as séries de Howells baseou-se em análises de variáveis canônicas incluindo 45 variáveis craniométricas corrigidas quanto ao tamanho, enquanto a comparação com hominídeos fósseis foi baseada em análise de componentes principais incluindo 16 variáveis também corrigidas. No primeiro caso, Lapa Vermelha IV Hominídeo 1 exibiu afinidade morfológica indiscutível, primariamente com africanos e, em seguida, com populações sul-pacíficas. Na segunda comparação, o mais antigo esqueleto americano conhecido apresentou maior similaridade com os primeiros australianos, Zhoukoudian UC103 e Taforalt 18. Os resultados obtidos confirmam claramente a idéia de que o continente americano foi inicialmente colonizado por uma população de *Homo sapiens* generalizados que habitaram o leste asiático no final do Pleistoceno, antes da definição da morfologia mongolóide clássica.

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