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Human Skeletal Remains From Mumba Rock Shelter, Northern Tanzania

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ABSTRACT During their expeditions in Northern Tanzania in 1934/38, Ludwig and Margit Kohl-Larsen (discoverer of Eyasi and Garusi hominids) excavated i.a. the Mumba Rock Shelter. This important excavation yielded human skeletal remains of 18 individuals. The most relevant results of the morphological analyses are presented here. According to the affinities and absolute dating (hominid IX, 3700 B.C.), the present study supports recent indications of the presence of Negroid groups in East Africa at an early stage in Later Stone Age times.

About 65 km south of the famous Olduvai Gorge in the Rift Valley of Northern Tanzania lies Lake Eyasi. It is about 80 km long and averages 15 km in width. This region gained its place among the fossil hominid sites through the efforts of ethnologist and physician Ludwig Kohl-Larsen; in the course of several expeditions from 1931 to 1939 together with his wife, Margit, he not only studied the people and cultures of the Rift Valley but also undertook important prehistoric research (Kohl-Larsen, '43).

Alongside the well-known hominids Eyasi I-III and the maxillary fragments from Garusi, Kohl-Larsen also discovered a number of caves and shelters, the most important of which is the Mumba Rock Shelter. It is situated between 3 and 4 km east of the northeastern shore of Lake Eyasi in a line of four gneiss hills known as Laghang Ishimijega (or "Mumba Hills" of old German Maps; see Fig. 1) running SW to NE. The central of these hills is called Eshigesh (or "Mumba Hill"). At the northwestern tip of Eshigesh Hill there are a number of rock shelters, among them the Mumba Rock Shelter. These shelters are located at 35°17′48″E and 3°32′18″S. The Mumba shelter is formed by a rock face with a lateral extent of about 20 m and an overhang of approximately 9 m (see Fig. 2).

Acting on the numerous cultural remains found on the surface, in 1934 Kohl-Larsen undertook a test excavation which reached a depth of 5.5 m and yielded, along with a number of artifacts, some human skeletal remains, which, however, were very fragmentary. After this most promising pre-excavation a more comprehensive one reaching a depth of about 9.40 m was directed by M. Kohl-Larsen from January to August 1938. The excavation area was about 12.5 m × 9 m. Beginning at the vertical wall, layers of 20 cm were removed. From Bed V onwards the protruding shelter wall and immovable large rock blocks reduced the excavation area considerably (see Fig. 2). A detailed report of the excavation is given by Kohl-Larsen ('43).

The presence of human skeletal material was restricted to Bed III (see Fig. 3). It was possible to reconstruct the exact position of the ten hominid finds from the main excavation on the basis of M. Kohl-Larsen's original notes (personal communication, 1977) (see Bräuer, '78a). As the sequence of layers of the test excavation (the remains of eight individuals also belong to Bed III) paralleled the stratigraphy of the main excavation, it was appropriate to combine the finds of both.

The over 100,000 cultural remains from Mumba Rock Shelter, which have already been the subject of an unpublished dissertation (Roller, '55), are to be reassessed by M. J. Mehlman. On the basis of his studies so far (personal communication, 1979) it seems that the individuals of Bed III can be regarded as makers of Kansyore pottery, ostrich egg shell beads, as well as stone tools of a "Wilton"-like type. Typologically, the stone tools do not reveal any marked differences within Bed III.

The numerous faunal remains were examined by Lehmann ('57). The vertebrate species

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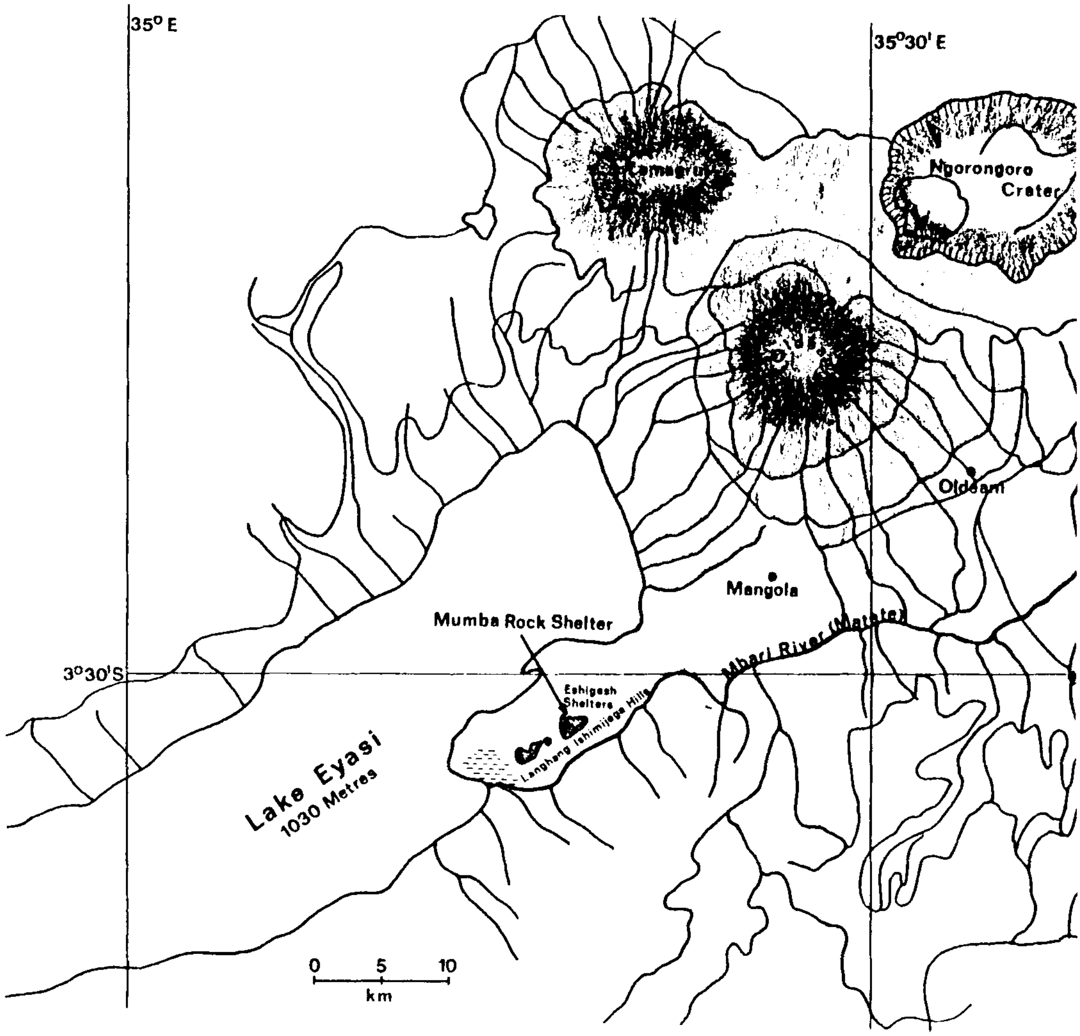

Fig. 1. Map showing Mumba Rock Shelter and surrounding area, Northern Tanzania.

found in Bed III are almost identical to recent ones. For further details the reader may refer to Lehmann's original study.

CHRONOLOGY OF THE HOMINID LAYER

The soil samples, which had been taken at intervals of 20 cm, were analyzed climatologically by Lais and Schmid ('52). According to their analyses, the three upper Beds (I-III) can be assumed to belong to later times, the following (Bed IV), to a pluvial period with a long final and initial phase and a short climax. Below this, thick layers were deposited in a dry period, which at the deepest level were indications of a wet climate.

The stratigraphic validity of the pluvial/interpluvial scheme, as well as the two post-pluvial Wet Phases, has been criticized for a long time (Cooke, '58; Flint, '59; Bishop, '62) and is generally rejected at present. Butzer et al. ('72) gave a large number of new radiocarbon dates for various East African beach deposits which show that the general level of the East African lakes was high in the early Holocene, about 10000 to 8000 B.P. Flooding may have taken place during this period. The Turkana, Nakuru, and Chad basins, moreover,

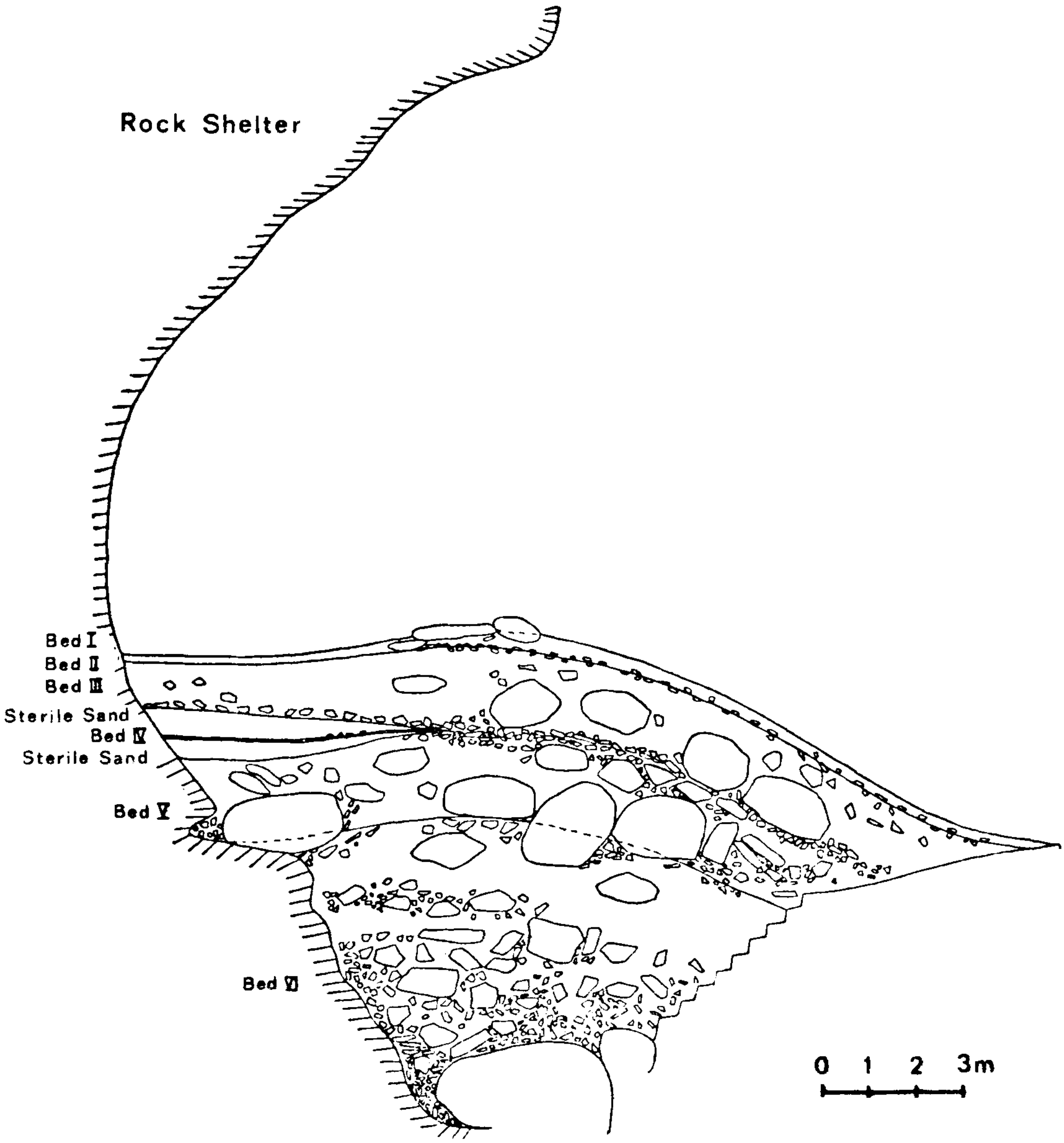

Fig. 2. Mumba Rock Shelter (after Kohl-Larsen, 1943).

also show a distinctly higher level between 6000 and 4000 B.P., though it is uncertain to what extent the same process produced the similarity. Mehlman's preliminary studies at Mumba Rock Shelter (unpublished manuscript, '77) are essentially in agreement with Kohl-Larsen's division of the beds, as well as with the assumption (Roller, '55) that the sequence above the beach deposit (Bed IV) pertains to the Later Stone Age. The uncertain chronological classifications of the above-lying Bed III, which were based on previous archaeological and sedimentological analysis, were largely substantiated by a radiocarbon dating in 1975. The absolute dating of a sample of charcoal found together with skeleton IX at a depth of about 1 m in Bed III gave a radiocarbon age of 4860 ± 100 B.P. (UCLA—1913).

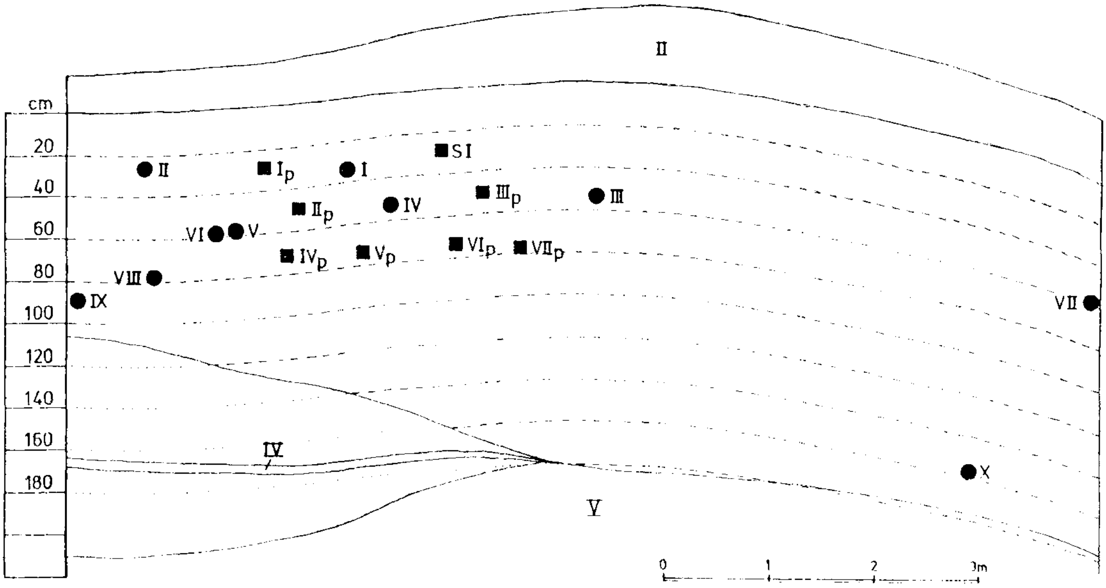

Fig. 3. Distribution of the individual skeletons recovered during the pre- and main excavations in Bed III (twice exaggerated).

The date, dendrochronologically corrected after Suess ('70), is 3670 B.C. Somewhat more light was shed on the question of whether the charcoal belongs to the final layer or whether it came to this depth by the assumed "burying-through" of the skeleton from younger levels, by a second dating kindly undertaken by Prof. Protsch, Frankfurt. So, in 1977, it was possible to date individual IX itself. The results produced a concordant radio-carbon age of 4890 ± 70 B.P. (Fra-1), resp. 3700 B.C., according to Suess. Of course, this does not provide a final proof of whether the charcoal was in fact buried with the skeleton. However, the second dating precluded the possibility that the skeleton was much younger. Excavation technique of that time, and the fact that 40 years have passed, unfortunately make it impossible to obtain any further details. Neither is there any longer a chance of clarifying the depth at which the skeletons had been buried through from younger layers. The assumption that they were grave burials rests solely on the predominantly crouched position of the individuals.

Since the dated individual is poorly preserved, it is of special importance that about 60 cm deeper, but still on the base of Bed III, is the most deeply situated skeleton, hominid X. As can be seen in Figure 2, the thickness of Bed III clearly increases to the outside. Although this complicates the analysis of the stratigraphic relations between the two finds, it is still quite probable that hominid X, which is the only mineralized one, dates from 3700 B.C. or earlier. A radiocarbon dating of skeleton X was not possible, as there is too little collagen.

THE MORPHOLOGICAL AFFINITIES OF THE SKELETAL REMAINS

As Figure 3 shows, a total of 18 individuals (3 children, 12 ♂, 1 ♀, 2 ?) were found during the two excavations at Mumba Rock Shelter. Some of them, however, were so severely damaged that they could not be recovered, and others were too fragmentary to be analyzed morphologically. Table 1 provides a guide to the human skeletal material found at Mumba Rock Shelter.

Particulars concerning the studies of the material are to be taken from the author's investigation ('76a, '79b), where, as far as determinable, all the individual measurements (88 on the cranium and 45 on the post-cranial skeleton) are supplied.

First, the morphology was analyzed by multivariate comparisons. Multivariate statistical methods are being used on an increasing scale also for analyzing the morphological affinities of single individuals (e.g., Brothwell, '74, De Villiers, '76a). The results of such analyses

TABLE 1. Human skeletal material from Mumba Rock Shelter (f.) fragmentary; (P) pre-excavation

Number	Sex	Age (yr)	Cranium	Mandible	Shoulder girdle	Vertebral column	Ribs and sternum	Humerus and forearm	Bones of hand	Pelvis	Thigh and leg	Bones of foot
I P	♀ ?	35–45	Maxilla(f.) Temporal bone(f.)	Body(f.)	—	—	Ribs (f.)	Ulna(f.)	Carpal bones Metacarpal bones Phalanges	—	—	Tarsal bones Metatarsal bones Phalanges
I	child	3–4	Calvaria(f.)	Fragmentary	Scapula	Vertebrae(f.)	Ribs	Complete	—	Fragments	Femur(2) Tibia(1) Fibula(2)	—
II	child	2–3	Calvaria(f.)	Complete	Clavicula Scapula(f.)	Vertebrae(f.)	Ribs(f.)	Complete	Phalanges	Fragmentary	Femur(2) Tibia(2) Fibula(1)	Phalanges
I S	?	25–35	Fragments Teeth	—	—	—	—	Humerus(f.) Ulna(f.) Radius(f.)	Carpal bones Phalanges	—	Fibula(f.)	Tarsal bones Metatarsal bones Phalanges
II P	—	—	—	—	—	—	—	—	—	—	—	—
III P	♂	40–60	Calvaria(f.)	Teeth	—	—	—	—	—	—	—	—
III	child	4–5	Calvaria(f.) Face(f.)	Complete	Scapula(f.)	Vertebrae	Ribs(f.)	Humerus(2) Ulna(1) Radius(2)	Carpal bones Metacarpal bones Phalanges	Fragmentary	Femur(f.) Tibia(1) Fibula(f.)	Tarsal bones Phalanges
IV	♂	52–61	Complete	Complete	Scapula(f.)	Vertebrae(f.)	Ribs(f.)	Humerus(f.) Ulna(f.) Radius(f.)	Carpal bones Metacarpal bones Phalanges	Fragments	Femur(f.) Fibula(f.)	Tarsal bones Metatarsal bones Phalanges
V	♂	35–55	Calvaria(f.)	Fragments	—	Vertebrae(f.) Sacrum	—	Humerus(f.) Ulna(f.) Radius(f.)	Carpal bones Metacarpal bones Phalanges	—	Femur(f.) Tibia(f.) Fibula(f.)	Tarsal bones Metatarsal bones Phalanges
VI	♂	40–60	Complete	Fragmentary		Identification of the postcranial bones uncertain						
VII	♂ ?	35–45	Maxilla(f.) Fragments	Fragmentary	Scapula(f.) Clavicula(f.)	Vertebrae(f.)	Ribs(f.)	Humerus(f.) Ulna(f.) Radius(f.)	Carpal bones Metacarpal bones Phalanges	—	Femur(f.)	Tarsal bones Metatarsal bones Phalanges
IV P	♂	38–47	Fragments	Body(f.)	—	Vertebrae Sacrum	—	Humerus(f.) Ulna(f.) Radius(f.)	Phalanges	Fragmentary	Femur(f.)	Tarsal bones Metatarsal bones
V P	♂ ?	50–60	Fragments	—	Scapula(f.)	Vertebrae Sacrum(f.)	Ribs(f.) Sternum	Humerus(f.)	—	Fragmentary	—	Tarsal bones Phalanges
VI P	♂ ?	ca. 45	Parietal bone(f.) Fragments	Body(f.)	Scapula(f.)	—	Ribs(f.)	Humerus(f.)	—	—	—	—
VII P	♂	30–60	Calvaria(f.)	Fragmentary	Scapula(f.)	Vertebrae	Ribs(f.) Sternum	Humerus(f.) Radius(f.)	—	—	Femur(f.) Tibia(f.)	—
VIII	♂	35–45	Calvaria Face(f.)	Body(f.)	Scapula(f.)	—	—	Humerus(f.) Ulna(f.) Radius(f.)	Metacarpal bones Phalanges	—	Femur(f.) Tibia(f.) Fibula(f.)	Metatarsal bones Phalanges
IX	♂	20–35	Calvaria(f.) Maxilla(f.)	Fragmentary	—	Vertebrae(f.)	—	Humerus(f.) Ulna(f.) Radius(f.)	Carpal bones Metacarpal bones Phalanges	Fragments	Femur(f.) Tibia(f.) Fibula(f.)	Tarsal bones Metatarsal bones
X	♂ ?	37–46	Calvaria Face(f.)	Fragmentary	—	Vertebrae	—	Humerus(f.)	—	—	Femur(f.)	—

generally have to be treated with care, as no information is available on the variability of the population, on the individual's position, or on the diagnostic accuracy of the racial origin of the raw data.

One method chosen in the present study was the Penrose distance statistic ('54), which shows a high correlation to other distance measurements (Knussmann, '67, Corruccini, '73, '75, '78, Weiner and Huizinga '72). Hanihara ('77) stressed that Penrose's distances have certainly come points of advantage in measuring biological distance between populations, and can be divided into two components, C_Q^2 and C_Z^2, that have useful interpretations (Gower '72).

In a detailed analysis, using different sets of variables, it was possible to show, among other things (Bräuer, '77, '79a), that the combination of size and shape distance in general serves well in differentiating the various major African morphotypes; the shape component is dominant in separating Negroids from Caucasoids, whereas the size component plays an important role in distinguishing San (Bushmen) from Khoikhoi (Hottentots). As early as 1967 Stern and Singer ('67) were able to demonstrate by their metrical study of San and Khoikhoi skulls that the mean of the Khoikhoi is found to be consistently greater than that for San. As it is more important to establish the affinities of the various series to a particular reference group than to identify the intergroup distances, it seems useful simply to plot the shape and size distances between the various series and the reference point.

Furthermore, "Pythagorean" distances were computed as the square root of average squared differences between variables (Sokal and Sneath, '63). To eliminate size effects, which may be important in case of comparison between single individuals and group means, measurements are converted to shape variables (Coruccini, '73). Each standardized measurement for each individual or group is divided by the individual's or group's size reference variable, its average magnitude over all the measurements. Principal coordinates are calculated from the distance matrix via the transformation given by Gower ('72).

In order to study the affinities of a morphologically wide spectrum, Caucasoid, Negroid, and Khoisanoid series were included in the comparisons, as well as population sampl(especially from the Eyasi region (Table 2). In addition to this recent material the relations to various representatives of the so-called ancient-Afro-Mediterranean group in East Africa were also studied, although their Caucasoid affinities are disputed at present (Rightmire, '74, '75).
Mediterranean group in East Africa were also studied, although their Caucasoid affinities are disputed at present (Rightmire, '74, '75).

To include very fragmentary material from Mumba Shelter in the multivariate analyses, the individual layers were grouped into samples (40–60 cm, 60–80 cm). Moreover, we formed a layer section of 40–100 cm by including also the few data on hominid IX. With regard to the deepest individual X, the skull of which is relatively well preserved, it seemed more reasonable to treat it separately in the analyses than to integrate it into younger layers. At this point it is not possible to deal with all multivariate analyses carried out.[1]

All the results agree in showing striking affinities of the different samples from Mumba Rock Shelter with one another and with hominid X. The affinities with other series and single individuals reveal a differentiated picture. For instance, in various analyses there are affinities with K13 from Bambandyanalo but also large distances to San (Bushmen) and Khoikhoi (Hottentots). The Boskopoid/Khoisanoid character of the population of Bambandyanalo (Iron Age) observed by Galloway ('59) has been disputed by Rightmire ('70), who found, by means of multivariate analyses, that the strongest affinities are with Negroid populations. This result also seems to be supported by the present study. Consequently, no affinities of the skeletons from Mumba Rock Shelter were found with Khoisanoid populations. It seems that, with regard to the major morphotypes, the affiliation may be restricted to the Negroid–Caucasoid spectrum. The Negroid relationships seem to dominate, as shown in the small size and shape distances as well as in the small Pythagorean distances to various samples from South Africa, such as the Zulu (see Figs. 4, 5).

Of interest are the extremely large distances of the post-Pleistocene hominids from Gamble's Cave,[2] from Elmenteita, as well as from even

[1] The analyses dealt with here are based on the following standard variables (No. after Martin): II,2 (1,5,17,40,48,54,55), III,1 (1,5,8,17,48,54,55). The selection of the variables was restricted by the comparative data available in the literature. Definition of the measurements on the cranium: maximum cranial length (M-1)—maximum length from glabella to opisthocranium; nasion-basion length (M-5); maximum cranial breadth (M-8)—from euryon to euryon; basibregmatic height (M-17)—height of the skull vault, measured from basion to bregma; prosthion-basion length (M-40)—the facial length from prosthion to basion; upper facial height (M-48)—from nasion to prosthion; nasal breadth (M-54)—the greatest breadth of the nasal aperture; nasal height (M-55)—from nasion to the lowest point on the inferior margin of the nasal aperture, avoiding the nasal spine.

[2] With respect to the two skulls from Gamble's Cave, the qualification must be made that they are very fragmented and heavily reconstructed in plaster, so that the measurements are not very reliable.

TABLE 2. Cranial material from Africa

Excavation	Number of individuals	Reference
1. Gizeh	58	Howells ('73)
2. Naqada	44	Crichton ('66)
3. Nubian C	20–60	Nielsen ('70)
4. Nubian Meroitic	28–35	Nielsen ('70)
5. Nubian X	37–42	Nielsen ('70)
6. Nubian Christian	8–12	Nielsen ('70)
7. Gamble's Cave No. 4	1	Leakey ('35)
8. Gamble's Cave No. 5	1	Leakey ('35)
9. Elmenteita A	1	Leakey ('35)
10. Willey's Kopje No. 2	1	Leakey ('35)
11. Makalia No. 1	1	Leakey ('35)
12. Nakuru No. IX	1	Leakey ('35)
13 Galla/Somali	37	Kitson ('31)
14. Jebel Moya	15–49	Mukherjee et al. ('55)
15. South African Negr.	500–600	De Villiers ('68)
16. Zulu	30	Rightmire ('70)
17. Zulu	55	Howells ('73)
18. Teita	34	Howells ('73)
19. Issansu (Eyasi region)	12	Ried ('15)
20. San (Bushmen)	20	Rightmire ('70)
21. San (Bushmen)	41	Howells ('73)
22. Khoikhoi (Hottentots)	16	Rightmire ('70)
23. Khoikhoi (Hottentots)	22–28	Kitson ('31)
24. Burungi (Eyasi region)	11	Ried ('15)
25. Sandawe (Eyasi region)	6	Ried ('15)
26. Hadza (Tindiga) (Eyasi region)	2	Ried ('15)
27. K13 (Bambandyanalo)	1	Galloway ('59)
28. Masai (Eyasi region)	8–14	Bräuer ('76b)

more recent representatives of this group, such as Makalia and Nakuru. This can be seen in Figures 4 and 5 and may indicate the morphological differences between the hominids from Mumba Rock Shelter and this group (see below). Although both analyses show very similar results, one must consider that interindividual distances are less reliable.

The question arises: To what extent are the multivariate affinities confirmed by the analysis of specific characters, or character complexes, of single individuals? The following focuses only on the best-preserved individuals from Mumba Rock Shelter.

The most ancient skeletal find is hominid X (♂, 37–46 years). The well-preserved cranium (Fig. 6) is long and has an ovoid vertical shape. The glabella and superciliary arch are moderately developed. The nasal bones are prominent. The nasal shape is distinctively wide (NH: 51?, NB: 30). Moreover, the skull has a distinct alveolar prognathism, and the build of the mandible, especially the ramus and chin region, shows Negroid characters (Schulz, '33).

The best-preserved remains recovered from the layer 60–80 cm were those of skeleton VII P (♂, 30–60 years). The left half of the calvaria was reconstructed from numerous fragments. If one approximates the maximum cranial breadth by adding the missing right half of the calvaria, a long and ovoid shape is obtained. Parietal bossing does not exist. The frontal bone is distinctly receding (frontal subtense: 21 mm); the glabella and superciliary arch are moderately developed. The interorbital breadth measures a substantial 28 mm, and the angle formed between the nasal bones is wide (stage 3 after De Villiers, '68).

Hominid VIII (♂, 35–45 years) of the same layer can be analyzed only with restrictions, as he shows strong deformations of the whole skull. Only the nasal measurements could be determined with relative certainty (NH: 51?, NB: 29?), resulting in a wide nasal shape. The skull, moreover, is long, with an ovoid vertical shape. The glabella and superciliary region are developed only moderately. Although the scope of the data for this layer is only small, the pattern of the characters taken as a whole indicates Negroid affinities (see De Villiers, '68, Tobias, '74).

A similar result is obtained from analyzing the skeletal finds of level 40–60 cm. The two individuals IV and VI are on the whole well preserved; skeleton IV (♂, 52–61 years) has an extremely large and robust cranium, which may be an extreme variant among the population. He, too, has dominating Negroid features, a marked alveolar prognathism and a very wide nasal shape, a distinctly receding frontal bone (frontal subtense: 25 mm), and an extreme interorbital breadth (30 mm). The calvaria, moreover, is long and ovoid. The upper face is low, as is the orbit. The superciliary arch and glabella are moderately developed, and the angle formed between the nasal bones is relatively wide (stage 3).

Finally, let us deal with the relatively well-preserved individual VI (♂, 40–60 years) in somewhat more detail. The cranium is very long and ovoid and it, too, has a low upper face. The orbits are of medium height. The nasal bones are very flat, and the interorbital breadth of 27 mm is considerable. Hominid VI, moreover, has a very wide nasal aperture and a strong alveolar prognathism. With regard to the cranial height index and vertical index, individuals IV, VI, and X are similar to one another; their skulls are of medium height and narrow in shape.

The detailed morphological analyses (cf. the

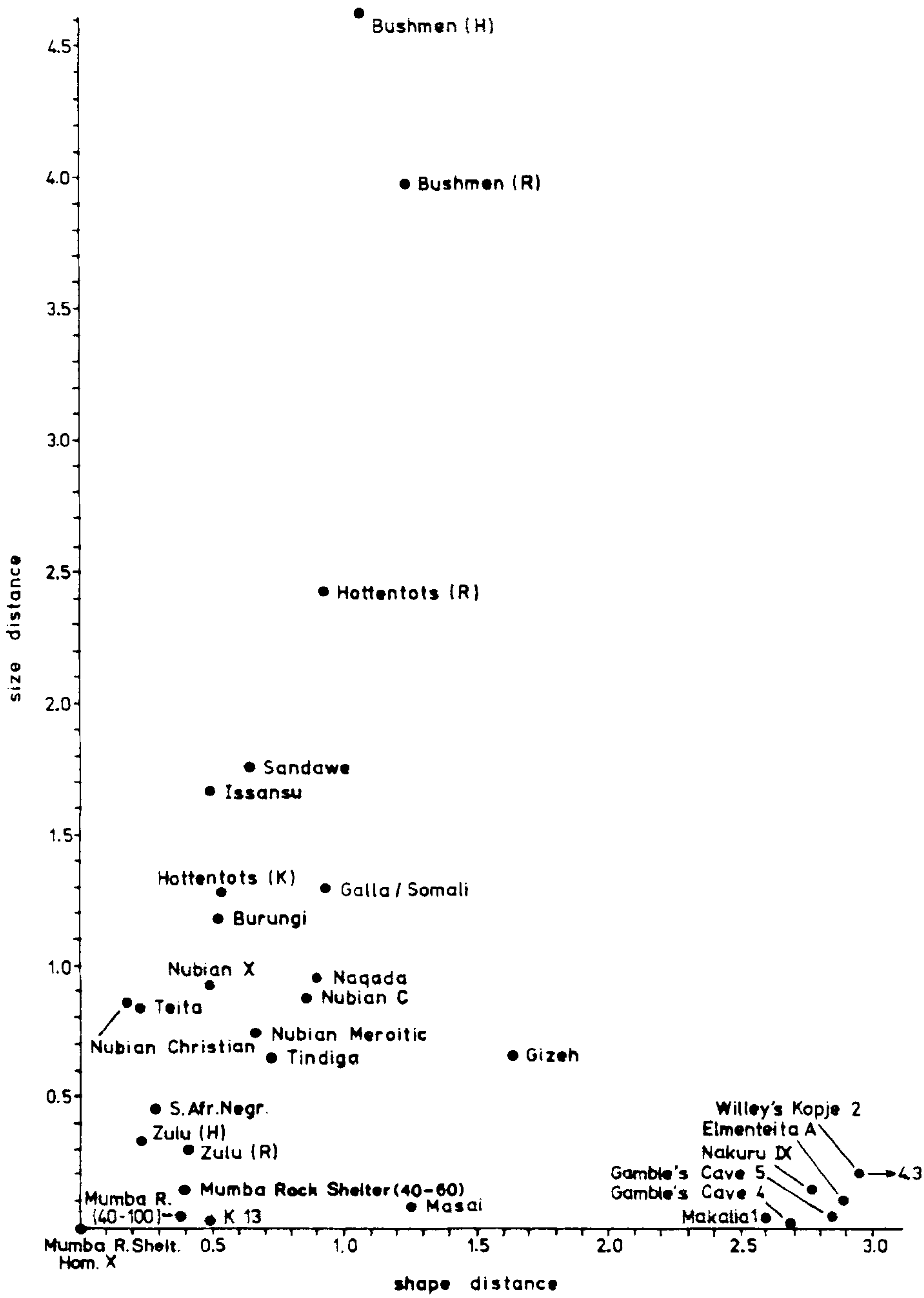

Fig. 4. Size and shape distances (analysis II, 2) between hominid X (Mumba Rock Shelter) and other African skeletal material.

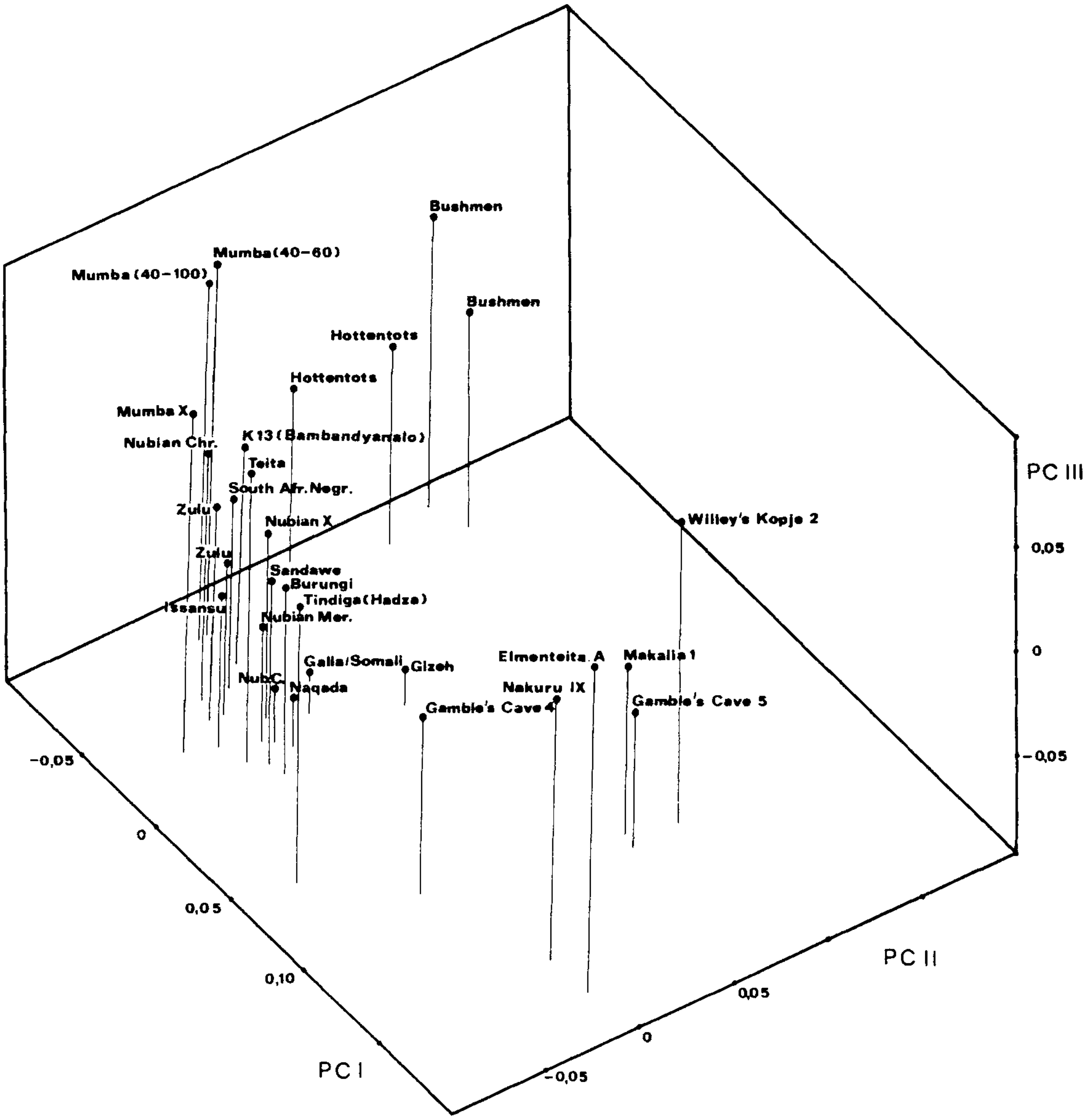

Fig. 5. Stereogram of Pythagorean distances defined by the first three principal coordinates (analysis III, 1). The coordinates represent 26.2, 14.0, and 10.1% of total intergroup distance.

skeletal finds from Mumba Rock Shelter, incomprehensive study of the author, '76, '76a) verifies, on the whole, the results of the multivariate comparisons, according to which the skeletal finds from Mumba Rock Shelter, including hominid X, mainly show Negroid size and shape characteristics.

INTERPRETATION

Until some years ago it was generally supposed that Negroid populations invaded East Africa relatively late, at about the beginning of the Iron Age, and did not move to South Africa until even later (Cole, '64, '70, Sutton, '66, '71).

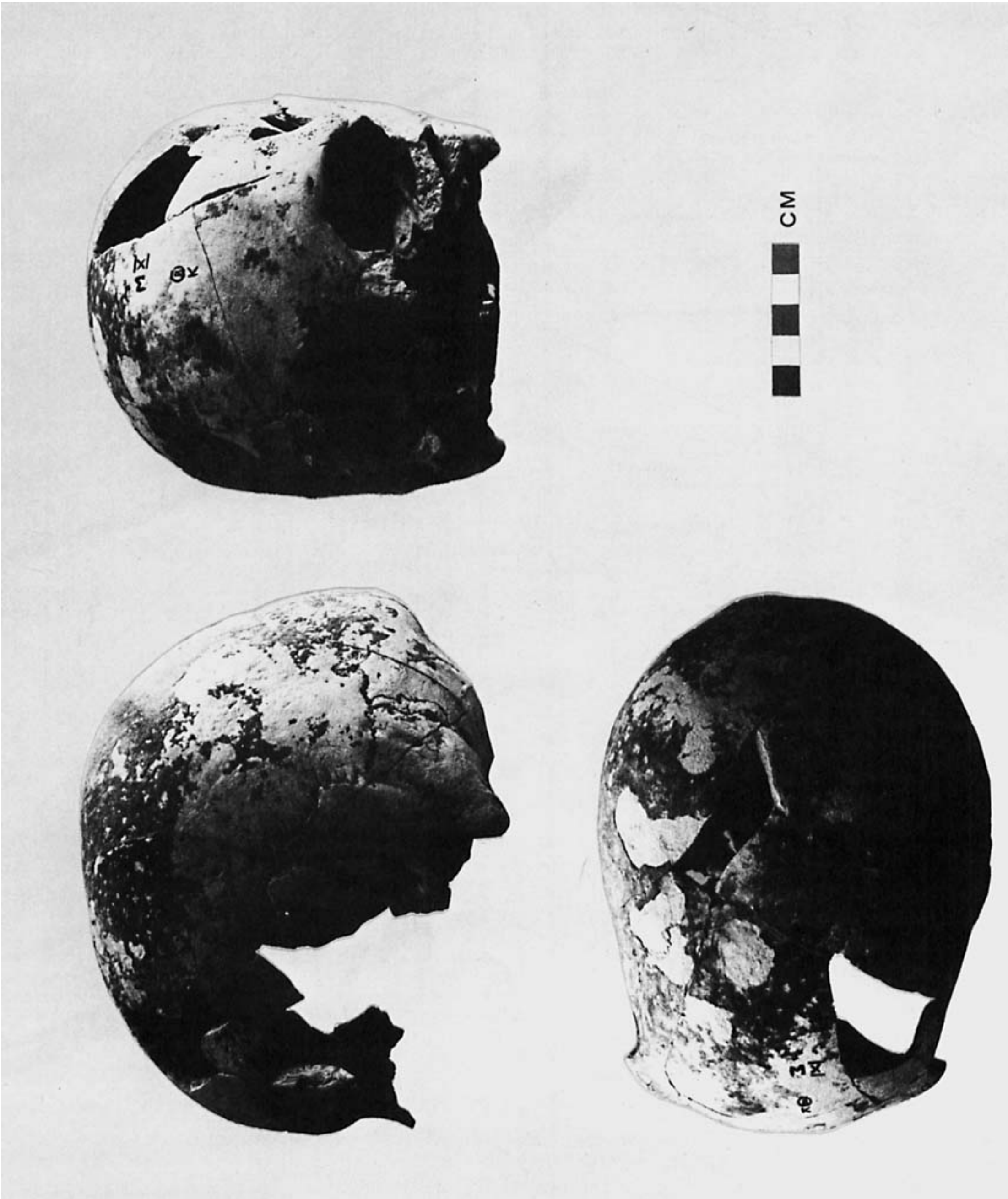
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Fig. 6. The cranium of hominid X, Mumba Rock Shelter.

The relatively large number of hominid finds in Kenya ranging from late Pleistocene to the second millenium A.D. are regarded as proof of this hypothesis and, on account of their morphological characteristics, are described by Leakey ('35) as being Caucasoid. Leakey ('35) also found San (Bushmen) characteristics on a cranium (Homa 4) of a heterogeneous series found together with a typical Kenya/Wilton industry and huge shell mounds on the northeastern side of Lake Victoria. As no distinctly Negroid skeletal features had been recognized in the Later Stone Age of East Africa, it was supposed that Caucasoid and Khoisanoid populations had occupied this region until about 2,000 years ago (Murdock, '59, Cole, '70).

Quite recently, however, new finds, datings, and revisions have shed doubt on this traditional point of view. First, there is the heavily mineralized mandible fragment found in 1965 near Kangatotha, west of Lake Turkana. The corpus fragment, dated absolutely to 4800 ± 100 B.P., was subjected by Coon ('71) to a detailed morphological and odontological analysis. The results showed strong affinities, especially of the molars, with the jaw fragments from Ishango at Lake Edward, East Zaire (see Twiesselmann, '58). Comparisons with samples of recent populations, too, confirmed the Negroid affinities.

In 1971, a left calvaria fragment was discovered during systematic excavations at Lukenya Hill, about 30 km southeast of Nairobi. The cranial fragments, dated on the basis of associated faunal material to 17700 ± 760 B.P., have been studied by Gramly and Rightmire ('73). They concluded that the morphological characteristics of the cranium indicate affinities with those of South African Negroids. Negroid affinities were also revealed by the multivariate analyses carried out by Rightmire ('75) for various representatives of the "Questionable Caucasoids" of the Rift Valley (Elmenteita, Willey's Kopje, Makalia, Nakuru). Although these results are of great interest, further analyses may be necessary in order to demonstrate how far the supposed affinities can be generalized with respect to whole groups.

More recent finds from South Africa also suggest the early presence of Negroid populations. During excavations in 1969 (Eloff '69) at Bushman Rock Shelter near Origstad (East Transvaal), an infant mandible was found which was dated to 29500 B.P. by means of various radiocarbon dates on faunal material from the respective layers. Based on a morphological comparison with fossil and recent material, Protsch and De Villiers ('74) came to the conclusion that it may represent an early Negroid form.

Although this does not fit in with general assumptions on dispersal of African morphotypes, there are other recent indications that in South Africa Negroid influences may date back much further than hitherto supposed (De Villiers, '70, '72). The new material refers to skeletal remains from excavations at Kalemba (East Zambia), conducted by D.W. Phillipson ('76). Altogether the remains of five individuals were found in various absolute dated deposits. Of special interest are the relatively well-preserved remains of a young woman (Kalemba 2) from a layer dated to about 7000–8000 B.P. Through detailed analysis, De Villiers ('76b) found strong affinities with the Southern African Negroid female cranium.

Integrating the morphological and chronological results obtained from the human skeletal remains of Mumba Rock Shelter into the actual pattern of finds, in particular the well-preserved individual X of the shelter, which can be assumed to have an age of at least about 6000 years, the results indicate a much earlier presence of Negroid populations in East Africa, supported hitherto only by very fragmentary material. The significance of the Mumba Rock Shelter further lies in dominant Negroid affinities found in the skeleton recovered from younger layers, which points to a certain continuity in this combination of morphological features. Summing up, we arrive at the following picture (see Bräuer, '78b, '79c). During long periods of the Later Stone Age, not only Caucasoid but also Negroid populations may have been present in East Africa. The wide dispersion of Khoisanoid populations, until recently assumed to have reached as far as Tanzania and Kenya at that time, is on the whole uncertain, even improbable.

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