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NOTES AND DISCUSSIONS

SOME OBSERVATIONS REGARDING THE EXPERIENCES AND BEHAVIOR OF THE BAMBUTI PYGMIES

The identity of the BaMbuti Pygmies of the Ituri Forest in the Congo with the forest itself goes beyond their social life; they are also psychologically conditioned by their environment. This can best be illustrated by some observations that I made during a recent field trip in their country.

Distance- and size-perception. At the end of a particularly long and tiring period of trekking through the forest from one hunting group to another, I found myself on the eastern edge, on a high hill which had been cleared of trees by a missionary station. There was a distant view over the last few miles of forest to the Ruwenzori Mountains: in the middle of the Ituri Forest such views are seldom if ever encountered. With me was a Pygmy youth, named Kenge, who always accompanied me and served, amongst other capacities, as a valid introduction to BaMbuti groups where I was not known. Kenge was then about 22 yr. old, and had never before seen a view such as this. He asked me what the "things" before us were (referring to the mountains). "Were they hills? Were they clouds? Just what were they?" I said that they were hills bigger than any in his forest, and that if he liked we would leave the forest and go and see them and have a rest there. He was not too sure about this, but the BaMbuti are an incorrigibly curious people and he finally agreed. We drove by automobile in a violent thunderstorm which did not clear until we entered the Ishango National Park at the foot of the mountains and on the edge of Lake Edward. Up to that moment from the time we had left the edge of the forest, near Beni, visibility had been about 100 yd.

As we drove through the park the rain stopped and the sky cleared, and that rare moment came when the Ruwenzori Mountains were completely free of cloud and stood up in the late afternoon sky, their snow-capped peaks shining in the sun. I stopped the car and Kenge very unwillingly got out. His first remark was to reiterate, what he had been saying ever since the rain stopped and we could see around us, that this was a very bad country, there were no trees. Then he looked up at the mountains and was completely unable to express any ideas—quite possibly because his language had no suitable terms, being limited to the experience of a strictly

forest people. The snow fascinated him, he thought it must be some kind of rock. More important, however, was the next observation.

As we turned to get back in the car, Kenge looked over the plains and down to where a herd of about a hundred buffalo were grazing some miles away. He asked me what kind of insects they were, and I told him they were buffalo, twice as big as the forest buffalo known to him. He laughed loudly and told me not to tell such stupid stories, and asked me again what kind of insects they were. He then talked to himself, for want of more intelligent company, and tried to liken the buffalo to the various beetles and ants with which he was familiar.

He was still doing this when we got into the car and drove down to which the animals were grazing. He watched them getting larger and larger, and though he was as courageous as any Pygmy, he moved over and sat close to me and muttered that it was witchcraft. (Witchcraft, incidentally, is known to the BaMbuti only through association with the Bantu. They have no similar concept of the supernormal). Finally when he realized that they were real buffalo he was no longer afraid, but what puzzled him still was why they had been so small, and whether they *really* had been small and had suddenly grown larger, or whether it had been some kind of trickery.

As we came over the crest of the last low hill, Lake Edward stretched out into the distance beyond, losing itself in a hazy horizon. Kenge had never seen any expanse of water wider than the Ituri river, a few hundred yards across. This was another new experience difficult for him to comprehend. He again had the same difficulty of believing that a fishing boat a couple of miles out contained several human beings. "But it's just a piece of wood," he protested. I reminded him of the buffalo, and he nodded unbelievably.

Later we went all over the National Park with one of the African guides. He and Kenge conversed in KiNgwana, the *lingua franca* of the area, and Kenge was constantly looking out for animals and trying to guess at what they were. He was no longer afraid or unbelieving; he was trying to adapt himself, and succeeding, to a totally new environment and new experience.

The next day he asked to be taken back to the forest. He reverted to his original argument. "This is bad country, there are no trees."

The inability of the BaMbuti to correlate size-constancy and distance had never even struck me as a possibility. In the forest, vision is strictly limited to a matter of yards, the greatest distance one can see, when up a tree looking down onto a camp, being a hundred feet or more below. Kenge

was, however, a sophisticated and well travelled Pygmy. He had been with me a long time, had travelled along roads where he could see for as much as a quarter of a mile, and had seen aircraft and knew that they contained people. Such instances, however, were rare, and on the whole his experience of visual distance was limited to the relatively slight diminution of size in seeing a person or people walking along a road a quarter of a mile away. He had seldom seen any animal from further away than a few yards, he had never seen any boat bigger than a dug-out canoe, and that no further away than a few hundred feet.

Number-perception. Size-perception is, however, only one of many phenomena of interest to the psychologist. The Pygmy, unless he is one who has constant dealings with the Bantu, is unable to count above four. He has, however, such an eye for patterns that, for example, if several arrows are taken from a bunch, he can detect the reduction and can usually replace the correct number withdrawn to bring the bunch to its original size. In a gambling game (*panda*) common in the region, up to 40 or so pebbles, seeds, or beans are thrown onto a mat. In a single glance the Pygmy can tell you if they form a multiple of four, or how many—one, two, or three—have to be added to make it into such a multiple. The game is a test of skill in number perception and manipulation. Spare beans are concealed between the fingers and toes, and as a player makes his throw, while the beans are still rolling on the mat, he has already made his calculation and added the requisite number from his concealed reserve to bring the total to the winning multiple.

Art: (1) Visual. Another phenomenon worthy of study, and again associated with environmental influence, is the almost total lack of any form of physical art. The BaMbuti refer to white, black and red by color names, for other colors they make comparisons—"like leaves," "like leopards," instead of "green" or "yellow." They use red or blue-black dyes in the crude decoration of their bark cloths, smearing the dye on with their fingers. More complicated are the designs painted on the bodies of the girls and women, using the black stain obtained from the gardenia fruit. Except for these decorations, visual art is lacking. Wooden implements are never carved or decorated or even polished. Perhaps the word of the BaMbuti is too close around him, too confined and colorless, too much lacking in variety, to produce a visual art.

(2) Auditory. In contrast to this lack the Pygmy has the most complex music in the whole of Africa. It is complex not only in terms of rhythm, melody, and harmony (the latter surprising enough in Africa), but also in terms of technique. The BaMbuti can improvise a 15 part liturgy or

canon, with melodies frequently running in parallel seconds, and hold it without the slightest difficulty. When this gets too tame, they divide the melodic line up, note by note, among the performers, each of whom will hoot his note at the appropriate moment. The melody then travels counter-clockwise around the group who may be sitting about a central fire or even in the natural circle formed by their huts, each at his own hearth. There is obvious material here for anyone interested in esthetics, as well as for those who might be more interested in the relatively small part that vision plays in the life of these forest nomads. (Even when hunting, a great deal is done by hearing rather than seeing, and perhaps even smell is more important as a sense. Vision is used by the hunters in the examination of tracks, but the firing of the arrow is often done by sound rather than sight.) I should mention again that music permeates their whole life.

Historical records. The earliest historical records of the BaMbuti, found in a tomb dating from the sixth dynasty in Egypt, places this tribe where it is today, refers to it as forest dwellers, and indicates that song and dance played a great part in the life of its people then just as it does today, over four thousand years later. In the forest there are few forces that stimulate change, and it is probable that the BaMbuti remained for most of this time living much the same kind of life. As recently as three or four hundred years ago, however, the great Bantu migrations forced certain Bantu and Sudanic tribes into the forest. For a number of highly significant reasons the resultant contact has had relatively little effect on the life of the BaMbuti, who consciously and forcefully reject the values of the plains and savannah, and unite in common opposition to the village world of the invaders.

It is a pity that such an exceptional opportunity for the study of a truly primitive people should be missed. In a few years the opportunity will be gone. There is little literature of scientific value available on these people. The references that I give here are those of the greatest interest, but even so are for the most part of general rather than specific value.¹ The work

¹ Martin Gusinde, *Die Kongo Pygmäen in Geschichte und Gegenwart*, *Acta Nova Leopoldina*, 76, 1942; *Urwaldmenschen am Ituri*, 1948; *Die Twiden. Pygmäen und Pygmoïda im Tropischen Afrika*, 1956, P. E. Joset, Buda Efeba, *Zaire*, 1, 1948, 137-157; Paul Schebesta, *Among Congo Pygmies*, 1933; *My Pygmy and Negro Hosts*, 1936; *Revisiting by Pygmy Hosts*, 1937; *Les Pygmé es du Congo Belge*, 1952; George Schweinfurth, *The Heart of Africa*, 1874; C. T. Turnbull, Initiation among the BaMbuti Pygmies of the Central Ituri, *J. roy. Anthropol. Instit.*, 87, 1957, 191-216; Legends of the BaMbuti, *ibid.*, 89, 1959, 45-60; Some recent developments in the sociology of the BaMbuti Pygmies, *Trans. N.Y. Acad. Sci.*, Ser. II, 22, 1960, 275-284; The *elima*. A pre-marital festival among the BaMbuti Pygmies, *Zaire*, 2-3, 1960, 175-192; Field work among the BaMbuti Pygmies, *Man*, 60, 1960; *The Forest People*, 1961.

of Schebesta was undertaken a number of years ago, and his later findings, as well as my own, indicate that particularly with regard to his analysis of the Pygmy-Negro relationship he was observing more from the point of view of the village than of the forest. This was due to the fact that it was impossible for him at that time to have access to the BaMbuti except through the offices of the local Negro chiefs. The presence of the Negroes changed the situation, even when in the forest, from a truly forest to a village environment, and the Pygmies reacted accordingly.

True hunters, particularly those who are as heavily conditioned by their environment as are the BaMbuti, are rare. The fact that they are surrounded by so many different cultures, yet have managed to maintain their own cultural integrity is an indication of the depth and vitality of their way of life and thought, however simple and static it may seem on the surface. If they lose their integrity in the next few years, it will not be because of any process of acculturation, but because the forest is no longer theirs and it will have been physically impossible for them to maintain their forest way of life. They are aware of the future that faces them, and while some say "We shall just have to live like the *savages* and plant bananas," the majority say, "When the forest is no more, we shall die." I am afraid it will be the latter.

American Museum of Natural History

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DISTANCE-CONSTANCY

It has often been found that with unrestricted viewing conditions two objects which are equal in physical size will be judged equal in size despite differences in their distances from O .¹ There is general agreement about this concept of size-constancy. Some confusion, however, has arisen about what is meant by distance-constancy.² Both Purdy and Gibson³ and Smith⁴ have demonstrated that a specified space between two points will be judged to remain constant in extent with changes in the distance of that space from O . The present aim is to put forward an integrative concept of distance-constancy—in the sense of finding what Boring calls invariant relation-

¹ J. J. Gibson, *The Perception of the Visual World*, 1950.

² See S. H. Bartley and H. J. Adair, Comparison of phenomenal distance in photographs of various sizes, *J. Psychol.*, 47, 1959, 289-297. These writers state that "distance-constancy has received very little attention. Accordingly we do not know so much about it, or what might be meant by the term, distance-constancy, itself."

³ Jean Purdy and E. J. Gibson, Distance judgment by the method of fractionation, *J. exp. Psychol.*, 50, 1955, 374-380.

⁴ O. W. Smith, Distance constancy, *ibid.*, 55, 1958, 388-389.