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Stone Age Revisited



In a Brazilian jungle, an ethnographer observes and for the first time records in detail the making of a basic tool of primitive life

by Vladimír Kozák

A great deal is known of how primitive man chipped his flint tools. Some anthropologists have seen chipping at first hand, and a few have even become expert at it themselves. But the making of a stone ax, which involves the very different techniques of pecking, grinding, and polishing, has seldom been seen by Western observers. The shaping of a stone ax is so laborious that when steel axes are introduced the practice is abandoned almost immediately.

Only in New Guinea and Amazonia have peoples survived who, within the last decade or two, have actually made and used stone axes. One such tribe is the Héta of southern Brazil. Vladimír Kozák, a member of the first scientific expedition to contact the Héta and the leading student of their culture, had the rare chance to observe them making a stone ax. His article is a unique document in the study of American Indian stone technology.

ROBERT L. CARNEIRO
Curator, South American Ethnology
The American Museum

When Europeans first entered Amazonia early in the 1500s probably every Indian tribe in the basin was familiar with the stone ax. Over the centuries since then, a few travelers have left sketchy descriptions of how the stone ax was used, but as far as I know, not one of them ever recorded in detail just how a stone ax was made.

Today the stone ax has all but disappeared from Amazonia, and the chances of recording its manufacture are almost nil. But by a stroke of great luck, in 1960 I had the opportunity to observe the making of a stone ax among the newly discovered Héta Indians of Brazil and to record the event in notes and on film. As it was, the chance came almost too late, for today Héta culture is extinct, and of those Héta who grew to adulthood in the forest, only two are still living.

The Héta Indians inhabited a hilly, heavily forested region of southern Brazil known as the Serra dos Dourados, which until the end of World War II was a forest preserve. Although the region is less than 400 miles from the great metropolis of São Paulo, the tribe was all but unknown. After the war, the State of Paraná, in an effort to pro-

mote settlement in the area, began to sell tracts of forest land to private individuals. As surveyors and colonists penetrated the forest, vague reports began to filter out that unknown Indians were living there. Prompted by these reports, in 1945 and 1949 the Indian Protective Service sent expeditions to attempt to locate them. The latter expedition managed to find some ten campsites, but gave up the search before encountering any live Indians.

Then in 1952 a young Brazilian by the name of Antônio Lustosa de Freitas began clearing a patch of forest in the Serra, not far from the Ivaí River. For two years, as he gradually enlarged his clearing, Héta Indians came, unseen, to the edge of the forest to watch him at his work. What particularly caught their eye was the steel ax Freitas used. On occasion, when he happened to leave the implement in the forest overnight, they were able to examine it at close range and to marvel appreciatively at the sharpness of its cutting edge. Never once though did Freitas suspect that there were Indians in the forest.

Eager to have steel axes of their own, the Héta summoned up their courage and on December 8, 1954,



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appeared at Freitas's cabin. But Freitas, convinced that he was being attacked, tried to scare them off by beating on the door jamb with the flat of his machete. Actually, their intentions were peaceful, and they had left their bows and arrows behind in the forest.

When calm was finally established, Freitas's wife offered the Indians some sugar and boiled rice, but such food was unfamiliar to them and they spilled it on the ground. After being shown that it was food, and especially after discovering that sugar was sweeter than anything they had ever tasted, the Indians retrieved every bit of it.

Other visits followed, all of them peaceful, and on each occasion Freitas and his family shared their food with the Héta. As the visits continued, however, Freitas, concerned at the extra drain on his meager food supply, decided to notify the Indian Service of the situation.

During 1955 the Indian Service sent three expeditions to try to contact the Héta, and the second one, of which I was a member, encountered a number of them at Freitas's farm. Then in February, 1956, a fourth expedition was organized, this time by the University of Paraná in Curitiba. This expedition, of which I was also a member, succeeded, for the first time ever, in locating and observing the Héta in their own encampments deep within the forest.

We found the Héta to be an exceedingly simple people, living in tiny nomadic bands and subsisting entirely by hunting, gathering, and a little fishing. They did not cultivate plants, nor did they make pottery, weave hammocks, or make canoes. Indeed, they were as primitive a group of Indians as I knew of in all of South America.

At the time of our first contact with them, there were somewhat more than 150 Héta altogether, living in a number of separate bands. "Héta" (sometimes incorrectly written "Xeta") was their name for themselves, and meant "all of us" or "we all."

The camp we visited consisted of seven people, four adults and three children. In Héta camps each family would build itself a simple beehive-shaped hut of poles thatched with palm leaves, but these shelters were used only when it rained. In

good weather the Héta moved their palm leaf mats outdoors and slept on open ground under the stars. A small campfire built close to the sleeping area helped to take the chill off cool nights. A campsite was occupied only as long as the surrounding area continued to yield food. When the fruit or game played out, the Héta abandoned the camp and pushed on to another site in the forest, where new shelters were erected.

To cut the saplings needed for these shelters, as well as for other types of cutting, the Héta used a stone ax. I was fascinated by this implement. The blade was nearly oval in cross section, and the bit was sharpened to a keen edge. The butt was buried deep within the thick upper part of the wooden handle, which was about two to three feet long. In the hands of one skilled in its use, the stone ax was, as I came to see, an effective tool.

I was anxious to find out how a stone ax was made, but it was suddenly announced that our expedition had to leave. I was dismayed, fearing that a unique opportunity was being lost. And it almost was. Not until 1960, four years later, did I have another chance to visit the Héta and to observe a stone ax being made.

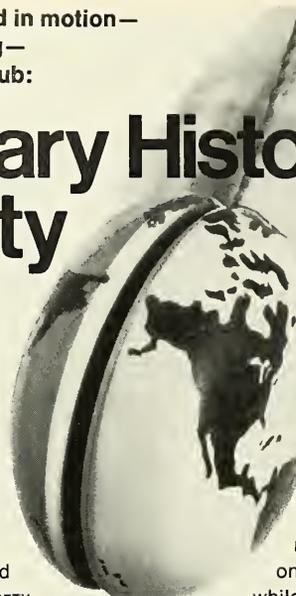
When I first asked the Héta to make a stone ax, they thought my request absurd. The steel axes they had received from us had quickly displaced their own bludgeonlike stone axes, which they now considered obsolete. To make another one at this point seemed to them not only onerous but pointless. Moreover, why on earth should the bearer of such a peerless instrument as a steel ax want to witness the making of a stone one?

My urging was fruitless, and my insistence only amused them. My pantomiming struck them as comical, and they laughed at me. How could I possibly make them understand? They knew no Portuguese; I knew no Héta.

Days passed, and the Héta were no nearer complying with my request. At best, I was being politely tolerated. Finally I decided to change my tactics and to direct my entreaties to Alúa, the wife of a man named Eirakán. I asked her, as best I could, to urge her husband to bring home some stones suitable for

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making an ax. Miraculously, it worked. Late one afternoon a hunting party, returning from inspecting the traps and collecting insect larvae for the evening meal, brought with them several river cobbles. I was delighted that I was about to witness what perhaps no other white man in the New World had ever seen—or at least reported.

I learned that the first step in the making of a stone ax is to carefully select the stone itself. A stone should be of the proper size and have the approximate shape of the finished ax, that is, an elongated ovoid. By beginning with a stone of this shape, much less abrading is required, thus saving the ax maker many hours of work. Besides being the right size and shape, the stone must be tough enough to withstand the many blows it will have to deliver. As a precaution, a stone is carefully inspected for cracks or flaws beforehand, since the slightest defect may cause it to fracture the first time it is used, thus wasting perhaps several days of work.

The hammerstone used for pecking should be slightly harder than the stone used for the ax head, shaped so that it feels comfortable in the hand, and not so large that wielding it will tire the worker.

Although he had brought back the necessary raw materials, Eirakán still could not understand why I wanted to see him use them. Nonetheless, early the next morning he sat down on a mat close to the fire, the two stones next to him, ready to start working. He spread his knees, brought the soles of his feet close together, and placed the ovoid stone between them. Then, taking the hammerstone in his hand, he began to peck.

But the sun was not yet high enough for filming, and as I wanted to make a full photographic record of the work, I asked Eirakán to stop. Now he knew I was crazy. First, I had pestered him for days to make a stone ax, and now that he was about to do so, I was asking him to stop. Surely I was deprived of all reason.

I pointed to the sun and then to my equipment a few times, at last managing to convey to Eirakán some dim notion of why I wanted him to wait. Obliging, he laid aside the stones and decided to have his breakfast. Out came a few



fat larvae from the previous day's catch, which he roasted in the fire and ate along with a piece of monkey meat and some palm nuts.

By the time he had finished his meal, the sun had risen above the trees, and I had enough light to film. I nodded for him to proceed. Again, using his feet as a vise, he gripped the oval stone, and began pecking away. He pecked at the surface of the stone with light, carefully directed blows. No chips or flakes came off during the pecking, only fine granules. Little by little, the hard, water-polished cortex of the stone was completely removed, and the cobble was lightly pitted over its entire surface. Stone dust soon covered his hands and feet and accumulated on the mat beneath him.

As he worked, Eirakán repeatedly examined both sides of the stone, pecking at spots that seemed a little high, making sure the ax blade would be entirely symmetrical. For several days he labored diligently, stopping only to inspect the traps and collect larvae or fruit. The work necessarily proceeded slowly since great care had to be taken. Too hard a blow and the ax blade might crack in his hands. Or a careless blow near the cutting edge might knock off more than desired, and the entire bit would have to be trimmed down to

The ax head is inserted into a hole gouged into the handle with a tapir bone, right. Tamping on the opposite side firmly secures the blade.

form a new edge. The work seemed endless to me, and I was beginning to see why Eirakán and the others had thought my request senseless. Still, all was going well and I fully expected the ax to be completed.

But one afternoon Eirakán, returning wet and tired from a foraging trip, took sick. Before he had recovered, our expedition had to return to Caritiba. I left the Héta with the greatest reluctance, despairing of ever seeing the ax finished. Lacking the financial resources to mount another expedition myself, I was not even sure that I would ever return to the Ivaí River. And even if I were to, the forest was being destroyed so rapidly that I seriously wondered if there would be any Héta left.

But six months later I was able to make still another trip to the tribe. I knew very well, though, that this was my last chance to see the stone ax finished, and that I had to take full advantage of it.

Eirakán was again in good



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health, but his mood had changed. He no longer had any interest in finishing the stone ax. But I was not to be dissuaded easily, and I kept prodding him. Finally, somewhat annoyed at my insistence, he yielded. Off he went to a spot deep in the undergrowth and came back with the two stones. They were exactly as I had last seen them six months before.

Once more Eirakán began to work, sitting on his mat, his legs spread, his feet clamped around the stone. But again he fell ill, this time with influenza, which is often a serious ailment for an Indian. Things looked bad. But I had tried too hard and gone too far to give up now, so I approached another man, Nango, and asked him to take over the work. Nango, however, couldn't see any more sense in it than Eirakán had. He already had a steel ax, why should he make a stone one?

Nothing I said could induce Nango to resume the work, and as a last resort I appealed to Táhey, the headman of the group. There was no show of authority, no issuing of commands. Táhey merely said a few words to Nango, and the latter sat down, picked up the stones, and began to work.

Nango pecked at the blade until at last it was reduced to the proper size and shape. This particular specimen was about six inches long, although others I had seen varied in size. Next came the grinding and polishing. A large sandstone cobble was brought in for the purpose, along with some white clay, which Nango put into a water-filled container made from a folded palm spathe. He then took the ax head, dipped it into the container, held what was to be the cutting edge firmly against the sandstone with his hands, and began rubbing. He ground one side of the ax, turned it over, ground the other side, went back to the first side, and so on.

During the grinding, Nango passed many times to renew the clay coating by dipping the ax head in the container. I had always assumed that grinding and polishing a stone ax were two separate operations, but the Héta performed them simultaneously: the sandstone ground while the clay polished.

A great deal of pressure was required to grind the ax blade, and the work was tiring. The sun was

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high and hot, and the sweat rolled down Nango's body. Yet, while it was obvious that he did not relish the work, he stuck to it dutifully. Only occasionally did he interrupt it to inspect the traps and to eat.

Finally, after a full afternoon's work, the grinding and polishing were done. Nango, who had consulted Táhey several times during the work, now brought the finished ax blade to him for his approval. Only the cutting end of the ax head had been polished; the butt end was left rough so that it would hold more securely in the wooden handle. Since the blade formed one continuous curve, with no groove or notch for lashings, technically the implement was a celt, not an ax.

Now that the blade was ready for hafting, it was Eirakán who offered to do so. He had regained his health and actually seemed enthusiastic about finishing the ax. The next day he went into the forest and came back with a section of tree trunk about four feet long and five inches in diameter.

Hafting the ax proved easier than I imagined. First, Eirakán stripped the bark off the end of the hardwood trunk he had selected to receive the blade. This was the end with the most knots, since knot wood is harder and therefore more resistant to splitting under the heavy blows that a stone ax will deliver.

Eirakán pulled the leg bone of a tapir out of his work basket, broke off one of the condyles with a stone, and sharpened the jagged end of the shaft on the sandstone until he had a serviceable chisel. He then placed the butt end of the ax head against the knotty end of the trunk, and using the edge of the chisel as a marker, outlined the area he would gouge out to hold the blade. This done, he knelt on the trunk to secure it firmly, and using a hammerstone, he pounded the chisel into it.

Much to my surprise, the chisel withstood the heavy blows without breaking, although it did have to be resharpened several times. In half an hour Eirakán had cut out a deep oval hole in the knotty end of the trunk. It did not go all the way through the wood, but was just big enough to hold the butt end of the ax head securely. Eirakán pressed it into the hole until he knew it would fit tightly, then removed it.

Since the section of tree trunk

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was still too thick to hold in the hand, it had to be trimmed down. Eirakán first cut a groove around the trunk a little below where the ax head was to be inserted. Then, hammering the chisel into the wood below this and using it as a wedge, he pried away long splints of wood all the way up to the groove. In this manner, the handle was reduced in size until it was about two inches thick, with a slight taper toward the lower end. The end itself was then beveled with a stone flake. The handle was scraped lightly with a stone scraper, but not really smoothed.

Finally, with the handle finished, the blade was pushed into the hole made for it and lodged firmly in place by tamping hard on the opposite side a few times. No resin, beeswax, or other adhesive was used to help hold the blade in place, and no lashings of any kind were employed. The green wood was hard and succulent enough to hold the ax head securely.

And so the stone ax was finished. Under favorable conditions, the Héta could make a stone ax in three to five days, with another half-day for hafting. This one had taken seven months. Eirakán was proud of his work. After showing the ax to everyone in camp, he finally presented it to me as a gift.

If carefully pecked from good tough stone, an ax can last a long time. It requires frequent sharpening, however, and would eventually be ground down to a good deal less than its original size. If the blade should come loose, it can be secured in place again by tamping the back of the ax a few times, just as was done to insert it in the first place.

The Héta used the stone ax in a variety of ways. Most important, of course, was its use as a cutting tool for felling trees. Almost any tree could be felled with a stone ax. I have seen trees four feet in diameter that the Héta had felled to serve as a bridge across a deep stream. Starting with well-sharpened axes, it took four men a day's work to fell a tree of that size.

In addition to cutting, a stone ax was used for cracking nuts, chipping bones, and grinding and hammering in general. The handle, too, had a number of uses. Its sharpened end served as a crowbar, which was



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driven into a rotten tree and moved back and forth in search of insect larvae. Pounded into the ground with a heavy stone, it made holes for shelter poles. It functioned as a digging stick, and was used to excavate pit traps. And occasionally, when wielded as a club, the stone ax could be a dangerous weapon.

Sometimes a carrying cord of bark was attached to the ax. With his stone ax hanging from the back of his neck by means of such a cord, a Héta thus had his hands free to climb a tree. Once there, he could swing his ax to cut out a honeycomb or cut down a cluster of palm nuts.

The Héta will never use the stone ax again. Indeed, the tribe, as such, exists no more. The forest, which for centuries was their source of food as well as their shield against the outside world, has rapidly given way to coffee plantations. And as the forest dwindled in size, it became increasingly more difficult for the Héta to extract a living from it. Diseases acquired from the white man decimated the population, and those Héta who managed to survive saw the futility of staying on. They left the forest, some to work as farm laborers, others to seek a livelihood as best they could outside of it.

Less than two decades ago, there were more than 150 Héta. Today there are only fifteen, and because

After felling a tree, the Héta use the pointed end of the ax handle to dig out a honeycomb. The honey is then caught in a gourd.

almost all of these were children when they were taken from the forest, they never had a chance to learn much of their own culture. Héta culture, thus, is extinct. Of those Héta who left the forest as adults, only two—one of whom is Nango—are still living.

Since the Héta were discovered, three or four other Amazonian tribes that also used stone axes have come to light. But they, too, quickly gave up their stone tools for steel ones. The forest Indian is a dedicated pragmatist for whom the faithful cutting tool of a thousand years commands no loyalty. Confronted with the clear superiority of the steel ax, he gives up his stone tool without the slightest hesitancy. Indeed, the change occurs so swiftly that there is usually no one around to note it, let alone to record how the old stone ax was made or used. Only by a stroke of luck was I once able to do so. It is not likely that anyone in this hemisphere will ever have that chance again. ■