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Daggers of New Guinea: distribution, styles and functions

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KOSTĚNÉ DÝKY Z NOVÉ GUINEJE: ROZŠÍŘENÍ, STYLY, FUNKCE

ABSTRAKT Tato studie se zaměřuje na kostěné dýky, předměty, které byly rozšířené v koloniální éře i v dřívějších dobách na Nové Guineji. Výroba a používání těchto dýk na ostrově takřka vymizelo důsledkem modernizace, k níž mezi obyvateli ostrova dochází. Tyto specifické zbraně a nástroje byly vyráběny z kostí získaných z kasuárů, krokodýlů a lidí. V přehledové studii jsou popsány hlavní typy kostěných dýk a nožů spojených s jednotlivými oblastmi Nové Guineje. Článek se také zabývá estetickou hodnotou těchto zbraní a nástrojů, dále jejich funkcí v souvislosti se společenským významem a kulturní symbolikou. Novoguinejské kostěné dýky se nacházejí v muzejních i soukromých sbírkách.

KLÍČOVÁ SLOVA Kostěná dýka; Nová Guinea; lidské pozůstatky; kasuár; krokodýl; rituální zabíjení; válečnictví

ABSTRACT This review is focused on bone daggers, the objects, which were widespread during colonial era, as well as in earlier times in New Guinea. Production and use of these daggers has decreased due to modernization occurring among inhabitants of the island. These, indeed specific tools, were manufactured from bones gained from cassowaries, crocodiles and humans. The description of the main types of bones daggers and knives linked to particular areas of New Guinea are examined in the review. Article also follows its aesthetic values, functionalities, along with its social importance and cultural symbolism.

KEY WORDS Bone Dagger; New Guinea; Human Remains; Cassowary; Crocodile; Ritual Killing; Warfare

INTRODUCTION

New Guinea is the second biggest island in the world and the fact that it remained unexplored by Europeans for the long period of time makes it one of the very last untouched drylands by Europeans. In the precolonial times, native inhabitants lived the staple food gained as croppers and fishermen supporting their subsistence by hunting and gathering. Their material culture was based on wood, stones, and bones, they used other natural commodities (rattan, nut shells, various fruit) for their subsistence. Weaponry corresponded to Neolithic type of culture in New Guinea, various hardware was used for stabbing (javelins, bow and arrows, daggers) and smashing (wooden or stone clubs) (Newton 1989, p. 305). Bone daggers was category of the weapons, renowned in many localities of the island. From the perspective of it's geographical distribution, the daggers were important weapon used in many cultures from the Sepik river basin (see Mead 1938, p. 191), they were used in Papua gulf (see Landtman 1933, p. 57), in southwest coastline among Asmat group (Rockefeller – Gerbrands 1967, p. 338) and Marind-anim (Van Baal 1966, p. 154). Furthermore, some of groups living in Southern Highlands, Eastern Highlands a Western Highlands (see for example Friede at al 2018, p. 442) utilized these, too. The other noteworthy area is Sentani, where daggers were made particularly of cassowary fibula and where handles were decorated with site-characteristic carving (Webb 2011).

There was a great variety within bone tools produced in New Guinea. In other words, bones gained from animal or human were not only utilized for daggers' manufacturing, but distinct amount of tools, for instance scrapers (for bananas and bulb' processing) or openers (coconut shells) were made. Likewise, bones of crocodiles, humans and other species were used for spatula manufacturing, which locals employed in lime scooping when chewing on Areca nuts. In that case to use different species bones have had the same function, i.e to chew Areca nuts. Arrow tips could also be made of various bones. Fur-

Fig. 1. Magic bag including cassowary dagger and crocodile mandible (The Czech private collection). Photo: Author.

thermore, bones also served as sorcery[1] tools, used during magicians' routines, as the presence of hacked cassowary tibia was inevitable part of the of magic bag (fig. 1)[2]. Bone artefact' manufacturing was not only bounded to New Guinea; we can find similar objects also in nearby areas of Southeast Asia, Australia, and on Eastern islands of Melanesia. We are mostly based in New Guinea when referencing to production of bone daggers. Despite the fact that cassowary bones are the most frequent material used for dagger manufacturing, there are some made in different manner. For example, my anthropological research is mainly specialized in the Nungon group in New Guinea. In this area, I have witnessed production and use of daggers and awls, which were made of cuscus (*Spilocuscus maculatus*). Conversely, although cassowaries are common animals living in these surroundings, I have never witnessed any cassowary bone' daggers. Despite it could be due to the long-term contact with administration and missionary activities (SDA and Lutherans), it is not quite probable, because other bone tools are still manufactured and used occasionally. There are some mentionings about casuary bone' use written by Bodrogi (1961, p. 131) related to Morobe province. He has not brought up weapons; Bodrogi described working tools only, which were used, for instance, for digging holes into softer materials. This practice is also depicted by Barth (1975, p. 188), who refers about red pandanus hollowing through the tool made of cassowary femur among Baktaman group living in other part of New Guinea (Ok Mountains). The cassowary bone's use had not only its practical application among Baktaman, it was linked to actual initiation into role of man. Neuhauss's contribution (1911) lacks the information that bone daggers were found within the entire German colony back then, as his three-piece monography does not mention them at all.

In order to satisfy the needs of further description, it is necessary to highlight differences between aforementioned two types of tools. Whereas knives were used to process matter - as peeling and scraping of boiled bulbs is - daggers were mainly dangerous attack weapons. Daggers were manufactured from five organism genuses: crocodiles (*Crocodylus novaeguineae*), cassowaries (*Casuarius unappendiculatus, Casuarius bennetti, Casuarius casuarius*) and humans (*Homo sapiens*). The aim of this review is to analyse the main customs of bone daggers' manufacturing and their usage in particular cultural-geographical areas of New Guinea.

AESTETIC, MEANINGS AND FUNCTIONALITY OF BONE DAGGERS

The function of artifacts made of bones differ; it's utilization indeed could be practical, as indicated above, however it also carries its aesthetic and social importance. For example, these artifacts performed aesthetics role being part of self-decoration among people of Mt. Hagen. For example, spatulas made of cassowary bones were part of their head covers: "men wear

1 There is no easy discussion in anthropology regarding concepts of sorcery, witchcraft, and magic, not only in Melanesia. As regards Melanesia the major contribution was prepared for publication by Michele Stephen (1987).

2 The paper is based on studying of artifacts present in various private collections in Germany and Czechia

Fig. 2. Sentani lake cassowary bone daggers (The German private collection). Photo: Jan Rendek.

cassowary leg-bone spatula protruding from their wigs on either side of the face" (Strathern – Strathern 1971, p. 24; cf. also Strathern – Kirk 1981, plate 28). It was also bones (pigs, cassowaries, flying foxes), that served as a material for nose decoration. This aesthetic accessory was the sign of the adulthood among some groups, but frequently, it was only body decoration with no additional meaning exept to following beauty standards. Daggers with their aesthetic qualities were worn for self-decoration and they had specific appearance in particular regions; these were not only bare product of raw material manufacturing, their visual character was given by elaborate decorations. Aforementioned properties are well defined for three areas of New Guinea - Sentani, Sepik a Southeast region. For example, bone daggers from Sentani were decorated with ornaments, which are specific only for this area. One of the early witnessing was published by German ethnographer Ratzel, but this information is only general. He mentions daggers in annex, describing them as being decorated with "simple engravings" only (Ratzel 1894, p. 221, plate on page 218). Such engravings may, however, not be considered simple; they followed specific and detailed local visual style. This could be demonstrated via specific examples collected in Sentani area (fig. 2). The upper specimen is decorated with hydrometra (*Hydrometra*), also there are some water waves in the background. The lower one is furnished with picture of human figure located near to its tip, just as with motive of waves carved above this person (see for example Webb 2011). These, along with fish motive, are the most common themes in visual style of Sentani. Daggers originated in Sepik and Asmat were also decorated with area-typical motives and symbols, the particular patterns will be described later in this review.

Owning the dagger made of long bones was a matter of social prestige. If someone was able to gain this valuable material (cassowary bones, human bones, crocodile bones), it made him skillful hunter and successful warrior in the eyes of the others. For that reason, daggers were carried clearly exposed, especially beneath the arm bracelet. This manner was documented by Lewis, who traveled through Oceania in order to enrich the collection of items for Field's museum in Chicago (Welsch 1998). The same fact was documented by Michael Rockefeller as he observed it in Asmat group (Rockefeller – Gerbrands 1967). Georg Buschan (1900, p. 92.) published one of the early photographic evidence of using the arm bracelet for carrying dagger. Those weapons were indeed showed up to public as the proof of social position of their owner. Being prestigious artifact, it has not become commodity of transcultural exchange, as, for example, stone axes, treasured feathers, salt and other materials were (see for example Hughes 1977). Furthermore, Knauft (1993) declared that these daggers could be part of bride-wealth, as he cited Trenkenschuh. Trenkenschuh stated that Asmat's bride-wealth could include up to five or six daggers made of bones.

Cassowary bones were not only valuable material. These birds were animals of high importance, considering their spiritual symbolism, coupled with their significancy in mythology among the communities living in Sepik basin. Donald Tuzin largely reported about the meaning of cassowaries in mythology of Arapesh, in which the cassowaries represent women (See for example Tuzin 1997). Cassowaries, similarly, to crocodiles, gained distinct status not only among Arapesh, but in many Sepik cultures as well, being displayed on variety of sacral items or objects of daily use (Newton 1971). Sole fact

Material	Region / culture group	Decoration	Species
Cassowary tibia	Sepik	Engraving	*Casuarius unappendiculatus*
	Sentani	Engraving	*Casuarius unappendiculatus*
	Highlands (Huli group, Enga, Chimbu and others)	It depends on the group, colored, cassowary feathers, simple engraving	*Casuarius bennetti*
	Asmat	Cassowary feathers, natural fibers	*Casuarius casuarius*
Human femur	Asmat	Cassowary feathers, natural fibres, engraving	*Homo sapiens*
	Sepik	Engraving	*Homo sapiens*
Crocodile mandible	Asmat	Job's tears, natural fibres, feathers (cockatoo, cassowary)	*Crocodylus novaeguineae*

Table 1. Types of bone daggers according to selected New Guinea culture groups

that cassowary hunting was considerably hazardous made the daggers, manufactured from its bones, highly valued, leaving aside their meat was eaten too (See Sillitoe 2017). This bird is indeed among the most dangerous in the world and attempts to keep the birds in captivity yielded only a mild success as they remained no less perilous; they rarely breed in captivity and therefore eventual farmed birds were limited to the offsprings of killed adult individuals.

Daggers and knives beared three common purposes: working tools, weapons, and signs of social prestige. If dagger was used as tool, then it was either for coconut shell cracking (Williams 1936, pp. 416–417), taro- or other bulbs peeling, but also for other workday tasks, even though short knife made of cuscus bones seemed to be a way handier for scraping bulbs and foodstuff. The particular purpose of each dagger can be deduced from its shape and size. Cassowary daggers, which were used as working device, did not have a sharp tip, its cutting edge was similar to silverware knife, noting it was similarly dull. Appearing as a disadvantage, such finish was chosen due to the fact, that sharp tip was simply too fragile, breaking off easily. Sillitoe (2017, pp. 61–64) described tools' occurrence, their manufacturing and usage in detail among ethnic group Wola (Southern Highlands). He declares that blades with round-shaped edges were used for cutting of some types of fruit, eventually for ritual pig killing, where the knife was stabbed into animal's head just behind its ears. Men truly appreciated their knives and warded them for a number of years, even thirty in some cases. Bone of tibia or femur were processed for knife manufacturing, with the latter being favored, although both raw materials were valuable. Noteworthy, the blade making was not a time-consuming process, taking usually less then two hours. Such artifacts were used for killing mainly - animals or humans. Animal killing manners can be demonstrated on ritual process, practiced by Elema group (Gulf of Papua), which was described by aforementioned government anthropologist Francis E. Williams. Pigs were terminated by the bone weapon through following technique: hind- and forelimbs were tied together, then the bamboo stick was inserted between roped legs in order to transport the animal to the place of slaughter. The particular man, butcher in this instance, pierced the right side of animal's body behind the forelimb; the full man's body weight helped to reach pig's heart as he leaned against his knife. According to Williams, man could rotate his knife, keeping it inserted in wound in similar way the screwdriver is used or stab the same place repeatedly much like "person air-pumping the tire" (Williams 1940, p. 319). The battle daggers usually had nicely manufactured sharp tip, which naturally was prone to chip. These weapons were used mainly in two ways among communities of New Guinea - they were used as dangerous man-to-man fight equipment, or they served as the last hit instance for the enemy already wounded by arrow or another weapon. Dagger attack was typically targeted to neck area. The stroke was led downwards, right beyond collar bone.

THE MAIN TYPES OF BONE DAGGERS AND TECHNOLOGY OF ITS MANUFACTURING

Bone daggers may be sorted into the three main categories, according to the material used: long cassowary bones (tibia), human femur and crocodile mandibula (see Table 1). Bone daggers - with an exception of those made of crocodile jawbone - were manufactured similarly under following technique: distal epiphysis was retained, just as the large part of diaphysis, where the cutting edge was sharpened on its proxi-

Fig. 3. Cassovary knife, unknown region. (The Czech private collection). Photo: Author.

mal part. Particular daggers differ from each other over their aesthetic details (to see Table 1) as culture-specific connotations were employed throughout their manufacture.

CASSOWARY DAGGERS

According to the intended purpose, there were three different ways to approach cassowary bones processing. Manufacturing of any dagger was, however, based on tibiotarsus bone utilisation. If the dagger should have served as working tool, then the proximal joint was chopped off just beneath its head. The bone underwent grinding, through which the cutting edge curvature was established, and the tool was then ready to fulfill its purpose accordingly (fig. 3). If the dagger was intended to be a weapon, it was needed to sliver off the joint part just as in the previous example, although it was furthermore necessary to attenuate its body. Such was performed by removing the material from the posterior part over its entire length. Distal epiphysis was retained, and the posterior part of the bone was, through frontal cross section, cut away. This made the dagger attenuated enough to get through enemy's body, arming locals with very efficient weapon. The very last method on modifying the cassowary bones was the frontal cut, which went through diaphysis and epiphysis, splitting the anterior and posterior parts of the bone. Yielded bone halfcuts were used as spatulas or other tools (see fig. 1).

Fig. 4. Cassowary dagger from Abelam region. (The Czech private collection). Photo: Author.

Cassowary daggers are very often being a component of the private and museum collections around the world; simply because the daggers were omni-present. It was manufactured all across cassowary natural habitat, but it does not necessary mean that all people living nearby these wild animals made daggers from their bones. For instance, nor Pospisil mentions this kind of weapons among Kapauku group (Pospisil 1963), neither does Heider (1970), studying the Dani group. Furthermore, Watson (1983, p. 28.) does not mention bone daggers among Tairora group. Ivan Champion (1932, p. 92), however, does talk about daggers. In his report about the patrol he participated, going across the entire island - along the river Fly and Sepik - he brings up that within Bolivip area in Central Highlands, he has not seen „any cassowary bone daggers, but very likely they had them".

There are definitely many proofs of their presence among the other groups from Highlands, and yet, bone daggers were not thoroughly desirable weapons in those places. For example, Meggitt (1977, p. 54) stated that cassowary bones were known to Mae Enga due to exchange trade with Huli communities, but these artifacts were not considered as useful and efficient weapons by them. Daggers made of cassowary bones were investigated by ethnographers working in Gulf of Papua (Williams 1936, pp. 416–417), in Sepik basin (Kjellergen 2007, p. 61), among Kamoro group or Asmat in the southwest of New Guinea.

Cassowary daggers gained significant role in East Sepik area. This district is one of the few regions, where the locals decorated their daggers with engravings. Especially remarkable ones bear the artifacts from Abelam, where decorative patterns resembled motives present on sacred houses (*tambaran*). Aside from these abstract motives, specifically stylized human figures are common (fig. 4). In the Sepik area, daggers were used as short distance fight weapon, where the last stab to already wounded enemy was performed with. Similarly, to aforementioned practices, Sepik blades were important private property being attached to ritual practices in community life with youngsters' initiation into adulthood being

Fig. 5. Cassowary dagger, Asmat people (The Czech private collection). Photo: Jan Rendek

the typical example (Kjellergen 2007, p. 61). Another group, where the cassowary daggers gained important role, was Asmat. Members of this group from New Guinea were in fact the only ones, who decorated their weapons covered with string netting around its epiphyseal area. There could also be two tassels, created by string elongation, which were orientated along the vertical axis of the bone. Those tassels used to be decorated with cassowary feathers - usually with a few bunches on each - additionally with Job's tears (*Coix lacryma-jobi*) or other natural materials. Some of the daggers have string netting cover only and additional decorations were missing. It was not rare that the spike was perfected with cassowary claw. Using of cassowary claws was common fashion in New Guinea in order to improve weapons' effectiveness not only with regards to the daggers; also arrowheads were refined this way. Hand in hand with this went practice those cassowaries, posing unquestionable hazard to their capturers, were dispelled of their internal-side claws, to moderate the impact of their eventual outbreak. This extremely sharp claw increased weapon's deadly potential; in case it would be loosen away, staying in the wound, it will cause a way more serious, perhaps life-threatening injury. Claws could also be used for dagger' repairs, especially when tip broke off, which was the most common defect. In those cases, the claw was mounted on a tip and secured with resin (fig. 5).

HUMAN DAGGERS

Daggers made of human bones were manufactured in the same way as the cassowary ones, but human femur was utilised instead of faunal material. The tip of this type of dagger was made by the proximal epiphysis and femoral neck removal. Distal epiphysis and most of the diaphysis was kept. Daggers made of human femurs were produced in two different localities only (Southwest of the island among Asmat and in the Sepik basin). Human daggers are recognizable easily because of specific human femur appearance. For those, who are not specialists in human anatomy, these daggers would still be distinguishable due to their shape: epiphysis is ground from both sides to achieve triangular shape (specimens from Sepik area). Base of emerged triangle, consisting of the upper part of the epiphysis forms the «dull end» of the dagger, whereas two remaining sides, the ordinates of triangle, are pointing up towards the tip of dagger. There were two types of the daggers used among Asmat: cassowary (see above) and human. Human daggers were called *ndam pisuwe*, they were usually decorated with carving and wrapped with phloem fibre braid into crisscross pattern, which was although common for daggers made of cassowary tibia. Head-hunting or cannibalistic motives were carved into human daggers ordinarily. One of those symbols was praying mantis, which was often present among

Fig. 6. Cassowary bone dagger with a claw (The Czech private collection). Photo: Author

Fig. 7. Human dagger, Asmat people (The German private collection). Photo: Jan Rendek.

many Asmat artifacts - shields or ritual spears. There are two human femur daggers made by Asmat as an example (fig. 7). Distal epiphysis is covered with plant fiber braindings on both specimens, one of them has additional cassowary feather tassel and Job's tears attached to it. There are carvings on both daggers. The upper one has stylised human figure motive surrounded with specific patterns linked to Safan area. This weapon has also particular, saw-like notches from the third of its length to the tip. Those notches may cause devastating injury when the dagger is pulled out from the wound. Also, the risk of the weapon breakage and losing its tip inside the human body is higher. On the other dagger, there is mantis engraved - typical Asmat symbol (*wenet*) referring to cannibalism, because mantis also consume individuals belonging into its own specie (see Rockefeller – Gerbrands 1967). There are also two particular spikes made in the proximal area, aiming to worsen eventual injuries, sharing this modification with aforementioned dagger. Human bone daggers were manufactured in Sepik basin, too, but reasoning behind it differs from Asmat; Similarly, were daggers the sign of social prestige here, but material has not originated solely from killed enemies like in Asmat (see next paragraph). Weapons were made from the remains of honored ancestors, who were remembered as brave and successful warriors or excellent hunters. Son usually manufactured his dagger from the father's femur, when all the body tissue breaks down eventually (Newton 1989).

Haberland and Seyfarth (1974, p. 141) described details of human bone weapon making and material gaining in Sepik. There were two ways how to get femur according to their notes. Bones could either be obtained from killed enemies, in which case did not matter if the bones were feminine or masculine, whereas the other option was to gain the bone from the ancestor: son went to his father's grave, taking the bone down with bamboo pincers from the platform, where the father's body rested. Then he wrapped the bone into leaf and brought it home, where he shaped it. It was understood that using weapon manufactured of the bone of excellent warrior or hunter is capable to increase fighter's strength and to achieve victory in battle.

CROCODILE DAGGERS

The crocodile daggers, which were made from mandible, are very specific. The only one, who manufactured them in New Guinea, were members of Asmat cultural group (Indonesian part of the island). Despite the fact that crocodiles live in other parts of the island as well, these daggers were not produced anywhere else across New Guinea. The processing possibilities offered by the material itself do not necessarily call to the human imagination. In some cultures living in Sepik basin, crocodiles have become a significant social symbol. Those animals were commonly hunted, which they in fact remain to be until present days, in order to obtain their skin, being a tradeable commodity. Their skulls are spectacularly decorated with nassa shells and cowries, but crocodile mandibulas were not used for dagger manufacturing. The crocodile daggers' production was customary only for Asmat people,

Fig. 8. Crocodile dagger, Asmat people (The Czech private collection). Photo: Author.

who called those weapons *eu karowan*. These daggers were decorated in the same manner as the cassowary ones, knife-handle was covered with string netting made of plant fibres and various decorations were added - Job's tears, red fruit of soterek or cockatoo and cassowary feathers. Some teeth were retained on the jawbone in the haft area, however, on the very holding point, the teeth were extracted. Naturally, holding such blade by no means resemble the way if holding knives today; dagger tip was made in the end of the jawbone near to jaw joint, with the curved frontal part of dental arch was cut away, making this tool rather straight (fig. 8). Crocodile daggers have the same practical function as the one made of human or cassowary bones; they were dangerous short distance weapons - however - crocodile daggers had unique purpose of captives' ritual killing. These weapons were carried beneath woven armbands, nevertheless, some pieces were a way too large (length more than 40 cm), which necessarily made them unhandy for this type of transport. In regard to the size of crocodiles of New Guinea, it may be stated that the longest daggers of the island were produced by Asmat (Kjellergen 2007; Rockefeller – Gerbrands 1967).

CONCLUSIONS

This review was focused on manufacturing and distribution of bone daggers in New Guinea who used long bones gained from cassowaries, human bones or rarely, crocodile mandibulas. Long bone daggers were widespread among many communities, and they were produced, so to say, it the similar manner. According to this fact, it is not easy to determine proper locality of the particular artifact's origin, especially if the culture-specific decoration or shape is not present. In those cases, the dagger can be accredited to particular group, if the information was gained reliably when the item was collected. There are some culturally specific daggers made by Asmat (daggers manufactured of humans, cassowaries and crocodiles) and in Sepik (human and cassowary daggers), having specific ritual functions in both areas. Bone daggers were made with intention to use them for everyday work purposes as well. Nowadays, manufacturing of these artifacts, with intention to use them practically, is rare and adherently, bone daggers are made in order to be sold on local markets to play the role of souvenir for the tourists.

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