A SOUTH AFRICAN PERSPECTIVE ON RHINO HISTORIES

Annie Antonites

Rhinoceroses have been inhabitants of the African continent for millions of years. Here, people and rhinos share an intertwined history – from early modern humans hunting them with stone-tipped weapons to their use as political power symbols in early kingdoms and their emblematic representation of shamanic transformation in San rock art. Palaeontologists and archaeologists approach the study of these mega-herbivores in different ways to access layers of evolutionary, environmental, social and symbolic meaning.

Once a diverse clade, rhinos have been reduced to only five species: black, white, Sumatran, Indian and Javan. Genetic analysis of fossil, museum and modern specimens has revealed that the African and Eurasian lineages split around 16 million years ago. Rhinos immigrated from Eurasia to Africa via the land bridge between the Eurasian and the Afro-Arabian landmasses. From here, mixed-feeding ancestors of the two African Diceroti started to diverge between 5–6 million years ago into the browsing black and the grazing white rhino – mainly driven by larger climatic changes. Gene flow between the two species continued, and evolutionary biologists argue that by around 3.3 million years ago, animals with distinct preferences for either grasses or woody shrubs had diverged into reproductively isolated species. The earliest fossils of modern dietarily specialised black rhinos, from Koobi Fora in Kenya, date to ~ 2.5 million years ago, and modern white rhino fossils, from Olduvai in Tanzania, to ~ 1.8 million years ago.

One of these two species walked across a dune surface on the Cape south coast of South Africa during the late Pleistocene. Its footprint became fossilised in the sunbaked sand, covered by millennia of sediment deposition. To the untrained eye, the large footprint has an amorphous shape. Using image enhancing software, however, reveals a familiar tridactyl shape with rounded digits. Both black and white rhino fossils are present in the region's Pleistocene record, but it is not possible to confidently assign the footprint to either species.

Comparative skeletal anatomy forms the basis of palaeontology and archaeozoology – disciplines that study ancient animal remains. Skeletons of once-living creatures line the shelves of museum storerooms, kept as biodiversity records that form the backbone of scientific study. Individuals of known species, recorded at the time the specimen was accepted into a museum collection, enable the comparison of anatomical features between black and white rhinos.

Differences in anatomical features – such as the shape of articular facets and the proportion of compact bones – can help to differentiate between the bones of black and white rhinos. Because of their different browsing and grazing diets, their teeth also look slightly different. White rhino teeth have higher crowns, their worn occlusal or biting surfaces are flatter and the occlusal outlines of their lower cheek teeth are distinct from those of black rhinos. Dental eruption and wear rates measured in extant specimens of known ages can also be applied to fossil teeth.

The plants that the two rhino species consume follow different photosynthetic pathways with specific carbon isotopic signatures. Analysis of these molecular signatures imprinted within fossil bones and teeth can identify the carbon source as originating from twigs and leaves or from grasses. These types of analyses enable us to picture individual rhinos in their past landscapes.

Distinguishing species in figurative art draws on the physical and behavioural features of the two rhinos. Arguments are made based on a combination of elements, such as size, lip shape, ear shape, lumbar and pelvic humps, tail position,

position of the calf when moving (front or back) and how the head is carried.

Rhino remains occur at South African archaeological sites associated with early modern humans through recent centuries, but their occurrence is uncommon and usually limited to a few isolated bones or enamel fragments.

During the Middle Stone Age (~ 280 000 to 50–25 000 years ago), early modern humans consumed and deposited rhino portions at several sites in the Eastern and Western Cape. The presence of white and/or black rhinos not only provides information about the prevalent environmental conditions at the time, such as grasslands or tree cover, but also on strategies that early humans used to acquire dangerous prey. The small number of rhino skeletal elements at Middle Stone Age sites could, on the one hand, point to carcass scavenging. In this case, only easily transportable parts would have been brought back to shelters. On the other hand, dangerous prey such as eland, buffalo and the extinct giant buffalo are also present at the sites. The presence of other large-bodied species, together with hunting tools, shows that early modern humans were able to hunt or trap large prey. Perhaps the low incidence of rhinos at these sites is due to the availability of other meat, a reluctance to hunt dangerous prey or even to small rhino populations in the landscape.

More recent evidence for rhino hunting or trapping comes from a first millennium CE site in the modern-day Kruger National Park. At a hunting village on the Letaba river, archaeologists excavated fragments of black rhino bones. The animals were likely killed for their horn – an item traded with other animal products across the Indian Ocean rim in return for glass beads. As rhinos are creatures of habit, people may have used pit traps along regular pathways to water to immobilise them for an easier kill. The archaeological evidence for black rhinos at Letaba suggests a wider distribution range in the past than today. This change may well be linked to larger climatic and rainfall shifts.

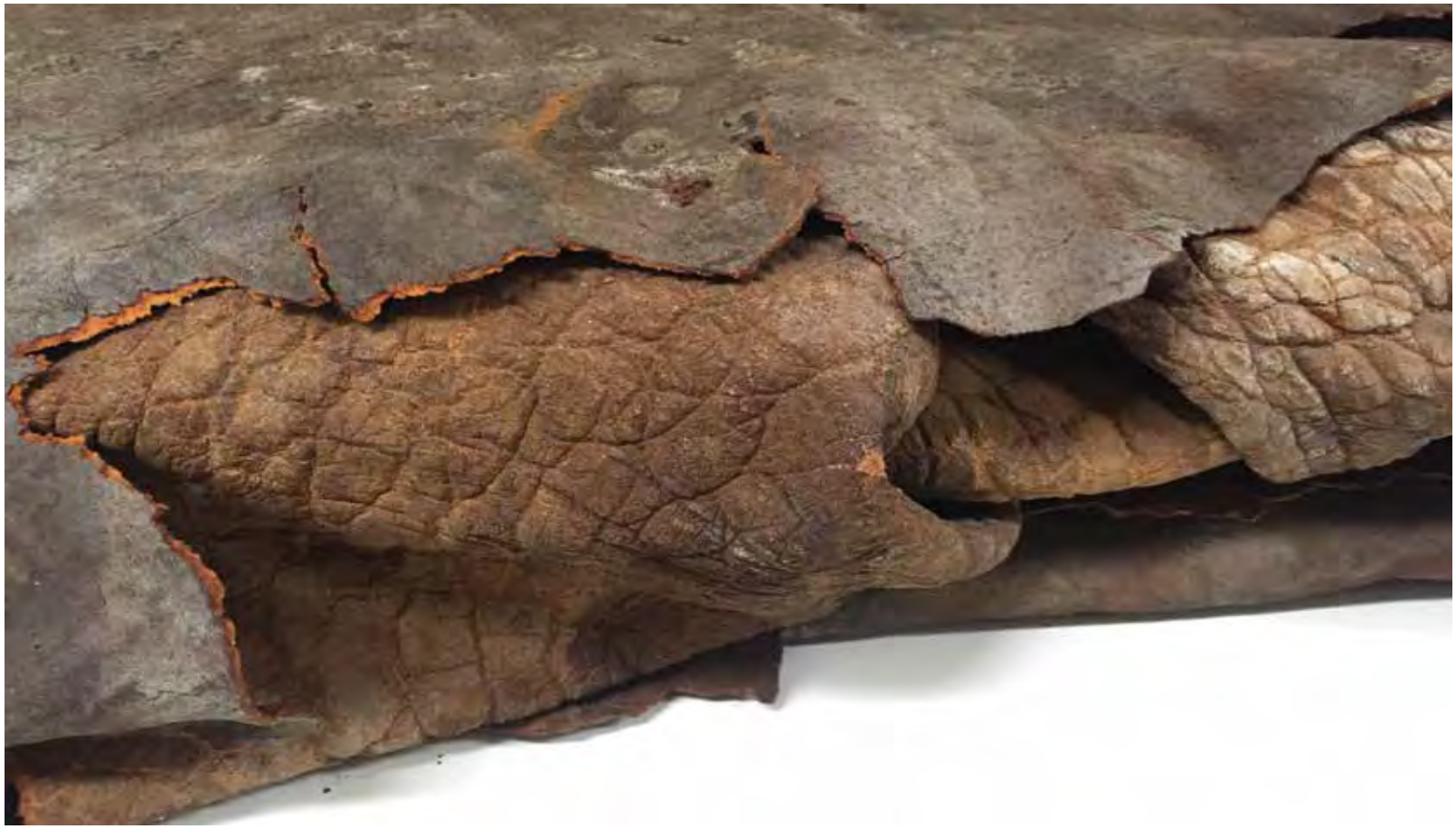
The Mapungubwe gold rhino is arguably the most iconic cultural incarnation of this large herbivore. During the thirteenth century, rulers of the Mapungubwe kingdom in the northern parts of the Limpopo Province incorporated rhino imagery into symbols of leadership. Some scholars argue that the figurine is of a black rhino, drawing parallels with characteristics such as dangerous behaviour, unpredictability, power and solitary life to those of the Mapungubwe rulers. The figurine measures 55 millimetres in height and was made from gold foil pieces fastened to a wooden core with small gold tacks. It is possible that the rhino was mounted on a ceremonial staff that formed part of the royal insignia and was later buried with the ruler after his death.

Rhinos have also been a feature of southern African figurative art for the last 30 000 years. At the Apollo 11 Cave in southern Namibia, seven painted portable stone slabs were discovered that date to the Late Pleistocene. These represent the oldest preserved figurative art in southern Africa, and one of these stone slabs portrays a rhino.

Golden rhinoceros from Mapungubwe.
Photograph: University of Pretoria Museums

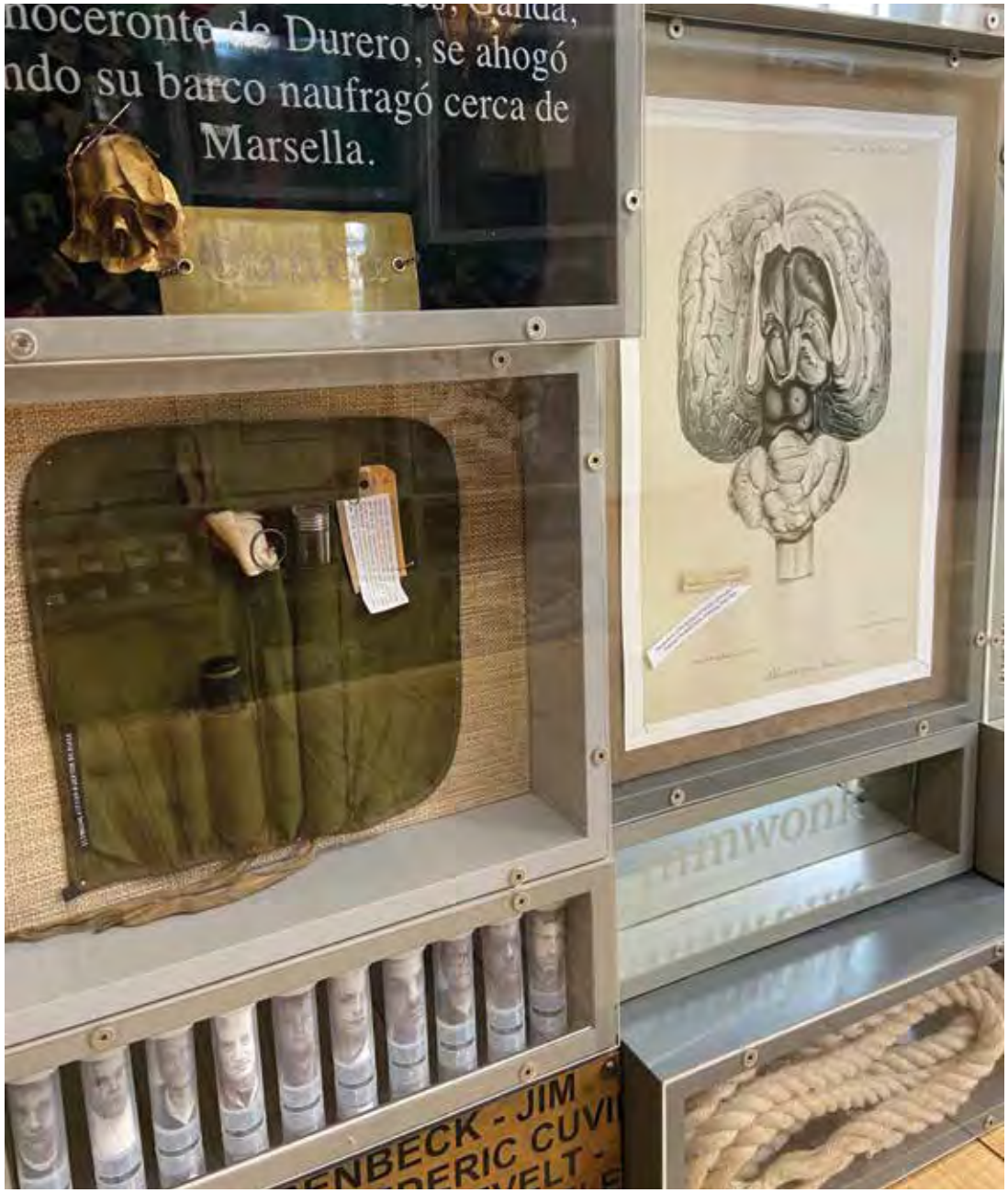
They also feature in later hunter-gatherer San rock art, where they are more commonly engraved on rock surfaces than painted. Sixty-two rhino engravings were recorded at the site of Thaba Sione in South Africa's North West Province. Here, smoothed outlines of some figures mimic the animal's habit of rubbing against rocks to remove parasites – the creators clearly combining observed behaviour with beliefs. San ethnographies suggest that some groups attached supernatural importance to rhinos.

In general, black rhino depictions far outnumber those of white rhinos, even in regions where both species occurred together. At Thaba Sione, however, most engravings are of white rhinos. Their predominance is curious but may relate

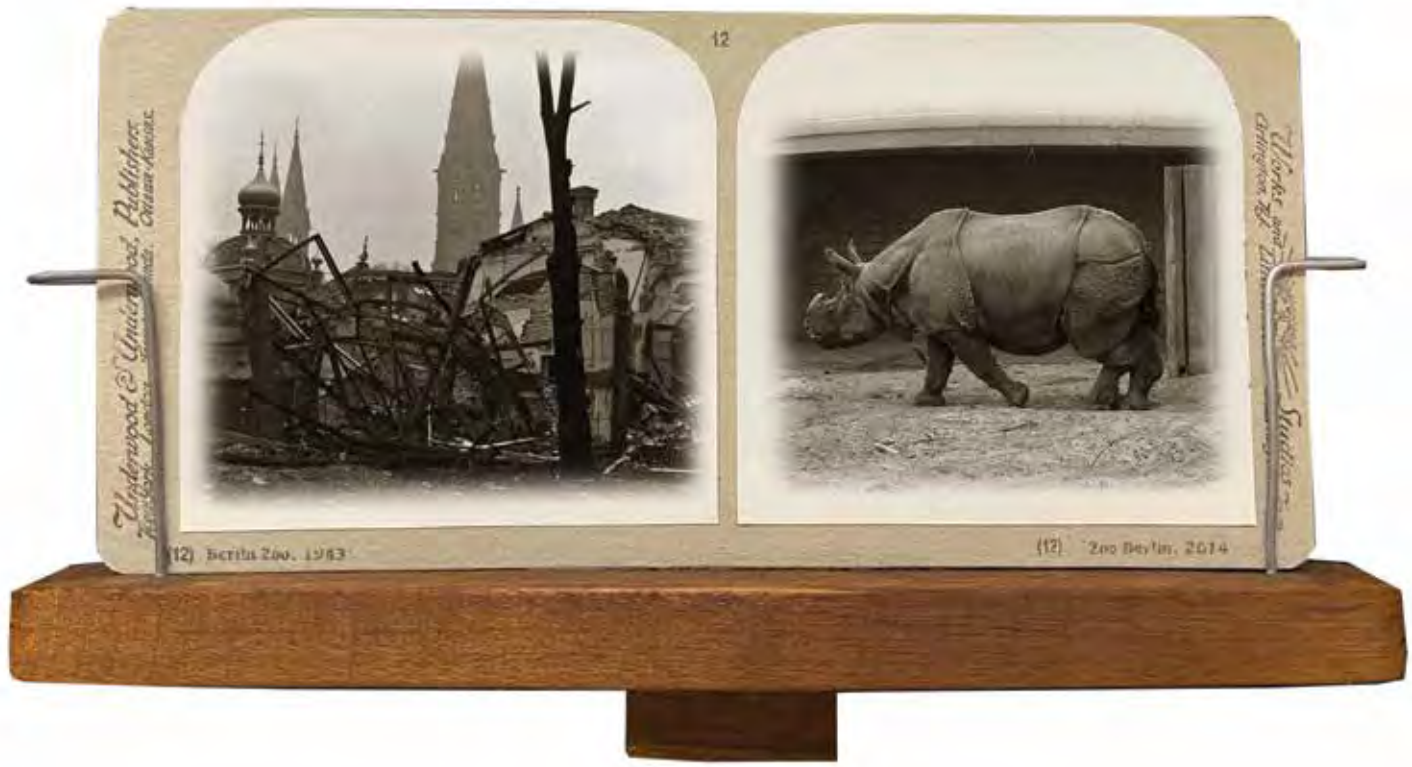


Rhinoceros skin. American Museum of Natural History Collection.
Photograph: Fritha Langerman, 2017

to conceptions of potency. Many San people believe that fat contains a high concentration of supernatural power. The white rhino, with its very thick fat layer between hide and flesh, could well have signalled high potency levels – like the famed eland that is so common in the region's rock art tradition. Shamans may have drawn on rhino potency to heal people or control game. At Thaba Sione, a depiction of a shaman transforming into a rhinoceros links the animal to shamanistic beliefs.



Exhibition detail.
Photograph: Fritha Langerman



Bombs fell on the Berlin Zoo 12 times between 1941 and 1945. Incendiary, demolition, phosphorus bombs and aerial mines killed a third of the animals, including a rhino.

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