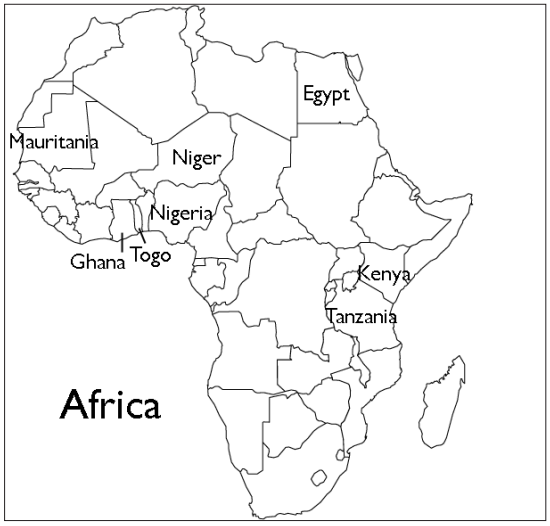
Discover...

AFRICAN METALWORK

Background to metalworking in Africa



There is enormous variety in African metalworking, in terms of the metals used, the techniques employed, and the objects produced.

Historically, the metals used most in Sub-Saharan Africa were iron, copper, bronze (alloy of copper and tin), brass (alloy of copper and zinc), and gold. There was also some localized use of lead, tin, silver, and more recently, aluminium.

There are substantial gold deposits in Africa, as well as a range of iron ores. Copper is sparse in west Africa, but is plentiful in parts of southern and central Africa.

History

In ancient Egypt, metal was smelted from the time of the Old Kingdom (2686–2181 BC). In Sub-Saharan Africa, it is not known precisely when native metals were first worked, but in parts of Niger and Mauritania, copper was smelted from the early first millennium BC. By AD 1000 metal use was almost universal in Africa. The 'Three Age System' of stone-use, followed first by bronze, and then by iron, does not apply to the history of metals in Africa. Almost everywhere, iron, copper, bronze, and brass were introduced at virtually the same time.

▲ **Egyptian Middle Kingdom bronze tweezers; 1923.43.58**

Techniques

Smelting

Smelting involves extracting a metal from its ore (a mineral containing the metal) by heating the metal ore in a furnace to a very high temperature. During the smelting process, oxygen in the ore combines with carbon in the fuel, escaping as carbon monoxide or carbon dioxide, leaving the metal in liquid form. Other impurities are also removed during the smelting process. During smelting, the temperature in the furnace is raised and maintained using bellows.

Forging

Forging metal is a method of shaping metal by hammering. Cold forging is generally limited to relatively soft metals including gold, silver, and copper alloys. Most metals are hot forged. A metal object produced by hot forging tends to be stronger and less brittle than metal cast in a mould. In addition to hammering, the metal is also shaped by chisels, and by punching tools.

▲ **Torque, Tanzania; 1995.27.2**

This heavy brass torque from Tanzania was shaped by hammering. The incised patterning was then produced using a sharp tool. It is thought to have been excavated from a Pare grave in the mid-twentieth century, and to have been made some time before 1892. It probably belonged to a woman. Amongst the Pare in the precolonial period, torques like these were made by members of the metalworking clan. They were usually purchased by a girl's parents and given to her to mark her adulthood and the fact that she was ready to marry.

Lost Wax Casting

An alternative method of shaping metal is by lost wax casting, or cire perdue. This method was used to produce some of the most famous African metalworks, including the Benin brasses (or 'bronzes'), and Asante weights. (See below for more information on these objects.)

It is not known exactly how lost wax casting was developed or introduced to Africa, but it was being practised by West African brass sculptors for several centuries before the arrival of the first Portuguese explorers in the late fifteenth century. Lost wax casting allows hollow metal objects to be produced. A clay or plaster model is made of the desired object. This clay mould is then covered with a layer of wax (or a similar material with a low melting point). The thickness of the wax layer is important, as it determines the eventual thickness of the metal. A second layer of clay is then formed over the wax. Ducts are left in the clay for drainage. The entire mould is then heated so that the wax melts and drains away through the ducts. Molten metal is then poured into the resulting cavity. Once the metal has cooled and hardened, the clay is chipped off, leaving the metal object.

The process is illustrated by this sequence of heads from a Yoruba metalworker in Togo. These were collected some time before 1910.

▲ **1st stage – clay mould of head; 1910.48.1**

▲ **2nd stage – clay mould covered with wax layer; 1910.48.2**

▲ **3rd stage – wax has been covered with clay, then melted and replaced with metal. Outer clay partially removed to reveal metal object; 1910.48.3**

Direct Cast Method

This is another method used to shape metal. It produces a metal model of small, organic objects such as seeds or insects. The seed or insect is covered in a thick layer of clay. The clay is then heated so that the organic material is burned away. Molten metal is poured into the cavity through specially prepared ducts. Once cold, the clay cast is then broken off revealing the metal object which is then filed and polished.

Use of Metals

It would not be possible to discuss all of the African objects made of metal in the Museum. Metal has been used to produce objects for almost all areas of life, including trade, warfare, agriculture, worship, ritual, and body ornamentation. However, information is provided here about a selection of African metal objects on display in the Museum's lower gallery.

Jewellery

This brass anklet is one of a pair. It was beaten from a solid brass bar. The anklets were then decorated with incisions. They were collected from Igbo women in Nigeria. The anklets were so heavy and cumbersome that they caused the wearer to walk with a rolling gait. This style of movement was imitated by women who wanted others to think that they were accustomed to wearing such expensive items.

▲ **Anklet, Igbo, Nigeria; 1975.41.1 .2**

▲ **Copper manilla. Made in Birmingham; 1884.99.42**

In west Africa from the fourteenth century, copper bracelets were used as currency. After the arrival of Portuguese and other European traders, great numbers of these manillas (the Portuguese word for bracelet) were produced in Europe to trade in west Africa. Pictured here is a copper manilla made in Birmingham for trade to Africa. It was produced to be exchanged with Igbo people in Nigeria for palm oil and ivory.

The copper from these manillas brought to Africa from Europe was often melted down and remade into other metal objects. Similarly, this aluminium ring from Ghana is the product of recycling: it was made from metal taken from a car radiator. It was collected amongst the Tallensi.

▲ **Aluminium ring, Ghana; 1941.8.258**

Benin Brasses

In 1897, a British military force embarked on a mission to capture the city of Benin in southern Nigeria. The reason given by the British for the expedition was the murderof members of a British trade delegation. The British brought back thousands of objects, some of which are on loan to the Museum.

As a result of this expedition, Benin became famous in the West for its ‘bronzes’. In fact Benin bronzes are made of brass. They were cast using the lost-wax process described above. At one time brass was rare and expensive. It was a material favoured by the divine king, or Oba, and he adorned his palace with it. Because it never corrodes or rusts, brass represents the permanence and continuity of kingship. The brass from Benin on display in the Museum has dulled over time. When it was new it would have been a very shiny reddish colour. These qualities are considered both threatening and beautiful and are symbolic of the Oba.

▲ **Pendant mask representing a woman’s face. Probably given by the Queen Mother to her chiefs, Benin; 1983.25.3**

Asante Gold Weights

Amongst the Akan Asante of Ghana, detailed, miniature brass weights were produced by casters using the lost-wax process. The weights were used for weighing gold-dust, which was once used for all commercial transactions. The weights were either shaped into figures, or were decorated with geometric patterns.

▲ **Geometric weight, Ghana; 1938.18.7**

▲ **Figurative weight, Ghana; 1938.18.893**

These geometric or abstract patterns include squares, crosses, cubes, discs, and pyramids. This type of design may have been adopted as a result of contact with Islamic peoples to the north.

The figurative examples feature man-made objects, and human and animal figures. A few of the weights illustrate proverbs – an important feature of Akan life and culture. The weight pictured here depicts a man with a monkey on his back and a gun in his left hand. He is standing before a trap in which an antelope has been caught.

The culture of metalworking

The process of using fire to transform ore into metal, and metal into an object, was widely seen in Africa as a dangerous act of creation. As such, it was susceptible to interference by ancestral spirits and by acts of sorcery, or spells, from other members of the community. Secret rituals, symbols, rules, and taboos were therefore seen as essential to counteract these malevolent forces, and they were viewed as of equal importance to a successful smelt as the ore and fuel.

Smelting metal was often described as being analogous to gestation and birth. Amongst the Fipa of Tanzania the constuction of a furnace was accompanied by the same rituals and decorations used to prepare a bride on her wedding day. Ironworkers, and frequently other metal workers, were expected to refrain from sexual activity during smelting and some stages of mining and smithing.

To remove the ironworkers from sexual temptation, because it was a dangerous activity, and to protect their secret rituals, smelting was often carried out at some distance from villages. Indeed, in many African groups, blacksmiths were separate from other parts of society, and they married endogamously, within their own group. Often the wives of blacksmiths were potters. These families often lived away from other members of the society, on the edges of settlements.

Acts of sorcery were often blamed for smelting failures. Preparing medicines to protect the furnace from these spells was therefore considered an essential part of metalworking.

Because metalworkers knew how to make offerings and sacrifices to the spirits and ancestors, and how to protect their work from malevolent spirits and magic, they were often regarded by the rest of the community with a mixture of fear and awe.

Sources

BRINCARD, MARIE-THERESE (ed), *The Art of Metal in Africa*, New York: African-American Institute (1982).

CRAFTS COUNCIL, *African Metalwork*, London: Crafts Council (1995).

Websites

METROPOLITAN MUSEUM OF ART, *African Lost-Wax Casting*, at http://www.metmuseum.org/toah/hd/wax/hd_wax.htm [undated; consulted October 2005].

The objects found in this Information sheet can be found at the following locations:

Lower Gallery (first floor)

Case L40A – Body Arts, Re-shaping

Case L62A – Metalworking

Case L73B – Gold Weights – Asante, Ghana

Case L75A – Ornamental Objects used as Currency

Case L85A – Surgical Instruments

Case L96A – Torgues

Case L99A – Rings for Fingers and Toes

Case L26A – Court Art of Benin

Compiled by:

Bryony Reid, Senior Project Assistant (Interpretation)

DCF What's Upstairs?

October 2005

Pitt Rivers Museum, South Parks Road, Oxford OX1 3PP +44 (0)1865 270927 www.prm.ox.ac.uk