Art and Technology: Africa and Beyond

March 11, 1995–May 26, 1996

Eiteljorg Gallery for Special Exhibitions

Indianapolis Museum of Art

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Art and Technology: Africa and Beyond is the sixth in a continuing series of exhibitions of the arts of Africa, the South Pacific, Precolumbian America and other non-European traditions presented in the Eiteljorg Gallery for Special Exhibitions. This exhibition is supported in part by Mr. and Mrs. Harrison Eiteljorg, the Institute of Museum Services, the Arts Council of Indianapolis and the City of Indianapolis, the Indiana Arts Commission and the National Endowment for the Arts.

Catalogue captions:

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(T.C.) Theodore Celenko, Curator of African, South Pacific and Precolumbian Art
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Front cover:

4
probably Yombe people
Zaire, Congo or Angola
Central Africa
human figure *(Nkisi)*
late 19th-early 20th century
wood, glass, cloth, resin, feathers, pigment, metal
h. 8 ⅛ in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.1108

no. 4, ill. A, left: photographic image

no. 4, ill. B, center: three-dimensional computer rendering of figure's surface with color enhancement to indicate three density ranges (white: most dense material; green: medium density; brown: least dense)

no. 4, ill. C, right: x-ray picture (40 kVp, 2 mAs)

Acknowledgments

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Introduction

Art and Technology: Africa and Beyond explores applications of science and technology in examining, understanding and authenticating works of art from Africa, the South Pacific and Precolumbian America. The exhibition encompasses more than a dozen technical procedures. This is probably the first time that results from the analysis of African objects using such procedures as CAT scans and protein analysis have been published. Light boxes displaying x-ray pictures, an interactive ultraviolet light station and numerous photomurals make this an unusual installation for an art museum. With very few exceptions the thirty-five items come from the collection of the Indianapolis Museum of Art, and most were given to the museum by Mr. and Mrs. Harrison Eiteljorg.

The exhibit is divided into three categories: technical analyses, conservation treatments and authenticity. These categories are not mutually exclusive, but provide one way to organize a diverse group of objects and a range of technical procedures.

The **Technical Analyses** section has examples of CAT scans (nos. 4-5, ill.); x-ray pictures (nos. 1, ill.; 2; 3-5, ill.); radiocarbon dating (no. 1, ill.); wood identification (no. 3, ill.); paint media analysis (no. 3, ill.); ultraviolet illumination (no. 6); microscopic skin identification (no. 7, ill.); protein analysis (nos. 7, ill.; 8); and metallurgical analysis (nos. 9-10). Two examples of thermoluminescence dating are found in the third section (nos. 21-22, ill.). These techniques help the examiner evaluate an object's condition, age, authenticity, materials and methods of construction.

Most of these methods of examination are nondestructive to the artifact; that is, removal of material from the art object is not necessary, or only minute samples of paint, fiber, hair or wood are required. Others, such as dating techniques, may necessitate somewhat larger samples from the objects. Because each method of examination has its particular strengths and weaknesses, usually more than one of these procedures has been performed on a particular object.

In the **Conservation** section, the objects illustrate the results of treatments performed in the museum's art conservation laboratory. These treatments attempt to stabilize, preserve, repair, and in some cases, restore the condition of damaged objects. A conservator's primary goal is the preservation of cultural materials for future generations. This may involve structural repair of broken parts; consolidation of flaking paint, fiber or hair; the support of weak elements, and other procedures.

A secondary goal of conservation is to address the appearance of an object. Procedures that improve a work's visual qualities are often called aesthetic or cosmetic compensation. Objects may require cleaning, filling of holes, or replacement of missing parts. The conservator works closely with the curator to determine the extent and type of aesthetic compensation that is appropriate for a particular object. Full written and photographic documentation of all procedures is performed before, during and after each treatment. As far as possible, conservation procedures are reversible; that is, they can be undone should the need arise.

The final section, **Authenticity**, focuses on a long-standing and problematic issue that concerns museums, collectors and the commercial art world. In this section examples of authentic, replicated, tourist and fraudulent objects are compared. Here, science is secondary to stylistic analysis, aesthetic evaluation, and ethnographic and archaeological contextual information.

The goal of this exhibition is to learn more about specific art objects through a presentation of technical information, to demonstrate the results of conservation treatments on objects in the collection, and to provide insight into the collaboration between art and science. It builds upon previous exhibitions, publications and lectures (for example, Minneapolis Institute of Arts 1973; Kamer 1974; *African Arts* 1976; Sieber and Celenko 1977; Sieber 1984; Frank 1985; Maurer 1989; Jones 1990) that have dealt with issues of authenticity and technical analyses as they relate to African and other non-European art forms. This exhibition furthers an understanding of these art objects and the technology that helps to explore their physical qualities. The thirteen objects illustrated and discussed in this brochure are representative of the thirty-five exhibition items.

Theodore Celenko
Curator of African, South Pacific and Precolumbian Art

Laura Reutter
Assistant Conservator of Ethnographic Objects

Checklist

TECHNICAL ANALYSES

1
Dogon people
Mali, West Africa
female figure
18th century
wood, incrustation
h. 29 1/16 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.176

2
Veracruz culture
Gulf Coast, Mexico
male figure
400—700 A.D.
ceramic, pigment
h. 23 ½ in.
Lent by Bonnie and David Ross
TR8343

3
probably Limba people
Sierra Leone, West Africa
trumpet with seated figure for *Gbangbani* association
20th century
wood, pigment, mastic, iron
h. 25 13/16 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.426

4
probably Yombe people
Zaire, Congo or Angola
Central Africa
human figure *(Nkisi)*
late 19th—early 20th century
wood, glass, cloth, resin, feathers,
pigment, metal
h. 8 1/8 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.1108

5
Bamana people
Mali, West Africa
figure *(Boli)* for men's association
20th century
wood, fiber, ritual substances
l. 24 ½ in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.240

6
Yoruba people
Nigeria, West Africa
human figure
18th—19th century
ivory
h. 8 ½ in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.1566

7
Ejagham or Efik people
Nigeria, West Africa
janus-faced head crest
late 19th—early 20th century
wood, skin, pigment, iron, basketry, fiber
h. 10 3/16 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.901

8
Grebo people
Liberia, West Africa
meat board
20th century
wood, incrustation
l. 39 5/8 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.436

9
Benin Kingdom
Nigeria, West Africa
staff for king's messenger
probably 18th century
cuprous alloy
h. 34 7/8 inches
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.1568

10
Fon people
Benin, West Africa
human figure
probably 20th century
wood, metal
h. 18 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.683

CONSERVATION

11
Akan peoples
Ghana, West Africa
drum
20th century
wood, hide, pigment, iron
h. 39 7/8 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.486

12
Yoruba people
Nigeria or Benin, West Africa
cap mask for Efe/Gelede cult
20th century
wood, paint, mirrors, iron
h. 22 ½ in.
Gift of Butler University
1988.128

13
New Hebrides
Melanesia, South Pacific
ancestor figure
20th century
bamboo, human skull, sea shells,
fiber, pigment, feathers, wood,
vegetable paste, pig tusks
h. 86 ½ in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.1414

14
Dayak people
Borneo, Indonesia
face mask
20th century
wood, cloth, fiber, paint, mirrors
h. 16 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.1377 A-C

15
Maya culture
Guatemala or Mexico
plate
600—900 A.D.
ceramic, slip
w. 15 1/8 in.
Anonymous gift
1986.22

16
Bamana people
Mali, West Africa
door lock
20th century
wood, iron
h. 16 3/8 in.
Indianapolis Museum of Art
1989.260 a-b

AUTHENTICITY

17
Baule people
Ivory Coast, West Africa
female figure
20th century
wood, incrustation
h. 13 1/8 in.
Director's Discretionary Fund

18
Baule people
Ivory Coast, West Africa
female figure
20th century
wood, incrustation, cloth, metals, glass beads, fiber string
h. 16 ¾ in.
Gift of Mr. and Mrs. Wally Zollman
TR8299/4

19
Baule people
Ivory Coast, West Africa
female figure
20th century
wood, pigment
h. 15 ⅝ in.
Gift of Daniel Cantor
8047.93.2

20
Baule style
Ivory Coast, West Africa
male figure
probably 1970–1985
wood, pigment
h. 11 ½ inches
Gift in memory of Patricia C. Peat
8296.95.1

21
Jenne culture
Mali, West Africa
female figure
15–16th century
ceramic
h. 10 ⅝ in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.168

22
Jenne style
Mali, West Africa
female figure
20th century
ceramic
h. 11 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.170

23
Colima culture
West Mexico
dog
200 BC–300 A.D.
ceramic
l. 11 ⅜ in.
Bequest of Clarence E. Hamilton
82.89

24
Colima style
Mexico
dog
1980s
ceramic
l. 12 ½ in.
Lent anonymously
TR8302

25
Colima style replica
Mexico
dog
20th century
ceramic
l. 11 in.
Education Division Collection

26
Colima style
United States of America
dog
probably 1980s
ceramic, gold leaf, rubies
l. 13 in.
Lent by Robert and Marianne Huber
TR8294

27
Lower Niger River region
Nigeria, West Africa
bell
19th century or earlier
copper alloy
h. 5 ⅝ in.
Lent by Dr. and Mrs. Gregory Wells
TR8305

28
Southern Nigeria, Lower Niger River style
probably Birmingham, England
bell
probably late 19th–early 20th century
copper alloy, iron chain, lead clapper, pigment
h. 6 ⅜ in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.791

29
Lega people
Zaire, Central Africa
miniature mask
19th–20th century
ivory
h. 7 ½ in.
Lent by Dr. and Mrs. Wally Zollman
TR8299/1

30
Lega style
Zaire, Central Africa
miniature mask
20th century
bone
h. 5 ⅜ in.
Various funds
65.5

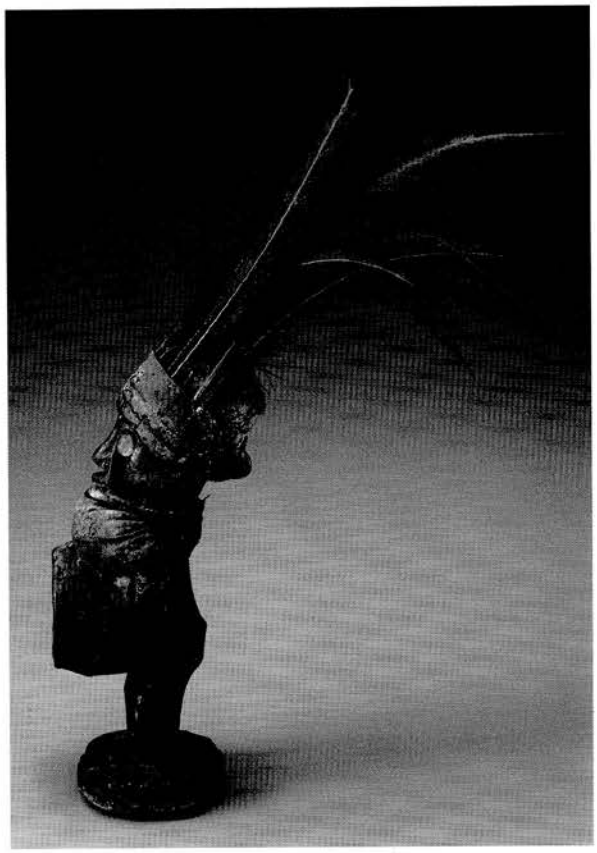
31
Toma people
Liberia, West Africa
miniature mask
20th century
wood, cloth, ritual substances, iron, cowrie shells, fiber
h. of wood portion: 6 ½ in.
Lent by Charles D. Miller III
TR8175

32
We style
West Africa
miniature mask
20th century
wood, pigment, incrustation, cowrie shells, hide, fiber, metal iron
h. 10 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.428

33
Baule people
Ivory Coast, West Africa
comb
20th century
wood
h. 13 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.521

34
Colima culture
West Mexico
human figure
300 BC–1 A.D.
ceramic
h. 4 ¾ in.
Gift of Earl C. Townsend, Jr.
68.28.16

35
possibly Jenne culture
possibly Mali, West Africa
human figure
14th–20th century
wood, pigment
h. 26 ¾ in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.174



4
probably Yombe people
Zaire, Congo or Angola
Central Africa
human figure *(Nkisi)*
late 19th–early 20th century
wood, glass, cloth, resin, feathers,
pigment, metal, bone and other substances
h. 8 ⅛ in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.1108

Figures such as this one, found throughout the Lower Zaire River region, are characterized by medicinal substances that have been applied to them. Once a figure has been ritually charged with these substances, it may be used for a variety of reasons, for example, to ensure successful hunting, fishing or farming, as protection against thieves or illness, or to cause harm to an enemy (Celenko 1983:190).

An x-ray picture (no. 4, ill. A) of this figure reveals hidden accumulations in the top of the head, within the cloth neck ring and within the mirrored torso chamber. These radiopaque substances, which appear white in the x-ray picture, include a wide range of natural and man-made elements, such as bones, teeth, horns, claws (fragment atop the head), bird beaks, seashells, roots, twigs, nuts, cocoons, clay, glass beads, leather, and metal objects (MacGaffey 1991). The mirrored glass and eyes also

no. 4, ill. A x-ray picture, profile (40 kVp, 2 mAs)

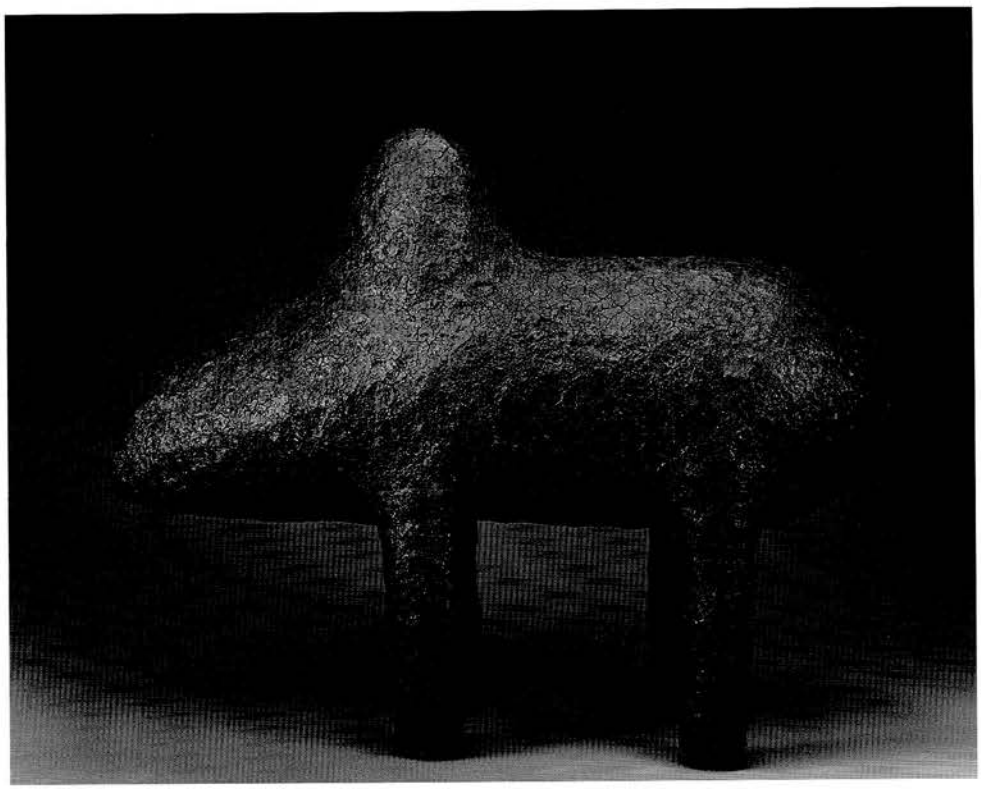
no. 4, ill. B CAT scan image, profile, detail of mid-section of figure

appear white because of their density. The grain of the wood remains somewhat evident while the feathers surmounting the head have been "burned out" during the radiographic process.

The CAT scan picture (no. 4, ill. B) depicts only a single "slice" of the figure in contrast to the x-ray image, which shows the entire thickness of the object in one exposure. The grain of the wood is much more distinct in the CAT scan, and the contours of the interior of the hollow torso chamber are clearly defined. The CAT scan also shows the location of individual medicinal pieces within the torso and neck ring.

Using a computer and data generated by the CAT scan, it is possible to compare the relative densities of specific areas (no. 4, ill. B). The density of a given material, along with its shape, provides clues about what it may be. In the following examples water, which has an assigned value of zero, is the standard for the density readings. The extremely high density reading of the object at site A (2365 value) suggests it may be stone; the shape and density of site B (1793 value) indicates an animal tooth; while the resin compound that forms the walls of the torso chamber, site C, has a very low density (22 to 88 value). Site D, the mirrored glass, gives a high reading (2145 value) in comparison to site E (1038 value), which falls within the range of bone (Buckwalter 1995). Radiolucent elements, which appear faint and dark gray, within the torso chamber and neck ring may be vegetal.

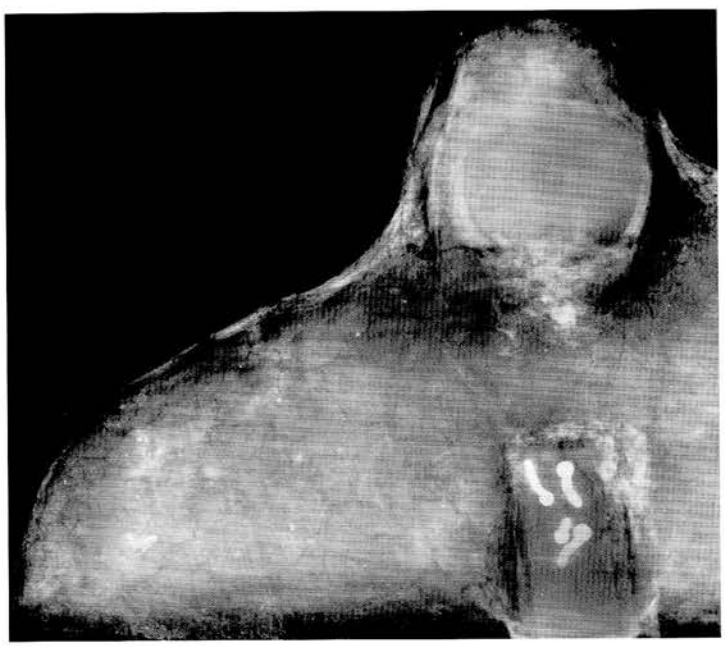
T.C., L.R.



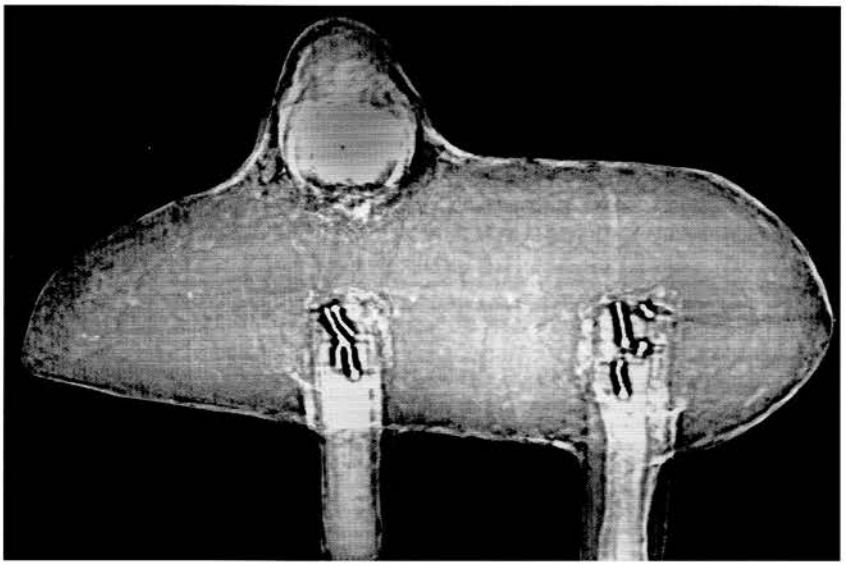
5
Bamana people
Mali, West Africa
figure *(Boli)* for men's association
20th century
wood, fiber, ritual substances
l. 24 ½ in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.240

A *Boli* is an assemblage of diverse materials in animal, human or unidentifiable form. It is placed on an altar in the sanctuary of a men's power association. A *Boli* is viewed as an embodiment of spiritual forces and as such provides a reservoir of power that can be harnessed at appropriate times (McNaughton 1979:27). There is no field information about how these unusual objects are constructed and very little solid evidence about their composition. They are reputed to be composed of wood, roots, clay, wax, honey, chicken or goat blood, animal bones, alcoholic beverages, chewed kola nuts, saliva, claws, horns, metal and other substances (Goldwater 1960:10; Zahan 1974:29; McNaughton 1979:26-27).

An x-ray picture (no. 5, ill. A) of this *Boli* reveals a wooden framework nailed together in the form of a torso and four limbs. In a previously published x-ray picture of this object it appears that the hump was built around a spherically shaped entity of an undetermined radiopaque substance, perhaps a clay vessel (Celenko 1983:38). Thus, radiographic evidence for this figure corroborates reports of the composite nature of these objects. However, this figure contrasts with another radiographed example whose core was made from one piece of wood (Sieber and Celenko 1977:20-21).



no. 5, ill. A x-ray picture, front half of figure, profile (55 kVp, 2 mAs)

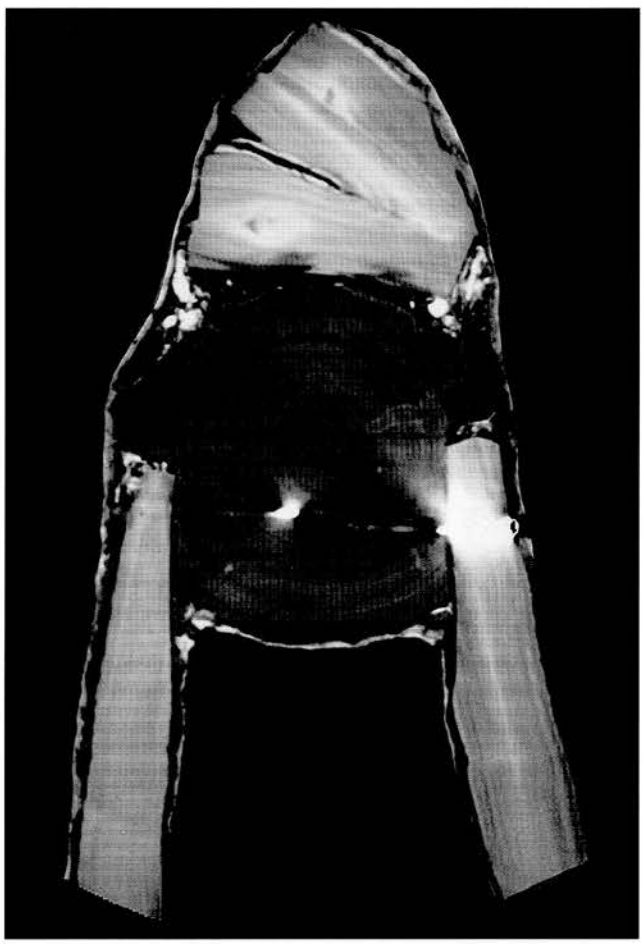


no. 5, ill. B simulated x-ray picture, profile

A simulated x-ray picture, in profile, (no. 5, ill. B) shows the iron nails that secure the legs to the torso. These nails appear as white, radiopaque lines encircled by black halos. The black surface incrustation, which appears as a white crust in the x-ray picture, forms a relatively thin layer over the body. It is not evident from this picture, nor from the cross-sectional CAT scan (no. 5, ill. C), whether the incrustation was applied in one or numerous applications.

A cross-sectional CAT scan "slice" through the hump and body (no. 5, ill. C) shows that the body consists of a log, the growth rings of which are clearly evident. This log has been notched on each side and on top to accommodate the legs and hump. White areas on the leg to the viewer's right and in the center of the body are caused by the radiopacity of the iron nails.

The hump is a chunk of wood, contrary to what the earlier x-ray profile suggested. The wood grain of the hump is apparent, as are two knots separated by a crack. Small radiopaque objects on each side of the hump may be ritual materials or simply bits of earth or pebbles added during construction. There is no field data about the composition of such humps. Assuming that this is an authentic object (acquired by a collector in 1971), evidence presented here indicates that, at least in one instance, the hump is made of a piece of wood that may or may not have a ritual significance. The wooden hump and legs have similar opacity and are quite distinct from the less dense wood of the torso. The different densities of body and hump, and the fact that the latter was part of a forked branch, as indicated by the two knots, may or may not have significance. T.C., L.R.



no. 5, ill. C CAT scan image, cross-section of hump and body

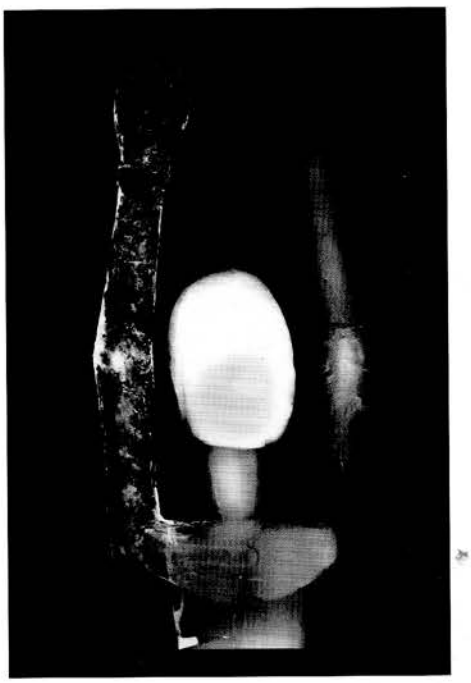
1
Dogon people
Mali, West Africa
female figure
16th–18th century
wood, incrustation
h. 29 1/16 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.176

The Dogon live in rocky territory at the edge of the Sahara Desert. The dry climate of Dogon country, unlike many other sculpture-producing areas of sub-Saharan Africa, provides an environment where wood carvings can survive for centuries. For example, the wood of this figure has been radiocarbon dated from 1485 to 1795 (conservation report 1989.176). Other wood carvings from the Dogon area have radiocarbon dates as early as the eleventh century (Bedaux 1988:45). The technique of radiocarbon dating, introduced in 1950 (Goffer 1980:304), has provided an important tool for archaeologists, art historians, conservators and other specialists.

Weathering has eroded most of the surface of this old carving, including layers of incrustation, suggesting that the figure was unattended for a number of years before its removal from Dogon country. The original substances that were repeatedly applied during rituals may have included beer or porridge from millet grain, or animal blood (Celenko 1983:18).

This figure is an excellent example of an authentic object that incorporates and conceals a significant restored element, the arm on the viewer's left. This restoration is not readily apparent to the naked eye, even to a specialist. However, by using radiography (no. 1, ill. A), a nondestructive, inexpensive and easily available technique, one can clearly discern the newly carved wooden arm, the wooden dowels at the shoulder attaching the arm to the torso, and glue and filler material in the shoulder area. The juncture of the arm and dowels is clearly apparent, as are the white areas of the radiopaque glue and filler.

The difference in the visual lightness between the two arms is due to the different densities of the original wood and the wood of the restored arm or differences in the surface coatings, or incrustations, of each arm. Tests on this object have established that the variance in the visual lightness of the arms is due, at least in part, to the differences in the surface coatings. The arm on the viewer's right, the original arm, has a coating of organic substances and what appears to be soil deposits that are soluble in water but not solvents. The arm to the viewer's left is covered with a thick layer of paint that is soluble in solvents. This indicates that an oil-based, non-traditional paint or enamel was used to cover the wood (conservation report 1989.176). T.C.

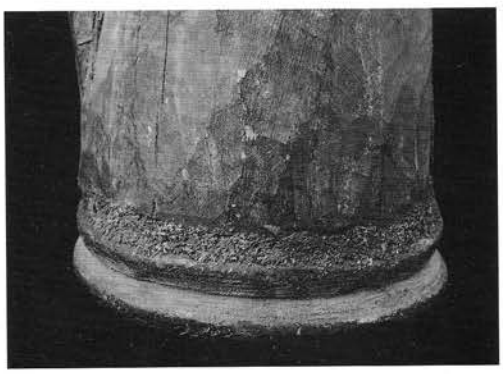


no. 1, ill. A x-ray picture, top half of figure (conservation report 1989.176)

3
probably Limba people
Sierra Leone, West Africa
trumpet with seated figure for *Gbangbani* association
20th century
wood, pigment, mastic, iron
h. 25 13/16 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.426

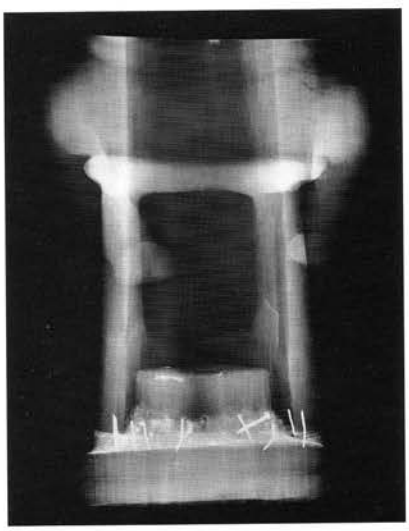
Trumpets of this type are an important ritual item among the Limba and neighboring peoples. They are used by men's anti-witchcraft associations to protect young men from malevolent forces during initiations. The female image incorporated into the trumpet may symbolize fertility, a positive force against witchcraft. The trumpet's vindictive "breeze" is capable of catching witches (Lamp 1978:43-45; Celenko 1983:58).

This hollow carving has a blowing hole in the upper back of the figure and, originally, an open end under the base on which the image sits. An unusual feature of this example is the stopper affixed to the open end. Frederick Lamp (1980) has encountered unattached stoppers on other trumpets and speculates that the holes may have been corked when the horns were not in use to prevent both the uncontrolled leakage of the vindictive "breeze" and the contamination of the spiritual body through the orifices.



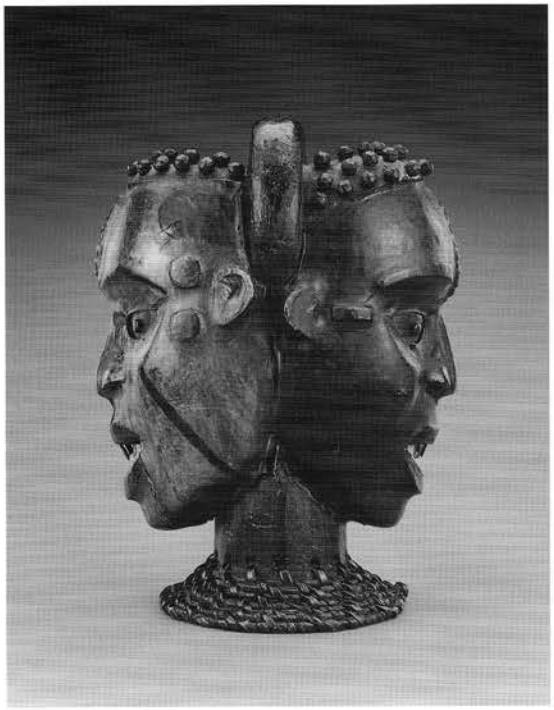
no. 3, ill. A detail, profile of base

This stopper, however, is attached with mastic (no. 3, ill. A) and even secured with iron nails, which are visible in x-ray pictures (no. 3, ill. B). The heads of some of the nails apparently have been cut off, perhaps to conceal them. Furthermore, laboratory tests indicate that the wood type and the oil-based paint of the stopper differ from those of the trumpet (conservation report 1989.426). All of this leads to speculation that at some point in its life the trumpet was changed into a seated figure in order to enhance its marketability. However, none of the above evidence is necessarily the result of alteration of an authentic object. Indeed, the bottom of the stopper (no. 3, ill. C) is worn. T.C.



no. 3, ill. B detail, x-ray picture of base (50 kVp, 2.5 mAs)

no. 3, ill. C detail, bottom of base



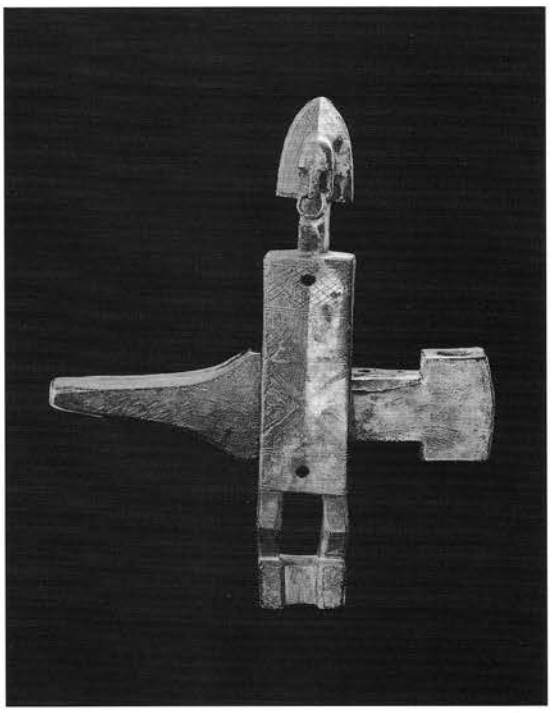
7
Ejagham or Efik people
Nigeria, West Africa
janus-faced head crest for men's association
late 19th–early 20th century
wood, skin, pigment, iron, basketry, fiber
h. 10 3/16 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.901

The naturalism of masks and head crests of this area is enhanced by skin coverings. Fresh or pre-soaked pliable skin, usually antelope, is stretched over the wood and secured with pegs, nails or strings, which are later removed. In some instances an adhesive may be used. The skin tightens over the wood as it dries (Nicklin 1974:13-14; 1979:56). Early reports indicate that skulls and heads of slain enemies were worn as dance crests and that human skin was used as a covering for wooden headpieces (Mansfeld 1908:150-51, pls. 17-18; Olderogge and Forman 1969:pl. 86; Talbot 1912:223, 261; 1926 vol. III:789, 829, 850; Brain and Pollock 1971:54; see also Nicklin 1974:8; 1979:56; Eyo 1981). A skin sample from this crest was subjected to rehydration-microscopic analysis and was identified as human (Zimmerman 1980; Celenko 1983:150-51). To corroborate this result, tests analyzing protein and DNA of the skin were conducted. Unfortunately, this attempt proved inconclusive (conservation report 1989.901).

T.C.

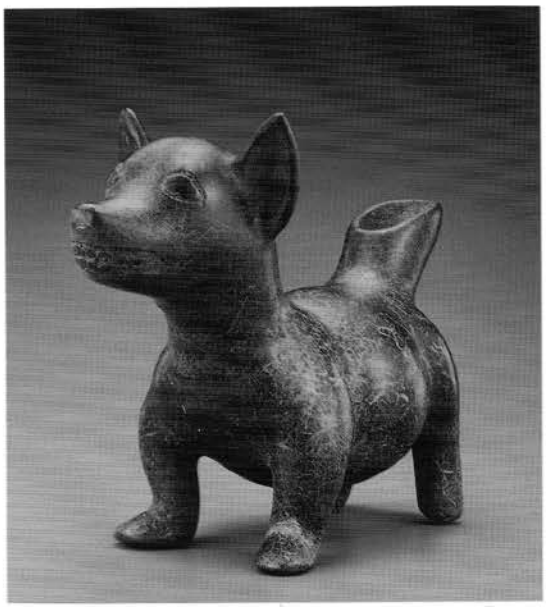
Although it resembles mold, the whitish "bloom" on one side of this lock is probably the efflorescence of applied fats and oils. Application of oily substances to wooden sculpture has been documented among some peoples of Mali. The source of the oils is probably vegetable seeds, such as sesame seeds and peanuts. These fats undergo changes in physical structure in response to changing temperature. Over time, this causes whitish crystals to form on wooden surfaces (Pearlstein 1986).

This photograph dramatically reveals the difference between the cleaned surface on the viewer's left side and the uncleaned side on the right. Fatty bloom is soluble in nonpolar solvents such as toluene and naphtha and can be easily removed by a conservator. L.R.



16
Bamana people
Mali, West Africa
door lock
20th century
wood, iron
h. 16 3/8 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.260 A-B

23
Colima culture
Western Mexico
dog
200 BC-AD 300
ceramic
l. 11 ⅜ in.
Bequest of Clarence E. Hamilton
82.89



Ceramic versions of a small breed of dog are among the most familiar forms in Precolumbian art. These Colima sculptures from ancient West Mexico are found in deep shaft-chamber tombs, where the dead were surrounded by offerings of food and artifacts, presumably to aid them in the afterlife.

These two dogs (nos. 23-24) share several common characteristics of the Colima style: hollow ceramic structure; naturalistic modeling, including a bulging stomach; an alert stance, the most common pose; and incised lines used to model details such as the oval eyes and bared teeth. Despite these similarities of style, however, number 23 is a two-thousand-year-old authentic object while number 24 is a twentieth-century copy.

The difference between the two is apparent in the surface treatment. Colima ceramics were covered with brown or deep red slip, often combined on the same piece, and then burnished before firing to achieve a polished surface. Number 23 is finished in this manner, and examination of the surface reveals a patina that is often found on Colima buried objects. Marks from roots that once grew around the piece in the tomb are clearly visible. In addition, the surface is covered with black manganese oxide, which is leached from the clay by water. These deposits tested positively with a drop of hydrogen peroxide, which reacted by bubbling when it came in contact with the oxidized mineral (conservation report 82.89). In a second test, under a microscope, the manganese oxide revealed its characteristic dendritic—or treelike—form, which is not easily duplicated.

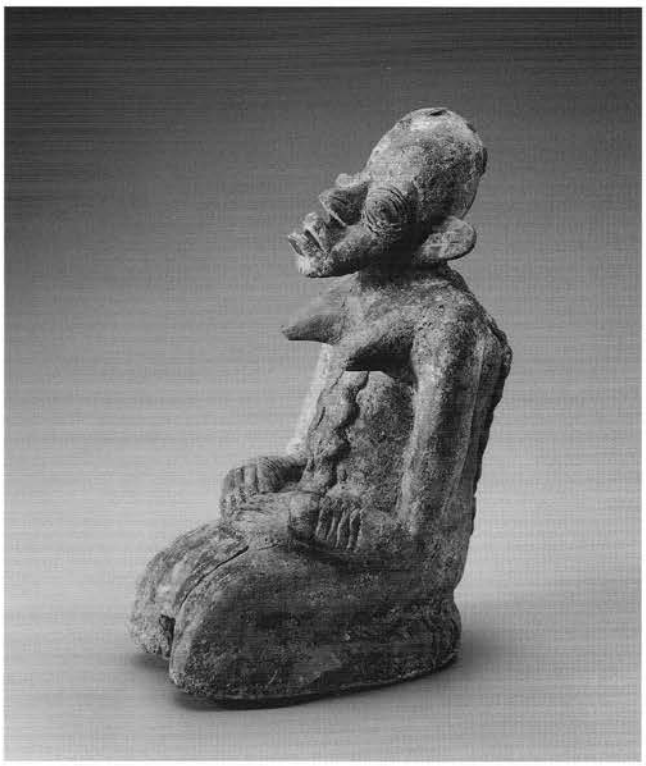
The surface of number 24 shows no evidence of slip application, surface burnishing or burial. The black paint spots were applied to imitate burial deposits. These spots tested negatively for the presence of manganese oxide using the hydrogen peroxide procedure. In addition, these spots tested positively to an application of acetone; that is, the solvent removed the recently applied black paint.

Although the form of number 24 makes it appear genuine, the workshop that produced this piece did not duplicate an authentic surface finish, apparently because it was too time-consuming and expensive. Another indication that number 24 was hastily done is the excess clay left along the edges of the deep incisions that were made in modeling the dog's features.

24
Colima style
Mexico
dog
1980s
ceramic
l. 12 ½ in.
Anonymous loan
TR8302

The history of number 24 is known. It was purchased in Merida, Mexico, during the mid-1980s by a collector who was aware that the object was a copy. There is a difference between works intended to deceive and those that are not. This is an example of a tourist piece and, for those familiar with the art, can be immediately recognized as such. This piece would only be considered a fake if it had been sold with the intent to deceive. J.R.

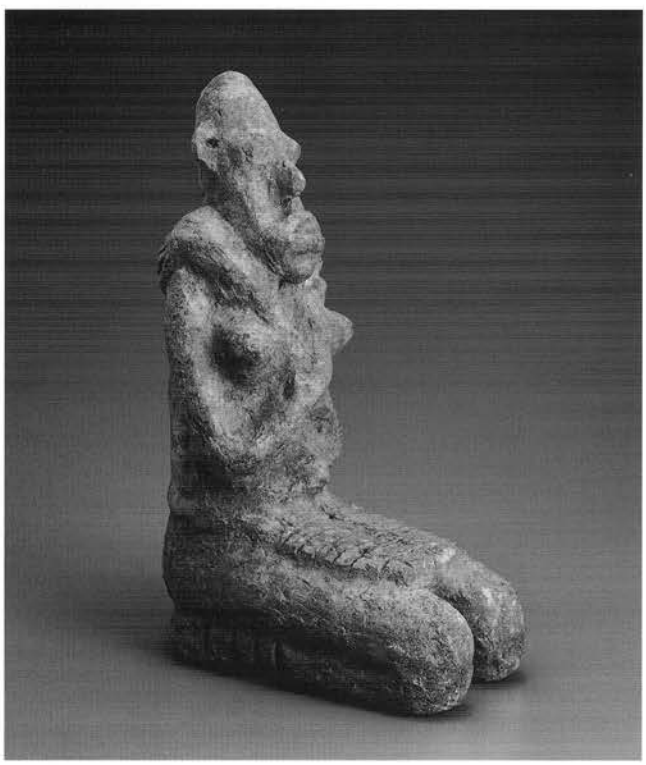
21
Jenne culture
Mali, West Africa
female figure
15-16th century
ceramic
h. 10 ⅝ in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.168



These figures provide a comparison of an authentic Jenne ceramic (no. 21) from the Inland Niger Delta of Mali and a copy (no. 22) of this type of image. If this recently made copy was presented as genuine, then it may be classified as a fake. Both images were acquired by a collector over twenty years ago. Both figures are rendered in the classic Jenne style, characterized by bulging eyes, jutting mouth and chin, and a kneeling, upright posture with arms on the knees or crossed over the chest (Celenko 1983:14-15).

The copy has a single gray coating to simulate an aged surface (conservation report 1989.170). The genuine example has some of its original red slip. Also, the copy does not have the clear delineation of forms of the authentic figure. This is particularly apparent in a comparison of the "soft" modeling of the face of the recently made ceramic with the angular facial features of the centuries-old image.

Thermoluminescence dating, which was conducted on samples taken from the underside of each sculpture, confirmed opinions about authenticity based on analysis of form and examination of surface. Thermoluminescence testing of the authentic figure (no. 21) provided a date within the fifteenth and sixteenth centuries (conservation report 1989.168), while testing of the copy (no. 22) provided a date within the last fifty years (conservation report 1989.170). T.C.



22
Jenne style
Mali, West Africa
female figure
20th century
ceramic
h. 11 in.
Gift of Mr. and Mrs. Harrison Eiteljorg
1989.170

28 (left)
Lower Niger River style replica
England, probably Birmingham
bell
probably late 19th—early 20th century
copper alloy, iron chain, lead clapper, pigment
h. 6 3/16 in.
Gift of Mr. and Mrs. Harrison Eiteljorg 1989.791

27 (right)
Lower Niger River region
Nigeria, West Africa
bell
19th century or earlier
copper alloy
h. 5 5/8 in.
Lent by Dr. and Mrs. Gregory Wells TR8305

Conical bells that depict human heads have been acquired from or attributed to various locations in the Lower Niger River region in southern Nigeria. Bells in the style of numbers 27-28 are sometimes identified as the Forcados style, since a number of them were unearthed in 1909 or earlier along the Forcados River in the Niger River Delta (Fagg 1968; no. 153). These cast bells made of copper alloy are laden with imagery, not all of which is fully understood. The prevalent ritual motif of snakes issuing from the nostrils is depicted in an abstract manner on both examples. These bells have been associated with the Edo of the Benin Kingdom, the Yoruba, the Igbo and other peoples (Peek 1980; Lorenz 1982).

The example on the right, with a green-gray oxidized surface, is a fine old example. Its suspension loop is missing. Its thin casting is consistent with a date before this century, when copper was scarce. The example on the left is a replica of an authentic but unidentified Lower Niger River region bell. It has a shiny surface with traces of blue oil-based paint. It belongs to a group of bells cast at an English foundry, perhaps in Birmingham, during the last decades of the nineteenth century or early this century. The replica, unlike the original, made by the lost-wax process, shows evidence of flashing on the underside from the two-part mold. This example has at least one letter (R) and numbers stamped on the lower back of the bell (no. 28, ill. A). Also, the replica (16.8 ounces; 479.7 grams) weighs more than twice as much as the thinly cast authentic bell (7.9 ounces; 225.5 grams). Replicas of this type may derive from one original model. Presumably they were made for sale or trade or as gifts in what is now southern Nigeria. Replicas have been documented in rituals among the Igbo (Nzimiro 1972: ill. 2). T.C.

no. 28, ill. A detail of stamp

Glossary

atomic absorption spectroscopy: The existence and relative amounts of different metals in an artifact may be determined using this technique. This analytical method involves the breaking down of molecules into separate atoms by vaporizing a sample. Each atomic element in the vapor absorbs radiation of a characteristic wavelength. This absorption of light allows for the identification of elements and their relative concentrations. This method of analysis is limited to about fifty elements, all metals. (Goffer 1980:51).

authentication: This is a process used to establish whether or not an art object is genuine. Judgments about authenticity are based on style, surface quality and technical analysis such as dating or material identification.

CAT (or CT) scan: A technique related to radiography, the CAT scan shows a cross-section of an object using x-radiation. Short for "computed axial tomography," the CAT scan moves along the length of an artifact making cross-sectional exposures. Data generated from these multiple "slices" of the object is stored in a computer. The computer recreates images of these slices that can be viewed on a monitor, manipulated and printed out. The imaging capabilities of the computer allow an object to be examined along different axes.

conservation: A multidisciplinary field, conservation encompasses the technical analysis of art objects, their preservation and repair, aesthetic compensation for damages, safe handling, shipping and exhibition. Trained art conservators usually have pursued a two- or three-year program of study to receive a master's degree in the field.

consolidation: This is a procedure used in art conservation to stabilize the surface of a damaged work of art. Consolidation usually involves the application of adhesives in a controlled manner, using a fine brush or syringe. For example, loose beadwork, flaking paint and crumbling patination all require consolidation to preserve them.

copy: A copy is an object which is created in the manner or style of an authentic artwork. Often art students create copies as exercises in a medium. A copy is not considered to be a forgery unless it is deliberately passed off as an original work of art.

fake: A fake is an unauthentic object that is presented as genuine. A fake may or may not be a forgery.

forgery: An object created in the style of an authentic work of art, and made with the intent to deceive others about its age, origin and/or value. A counterfeit.

infrared examination: Infrared inspection takes advantage of the fact that many paints, inks, dyes and other materials reflect and transmit infrared radiation differently from the way they reflect and transmit visible light. These differences can be recorded on film or viewed using an infrared reflectography video monitor, even though they are not normally visible. Damage, restoration, artist's changes, and hidden signatures on works of art are sometimes revealed using this technique.

microchemical testing: Microchemical analyses are tests performed on very small samples placed on a glass slide beneath a microscope. Tiny amounts of chemical reagents are introduced in order to chemically test for the presence of certain compounds or elements. Both inorganic and organic substances may be analyzed.

microscopic examination: Most examinations of art begin with a microscopic examination using either a hand-held lens or a binocular microscope with a much greater magnification (10x to 50x). Increasing the magnification greatly enhances the examiner's ability to note defects, restored areas, and subtle clues about the manufacture or construction of the object.

radiocarbon dating: Radiocarbon dating is based on the existence of carbon-14, a naturally occurring isotope of carbon. All living things assimilate carbon-14 in their tissues during their lifetimes. After plants and animals die, they no longer take in carbon-14. Over time, the amount of this isotope slowly decreases due to radioactive decay of the atoms. The rate of decay can be measured, allowing scientists to calculate the age of the sample. Organic, carbon-containing materials such as wood, textiles, ivory and leather may be dated if a large enough sample is available for testing. Usually a minimum of several grams of sample (golf ball-sized) are required for this test. Radiocarbon dating is limited in its range to objects older than 200 years and younger than 50,000 years (Goffer 1980:303). The major disadvantage of this technique is that it dates the organic material (therefore, when it died), not the artifact that was created from that material.

radiograph (x-ray picture): A radiograph is a photographic record of an x-ray exposure, preserved on a sheet of film. The material's composition and its density and thickness all determine the extent to which x-radiation penetrates (or is absorbed by) an object. The white portions of a radiograph represent areas of greatest density. Metals are very dense, while organic matter (fiber, cloth, wood) has low density.

radiography: Just as x-rays can be used on a living patient to determine physical condition, they can also be used to examine the structure or detect physical defects of artifacts. X-rays can penetrate materials such as wooden sculpture, ceramic, metal and stone. The differences in the density of the materials are recorded on sensitized film, resulting in a radiograph (x-ray picture).

repair: This is a conservation procedure used to stabilize the structure of an object. It may entail joining broken parts or strengthening weak areas.

replica: Usually a precise copy of an authentic work of art, the replica is often formed from a mold or cast taken directly from the original. A replica may be created for educational purposes or to sell.

restoration: This generally refers to cosmetic repairs, fills or paint that hide existing damage on an artifact. Restored objects are usually repaired to make the object look whole and unbroken, occasionally with the intent to deceive.

thermoluminescence dating or TL: Thermoluminescence dating is based on the principle that all materials on the earth's surface are being penetrated by naturally occurring radiation. When the radiation passes through mineral grains such as quartz or feldspar, a small amount of energy is stored in these crystals. This stored energy accumulates over time and can be measured in a scientific laboratory by heating the samples, which causes them to release their energy as visible light (Zimmerman 1978). Materials that can be dated using thermoluminescence analysis include ceramics (such as pottery, brick, and tile) and other fired materials, such as cast bronzes that have ceramic core material. This technique can date objects thousands of years old. A sample ranging in size from 15 mg to 1 gram (a pea-sized amount of powder) is required, and it is drilled from an interior area of the ceramic to avoid contamination with surface dirt.

ultraviolet illumination: Ultraviolet (or black light) illumination is a valuable examination technique for paintings, ceramics, wood, and other materials. When ultraviolet radiation strikes the surface of an artifact, its energy excites the molecules in some substances, causing them to fluoresce (or glow). Variations in color or intensity of the fluorescence is often helpful in differentiating old or original materials from newer ones. L.R.

Selected References

African Arts
1976 Authenticity in African Art issue 10(3).

Bedaux, R.M.A.
1988 "Tellem and Dogon Material Culture." *African Arts,* 21 (4): 38-45, 91.

Brain, Robert, and Pollock, Adam
1971 *Bangwa Funerary Sculpture*. Toronto: University of Toronto Press.

Buckwalter, Kenneth
1995 Personal communication.

Celenko, Theodore
1983 *A Treasury of African Art from the Harrison Eiteljorg Collection.* Bloomington: Indiana University Press.

Eyo, Ekpo
1981 "Headdress." In *For Spirits and Kings: African Art from the Paul and Ruth Tishman Collection.* Susan Vogel, ed. Cat. no. 98, p. 167. New York: Metropolitan Museum of Art.

Fagg, William
1968 *African Tribal Images: The Katherine White Reswick Collection.* Cleveland: Cleveland Museum of Art.

Frank, Barbara
1985 *Is This For Real? Problems of Authenticity in Art.* Bloomington: Indiana University Art Museum.

Goffer, Zvi
1980 *Archaeological Chemistry.* New York: John Wiley & Sons, Inc.

Goldwater, Robert
1960 *Bambara Sculpture from the Western Sudan.* New York: Museum of Primitive Art.

Jones, Mark, ed.
1990 *Fake? The Art of Deception.* Berkeley and Los Angeles: University of California Press.

Kamer, Henri
1974 "De l'authenticité des sculptures Africaines." *Arts d'Afrique Noire.*

Lamp, Frederick
1978 "Frogs into Princes: The Temne Rabai Initiation." *African Arts,* 11(2):38-49, 94-95.
1980 Personal communication.

Lorenz, Carol Ann
1983 "The Lower Niger Bronze Bells: Form, Iconography, and Function." In *The Art of Metal in Africa.* Marie-Thérèse Brincard, ed., 52-62.

McNaughton, Patrick R.
1979 *Secret Sculptures of Komo: Art and Power in Bamana (Bambara) Initiation Associations.* Working Papers in the Traditional Arts, no. 4. Philadelphia: Institute for the Study of Human Issues.

MacGaffey, Wyatt
1991 *Art and Healing of the Bakongo Commented by Themselves: Mikisi from the Laman Collection.* Stockholm: Folkens Museum - Etnografiska.

Mansfeld, Alfred
1908 *Urwald-Dokumente: Vier Jahre unter den Crossflussnegern Kameruns.* Berlin: Dietrich Reimer.

Maurer, Evan M.
1989 "Art and Imitation: Original Works and Forgeries of Tribal Art." *Antiques and Fine Art,* 7(1): 45-52.

Minneapolis Institute of Arts
1973 *Fakes and Forgeries.* Minneapolis: Minneapolis Institute of Arts.

Nicklin, Keith
1974 "Nigerian Skin-Covered Masks." *African Arts,* 7(3):8-15, 67-68, 92.
1979 "Skin-Covered Masks of Cameroon." *African Arts,* 12(2):54-59, 91.

Nzimiro, Ikenna
1972 *Studies in Ibo Political Systems.* Berkeley and Los Angeles: University of California Press.

Olderogge, Dimitry and Forman, Werner
1969 *The Art of Africa: Negro Art.* London: Paul Hamlyn Ltd.

Pearlstein, Ellen
1986 "Fatty Bloom on Wood Sculpture from Mali." *Studies in Conservation,* 31: 83-91.

Peek, Philip M.
1980 "Isoko Bronzes and the Lower Niger Bronze Industries." *African Arts,* 13(4): 60-66, 87-88.

Robertson, Clements L.
1967 "The Visual and Optical Examination of Works of Art." *Museum News Technical Supplement,* 20.

Sieber, Roy
1984 Fakes, Reproductions and Restorations in African Art. Lecture delivered 16 May 1984, Washington, D.C., Smithsonian Institution Libraries.

Sieber, Roy, and Celenko, Theodore
1977 "Rayons x et art Africain." *Arts d'Afrique Noire,* 21: 16-28.

Talbot, P. Amaury
1912 *In the Shadow of the Bush.* London: William Heinemann.
1926 *The Peoples of Southern Nigeria.* 4 vols. London: Oxford University Press. Reprinted, London: Frank Cass & Co. Ltd., 1969.

Zahan, Dominique
1974 *The Bambara.* Leiden: E.J. Brill.

Zimmerman, David W.
1978 "Thermoluminescence: A Dating and Authenticating Method for Art Objects." *Technology & Conservation,* Spring 1978: 32-37.

Zimmerman, Michael R.
1980 Personal communication.

Back cover:
15
Maya culture
Guatemala or Mexico
plate
600—900 A.D.
ceramic, slip
h. 15 ⅛"
Anonymous gift
1986.22

This ceramic plate, which had been broken into at least twenty fragments, was restored sometime before its acquisition by the museum in 1986. The restoration is on the left side. On the right side the restorer's paint has been cleaned away to expose the damaged condition of the object. What remains of the original ceramic and fired-on slip design has been revealed.

This is an example of a poor restoration. Many of the broken edges were misaligned when the fragments were glued together. To compensate for this, the restorer attempted to sand or file down the edges in several areas. As a result, some of the original design elements were destroyed. Excessive fill material along some cracks covers the original surface. The paint used to hide damage and make the object look more attractive extends into and over areas of the original design. The restorer splattered the surface of the plate with specks of grey and black paint to imitate burial deposits and make the surface appear uniformly aged. Finally, a clear varnish coating was applied over the entire front side (conservation report 1986.22).

An ethical and more appropriate approach to conserving the plate would include several steps. First, the restorer's varnish, paint, and fill material would be removed. The plate would then be disassembled using solvents, and old glue residues would be removed from along the edges of the pieces. The plate would be reassembled using a stable and reversible adhesive, and all broken fragments would be carefully aligned. Cracks and losses (missing elements) might be filled with a spackling material but no original surface would be hidden. The fills would be sanded and then toned to match original colors. In collaboration with the curator, the conservator might reconstruct areas where design elements were missing or abraded.

L.R.

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