



# CT Scan Study of a Nok "Philosopher"

By Marc Ghysels

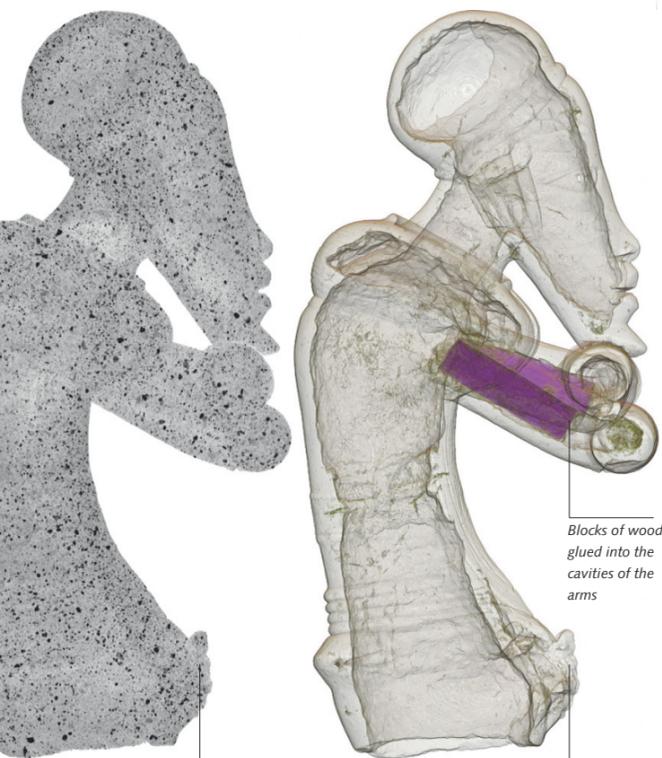
Of all the materials that can be examined by X-ray computed tomography (CT), terracotta is the one for which scanning yields the most information regarding the construction of an ancient object. Being of soft consistency at the outset, clay retains traces of whatever it came into contact with before firing. Given that it is relatively adhesive, fresh clay often incorporates dust or other adhesions of variable density, such as mineral particles or organic residues. The spatial distribution of these traces can allow the radiologist to follow the sequence of creative steps involved in the work's creation and possibly observe inconsistencies for which, in a field where fakes abound, plausible explanation needs to be found.

X-ray tomographic examination of this large archaeological terracotta in October of 2004 made it possible to observe a number of characteristics that tend to point toward the object's authenticity. On maximum-intensity 3D projections of the material the sculpture is made of, the object is observed to have a homogeneous structure, as suggested by the harmonious distribution of the mineral (including quartz, feldspar, and mica) and metallic inclusions clearly visible as dark grey and black dots (below left). Moreover, both static and dy-



Facial break

**"Philosopher" figure.**  
Nok, Nigeria.  
Terracotta. H: 70 cm.  
Private collection. Reproduced courtesy of Entwistle, London.  
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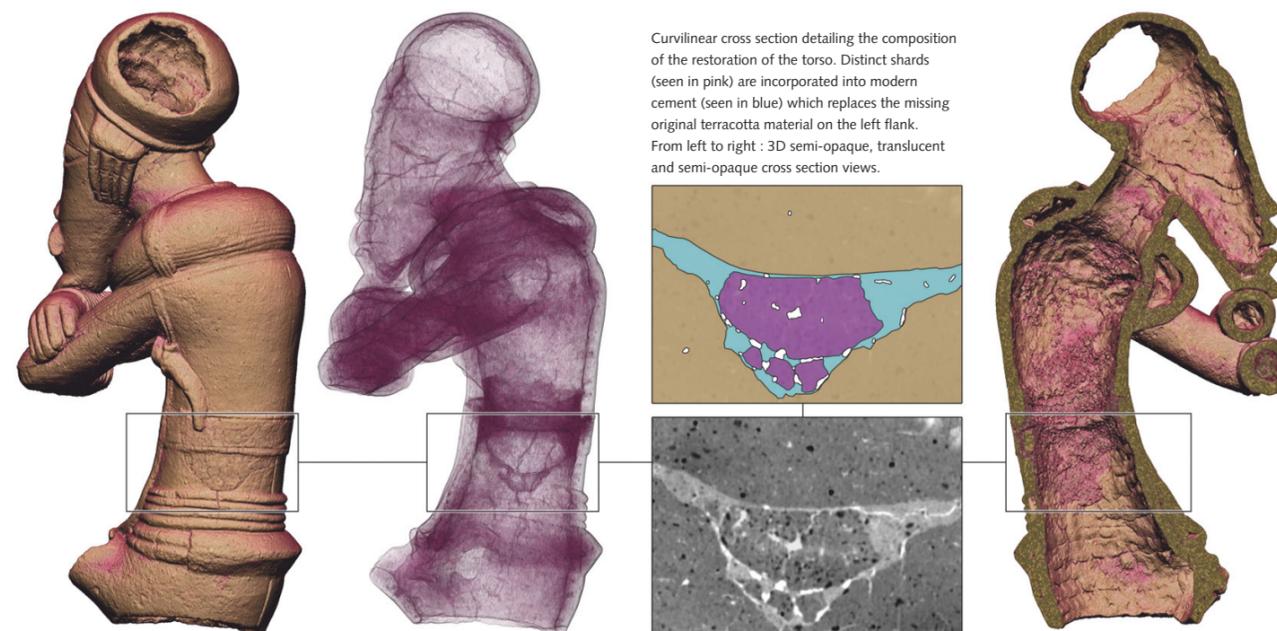


Small projections reveal the homogeneity of the clay

3D transparent

Blocks of wood glued into the cavities of the arms

3D translucent



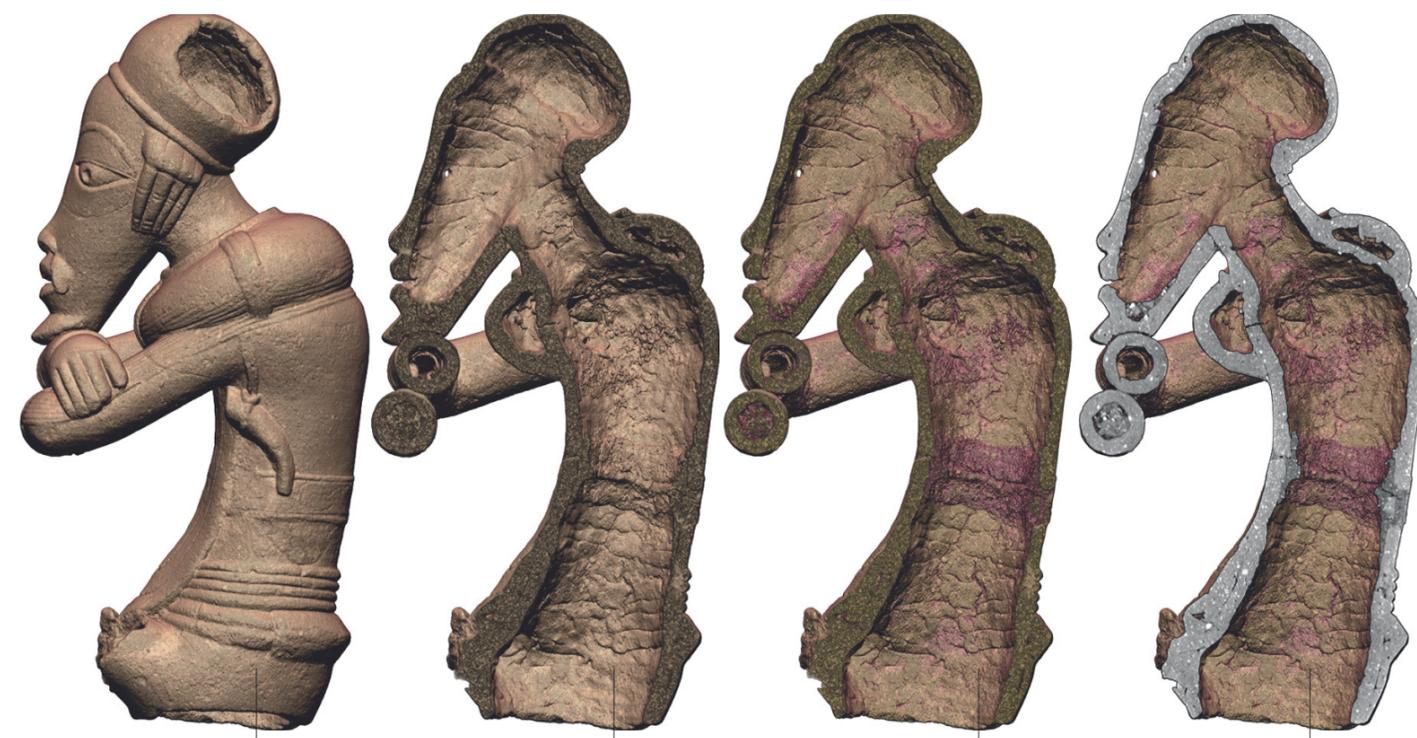
Curvilinear cross section detailing the composition of the restoration of the torso. Distinct shards (seen in pink) are incorporated into modern cement (seen in blue) which replaces the missing original terracotta material on the left flank. From left to right : 3D semi-opaque, translucent and semi-opaque cross section views.

amic study of the sculpture's internal and external surfaces reveal, in addition to normal firing flaws, the sculptor's fingerprints in the fresh clay and the form of the successive clay coils from which the sculpture was constructed (see opaque views below). The 3D semi-opaque and opaque views also reveal several breaks repaired by gluing. This includes one on the head, which runs across the figure's nose and cheekbones. The breaks in the hollow arms were repaired with the insertion of and gluing into their internal cavities small blocks of wood, which appear in purple in the transparent 3D view. The scanner also detects a significant horizontal crack in the middle of the figure's torso, which

was restored with a ring of "cement," with small areas of exogenous clay replacing the missing original material on the left flank.

Finally, although the hollow clay structure has been emptied of most of the sediment it likely once held, trace amounts are present in the internal cavities, most notably in the chin and arms.

These various observations allow us to conclude that this Nok sculpture is in an excellent state of preservation, despite its size. Our experience in the study of archaeological terracottas, and particularly of the rare large Nok pieces, indicates to us that this sculpture can be described as being in exceptionally good condition.



3D opaque view

3D opaque cross section

3D semi-opaque cross section

3D semi-opaque cross section with the corresponding 2D image superimposed