

April 6, 2005

Japan Association for the 2005 World Exposition

**The "First Face of Humanity":
Artifact Displayed at the Global House Beginning April 7**

The bones of what is believed to be mankind's oldest ancestor, *Sahelanthropus tchadensis*, which are 7 million years old, were unearthed in 2001 in the Republic of Chad in central Africa. The Mission Paléoanthropologique Franco-Tchadienne, led by Poitiers University Professor Michel Brune, announced in the April 7 issue of the scientific journal *Nature* that it had created a three-dimensional virtual reconstruction of the being's head using the latest technology. This has allowed people to see the "first face of humanity." In the local language, *Sahelanthropus* means "hope of life," and the find is known commonly as "Toumai."

Since March 25 the Global House at EXPO 2005 has hosted an exhibition on the origin of humanity centered on the Toumai find, and beginning April 7, the three-dimensional reconstruction that was announced in the recent edition of *Nature* will be revealed to the world for the first time. This re-creation of the face of this being from 7 million years ago is open to the public.

Up to now, the oldest skeletons that have been reassembled in complete form date back some 3 million years, such as the well-known "Lucy." Recently unearthed fossils dating back over 4 million years, though, have mainly consisted only of fragments like jaws and teeth, and a complete skull that would allow a reconstruction of the face had not been discovered. (An academic reconstruction would be difficult with only the fragments discovered.) Toumai, however, represents the oldest cranium among hominid fossils discovered to date, allowing scientists to know its shape almost exactly. This is groundbreaking research that will let us know the face of humanity's oldest ancestor.

When Toumai was found, it was discovered that the cranium had curved and cracked in the process of fossilization. (The skull was collapsed, as can be seen at the exhibition in the Global House.) Using CT scans, a three-dimensional model was created, revealing what the skull looked like before the shape was altered by time. (This is also part of the exhibition at the Global House.) Afterward, "flesh" was added through

the meticulous application of anatomical principles, and the reconstructed image was finally completed by computer while making use of a three-dimensional lithograph. Two independent methods were used to ensure the consistency of the reconstruction: one relying on geometry and the other on anatomy. Two teams, each composed of research specialists, completed each of the processes twice, proving beyond any doubt that Toumai was a hominid and not a simian.

In addition to an exhibition on the process of reconstructing Toumai, the Global House will display objects that provide the background for this 7 million-year-old fossil. The area around the virtual reconstruction will be divided into sections representing the diverse environment of the area in which Toumai lived, including water, savannah, grassland, and forest. On display will be fossils of 30 kinds of fish, as well as turtles, and a selection of mammals that includes the hippopotamus, giraffe, and apes. This ecosystem, which was the background behind the reconstructed image of Toumai on the cover of the recent issue of *Nature*, is believed to be similar to the actual environment in which Toumai lived and is similar to the Okavango Delta in present-day Botswana. Toumai lived in this diverse terrain some 7 million years ago and is believed to have walked on two legs.

The Djurab Desert in Chad contains no pyroclastic sediment, so the dating of artifacts discovered there cannot be done using argon or other radioactive isotopes. Instead, the age was ascertained by means of biochronological fauna, using fossils of many mammals from the same time period that had been unearthed in the surrounding area. Verification was also performed using such radioactive elements as uranium-235 and helium-12.

In addition to the announcement regarding the reconstruction of Toumai the recent edition of *Nature* featured a paper on eight other hominid fossils discovered in the Djurab Desert since 2001: four lower jaws and four separate teeth. It has been confirmed that this creature belongs to no previously known category, as it was bipedal, and the shapes of the teeth differ from those of the teeth of the humanoid fossils dating back more than 4 million years that have been discovered in Kenya and Ethiopia.

Articles in the April 7 edition of *Nature*

Michel Brunet et al. (2005)

"New material of the earliest hominid from the Upper Miocene of Chad"

Christoph Zollikofer et al. (2005)

"Virtual cranial reconstruction of *Sahelanthropus tchadensis*"

Captions

1. The virtual reconstruction of Toumai and the actual fossil on display at the Global House
2. The "first face of humanity" from 7 million years ago revealed to the world for the first time at the Global House
3. The "first face of humanity" from 7 million years ago revealed to the world for the first time at the Global House
4. The virtual reconstruction of Toumai and the fossils of mammals that lived in the surrounding environment of the time

Credits

Photos provided by Mission Paléoanthropologique Franco-Tchadienne.