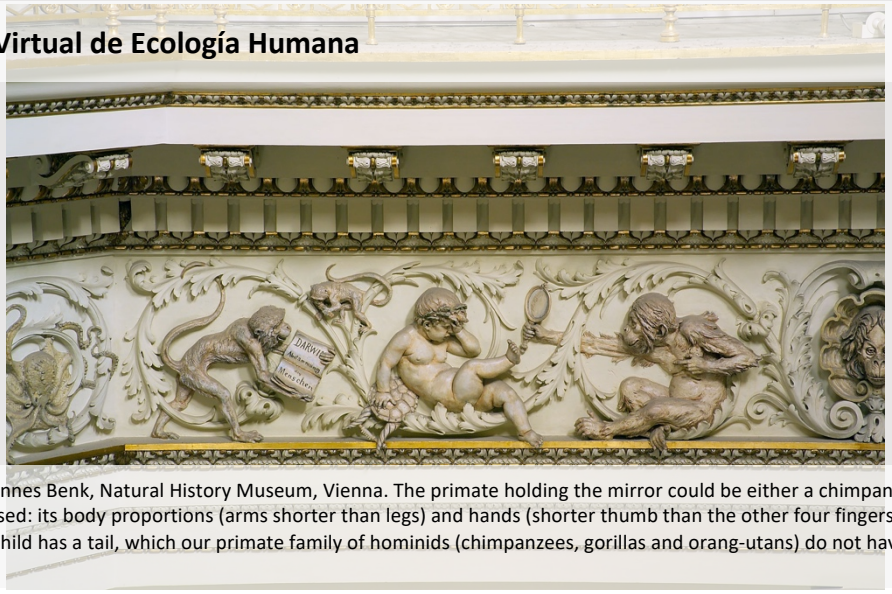

1898. «Darwin Frieze», Johannes Benk, Natural History Museum, Vienna. The primate holding the mirror could be either a chimpanzee or an orang-utan, but it is clearly anthropomorphised: its body proportions (arms shorter than legs) and hands (shorter thumb than the other four fingers) are clearly human. The one showing a book to the child has a tail, which our primate family of hominids (chimpanzees, gorillas and orang-utans) do not have. © Natural History Museum, Vienna

# Before the mirror: Darwin at the Natural History Museum, Vienna

The image which illustrates this work of the month, known as the «Darwin Frieze», comes from the Natural History Museum (NHM) in Vienna, to be precise from the cupola pressure ring, high above the entrance hall of the museum. The work, by Austrian sculptor Johannes Benk (1844-1914), is dated to 1898, the year the museum opened.

The NHM in Vienna now houses over 30 million pieces. Urged on by Francis Joseph I (1830-1916), the building work for the museum started in 1871. Management of the project was given to the geologist Ferdinand von Hochstetter (1829-1884), although he would not live to see it finished. As Hochstetter himself explained, the aim of the new museum was not only to build a prestigious institute for scientific research, but also an open institute for public education. The NHM in Vienna was designed as an «Integral Work of Art» («*Gesamtkunstwerk*»), in the building itself and its decorative elements –paintings and sculptures- would aid «Visual education» («*Anschauungsunterrich*t») for those who visited like a «*walk-in textbook of Nature*».

Hochstetter made the emerging disciplines of Palaeontology, Ethnography, Anthropology and Prehistory the guiding thread of the exhibition area, turning the MHN in Vienna into an explicit museum of Evolution. Unlike the referential museums of Natural History of the time –that of Oxford University or London- the one in Vienna does not include any artistic elements of a religious nature and integrates fossilised species with living ones. If you visit it today, you can appreciate how its exhibitive narrative connects –without any breaks- biological evolution with the origin of human cultural history in the Prehistory room, whose iconic work is the Willendorf Venus sculpted nearly 30,000 years ago.

Darwin died in 1882, a few years before the museum opened and Benk´s sculpture, which illustrates this work, is an explicit reference to him as a person and to his legacy. The frieze includes a primate holding a mirror before a

boy who is leaning on a tortoise, while the other primate shows him an open book, a book where you can read «*Darwin, Abstammung des Menschen*», the first part of the title in German of Darwin´s book, published in 1871, *The Descent of Man, and Selection in Relation to Sex*. The child averts his gaze and puts his palm on his forehead, ashamed to see his evident similarities with his primate relative who is trying to show this by showing the child his reflection in the mirror and pointing at itself, apparently smiling.

Although ironic, this composition is subtle as it includes references to Darwin´s research into recognising oneself reflected in a mirror with humans and non-human primates, even if we do not know whether Benk was aware of this interest.

In 1838, two years after returning to England after his round the world trip aboard *The Beagle*, Darwin showed interest in two baby orang-utans in captivity at London´s Zoological Gardens, a female and a male named, respectively, Jenny (Lady Jane) and Tommy. Darwin had never before seen members of our primate family (chimpanzees, gorillas and orang-utans) and was deeply impressed by their human appearance, as we can see from what he wrote in his notebooks and letters. He would take over 30 years to publish his work on the evolution of our species, but the observation he made about Jenny and Tommy were determinants of his idea that we, like all other living things, are the product of biological evolution: «Man in his arrogance thinks himself a great work, worthy the interposition of a deity. More humble and I believe true to consider him created from animals», he wrote that year in his notebook C (lines 196-197).

His relationship with Jenny and Tommy also gave Darwin his idea that the cognitive and behavioural differences between humans and the other primates are «of degree, not class», a notion he developed extensively in his work *On the Expression of the Emotions in Man and Animals*, published in 1872, one year after his *The Descent of Man.* In the work quoted above and in a later one published in 1877, «A biographical sketch of an infant» -a pioneering study of childhood development- Darwin compared the ability of orang-utans at London zoo to recognise themselves in a mirror to that of his own children, and recovered the notes he had made 40 years earlier with William Erasmus, his eldest son. Both his children and the orang-utans recognised themselves in the mirror, but while the former found it a fun experience, Jenny and Tommy «seemed almost frightened, started a little, became cross, and refused to look any longer», which is a curious inversion of that which appears on Benk´s frieze.

A hundred years later, in 1970, the psychologist George Gallup established the test to decide whether an animal is able to recognise itself in its reflection: the animal is put to sleep and a part of its body which it cannot see. Usually its face is marked; if, on waking up and seeing its reflection in the mirror the animal looks for the mark on its own body rather than in the mirror, this confirms that members of that species can recognize themselves.

Self-recognition appears in human children around year two, and this has also been documented for chimpanzees, orang-utans and, though not always, gorillas. It does not happen in other species of primate (including highly celebralised ones like some South American monkeys). Over the past two decades, research has been published which confirms self-recognition in birds (magpies, Clark´s nutcracker and pigeons), mammals (elephants, dolphins and orcas) some fish (manta rays and cleaner wrasses) and even ants. However, the list of species who fail Gallup´s test is longer than that of those who pass.

Darwin was interested in the ability to recognise one´s own image in a mirror as he associated it with cognitive qualities belonging to our species, to be precise, conscience itself. The list of species from such differing zoological groups which show self-recognition obscures the evolutionary significance it may have had for our species, but appears to be linked, as a common heritage with our closest primate relatives, to the ability to understand others: what is known as «social cognition hypothesis».

According to this hypothesis, self-recognition derived from the evolution of self-consciousness, which had appeared through natural selection due to its adaptive value. Our ability to understand our own selves would thus be closely connected to our ability to understand others. Indeed, self-recognition appears during our childhood at the same time as other socio-communicative and cooperative skills, which are the basis for our great sociability, in turn the basis for the survival of the human linage.

**Carlos Varea**, physical anthropologist, is member of the Biology Department at the Universidad Autónoma de Madrid (Spain), president of the Association for the Study of Human Ecology and co-director of the Virtual Museum of Human Ecology.

**Further reading**

Darwin, C. 1877. A biographical sketch of an infant. *A Quarterly Review of Psychology and Philosophy* 2(7). 285-294.

Darwin C. 1873.*The expression of the emotions in man and animals*. London: John Murray. 1st edition. (The reference to the behaviour of the orang-utans before a mirror at London Zoo is from this work, p.142.)