

PRESENTING HUMAN EVOLUTION TO THE PUBLIC: THE SMITHSONIAN'S HALL OF HUMAN ORIGINS

by Rick Potts



At twelve o'clock noon, on March 17, 1910, the Smithsonian's newly built National Museum of Natural History opened its doors to the public for the first time. Exactly one hundred years later the museum chose to celebrate this auspicious occasion with the opening of the long-awaited exhibition, *The David H. Koch Hall of Human Origins*. This major exhibition opened at exactly noon on March 17, 2010 to hundreds of visitors eager to see the widely publicized human origins hall.

The exhibition presents nearly 300 objects, including original fossils and artifacts, along with exact replicas of fragile and unique specimens that must be kept and protected in the countries where they were found. The main purpose of the *Hall of Human Origins* is to show the evidence of humanity's evolution over time; how the development of human features helps us understand who we are as a species today; and why knowing about this process is important. Not just based on Smithsonian research, the exhibit is an international effort built on Smithsonian partnerships with more than 60 research institutions and more than 100 scientists and educators from around the world.

What Does It Mean To Be Human?

The exhibition and its companion website offers the public an opportunity to explore the scientific finds that shed light on one of the significant sparks to human curiosity – our own origins. The primary theme of the exhibition is not an answer, but rather a question: *What Does it Mean to be Human?* This central question goes to the heart of human curiosity: *who* are we as human beings, *how* did we get here, and *where* are we going? By choosing a question for our exhibition theme, the goal is to invite each museum visitor to explore the scientific discoveries about human origins and to connect their lives and personal perspectives to the evidence of how our species evolved.

In the central area of the L-shaped exhibition, visitors are invited to type in their answers to this central question 'What does it mean to be human?' Their responses, which are posted on our web site, www.HumanOrigins.si.edu, help inform us of the immense diversity of thoughts our museum and web visitors have as they encounter the evidence of human evolution. Answers to this question are informed by many perspectives drawn from philosophy, religion, the arts, the sciences, and every-day life experiences.

The Story Unfolds

Fossils and archeological finds highlighted both in the exhibition and website reflect, for example, the roots of walking upright, transitions in technology, enlargement of the brain, changes in the face and the body, and the diversity of species that are part of our evolutionary tree as reflected in our biological ancestors and nearest relatives that



Exhibit hall photos, courtesy Chip Clark and Human Origins Program.

science has so far uncovered. The hall's interactive displays take our visitors back through time to see how these early predecessors lived, the survival challenges they faced, and the elements of humanness they had accumulated at certain points in time.

Every fossil has a story to tell because each one was once part of a living, breathing individual whose species had evolved some combination of the features that define human beings today. As a baseline, each of these species walked upright and had small eye teeth (canine teeth). Bipedality and small canines define all members of our family tree back to at least 6 million years ago. The earliest of these species walked upright and had long, powerful arms—a union of features that persisted for about 4 million years and enabled these oldest ancestors and evolutionary cousins to walk on the ground *and* climb trees to find food and safety.

Later species abandoned their expertise in the trees as they developed stone toolmaking skills and somewhat enlarged brains. Still later species, like *Homo heidelbergensis*, were the first we know of to build hearths and shelters, and to hunt using wooden spears. Later in time, the Neanderthals (*Homo neanderthalensis*) were very clever at making tools and using local food and stone resources; they even buried their dead on occasion and created symbolic artifacts of unknown meaning to us today. However, all of these species, including many side branches, are no longer around; their ways of life now extinct, they leave our own species, *Homo sapiens*, as the last survivor of a once diverse evolutionary tree.

In 1910, the scientific record of human origins consisted of a few dozen fossils, mostly the bones of the famed Neanderthals of Europe. Nearly all of the fossils, archeological remains, and genetic findings that a natural history museum can offer on this subject have been found over the past century. Now, in 2010, the science of human origins is informed by more than 6,000 fossil individuals, ranging from isolated teeth to well-preserved skeletons, spread out over the past 6 million years. These fossils along with hundreds of thousands of archeological remains, which echo the ways of life of early human species, offer a remarkable record of the accumulation of features that make the human species unique.

Milestones in Becoming Human

Humans evolved over millions of years in response to a changing world. The 6 million years of human evolution have comprised one of the most dramatic eras of environmental change in Earth's history, with large swings between warm and cold, and between wet and dry. The *Hall of Human Origins* is the first exhibition on human evolution to explore the drama of climate change and the survival challenges it presented to our early ancestors. These challenges set the stage for the changes – the adaptations – that evolved over time.

The exhibition is organized around a series of displays that present the key milestones in human evolution. In one area, adults and children alike enjoy stepping in an exact reproduction of the oldest known bipedal footprints, 3.6 million years old, made by the species *Australopithecus afarensis*



(the most famous fossil of which is known as Lucy). Another area shows that, by about 2 million years ago, our ancestors began to delay eating their food, carrying it to places where meat could be butchered and bones with nutritious marrow could be smashed open. Later in time, between 800,000 and 400,000 years ago, there is ample evidence of hearths where food was cooked and of well-made shelters indicating that our ancestors made campsites. Still later, by about 130,000 years ago, early groups of our own species exchanged stone materials across vast distances of more than 100 km. This evidence shows the beginning of social networks that stretched across those ancient landscapes. They didn't have Twitter or Facebook, that's for sure—but they kept track of one another from afar, and they knew who had what to offer!

The exhibition is filled with intriguing highlights along the milestone trail. The fastest pace of brain enlargement began around 800,000 years ago, and led to the evolution by about 200,000 years ago of the two largest-brained species, the Neanderthals and ourselves. By this time, children took a long time to grow up, since large brains take many years to mature. Adults were faced with significant demands to find nutritious food to feed the brain of each child as he or she grew. Challenges, of course, still echo prominently in our lives today and can be traced to the evolution of the big human brain over hundreds of thousands of years and the prolonged growth of the brain in every living person.

The exhibition also explores the oldest stone technologies, which remained largely unchanged for more than a million years. The exhibition shows how the long-lived handaxe tradition eventually gave way to smaller and more innovative technologies: for example, projectile points by 100,000 years ago, used to catch fast and dangerous prey; and sewing needles by about 25,000 years ago, enabling early members of our species to make snug-fitting clothing. Clothing made the difference between life and death as populations moved into ice-age habitats.

Among the most interesting of human capabilities is our use of symbolic language. The oldest clues concerning complex symbols are pieces of pigment—faceted sticks and lumps of ochre (yellowish, redish, brownish in color) and limonite (yellowish-brown color), essentially the world's oldest crayons, dated to 250,000 years old. The use of color to mark objects, or perhaps even the body to create a sense of personal or group identity, is the best evidence we have for when language, the most complex of our symbolic abilities, first emerged.

As visitors explore the Hall and website, there are ample opportunities to learn about our own species, *Homo sapiens*, which evolved around 200,000 years ago. By about 17,000 years ago, all species of early humans except our own had become extinct. Despite our prevalence today, even our species had its endangered moments. Between 90,000 and 70,000 years ago, as African environments oscillated between drought and moist times, the population that gave rise to almost all of the genetic diversity among the world's



peoples today had dwindled dramatically to somewhere between 10,000 and 600 reproducing adults. We almost became extinct. However, by that time, *Homo sapiens* had developed a certain resilience in the face of millions of years of survival challenges.

By about 12,000 years ago, pockets of people in several regions began domesticating some plants and animals. These activities ultimately gave rise to the agriculture on which modern societies depend. The exhibition provides an opportunity to contemplate the enormous pace of population growth since that time, our deep influence on the planet, and how our species became a turning point in the history of life. Among the Hall's many interactive displays, one of the most intriguing is a game called 'Keep Your Species Alive,' in which the players imagine the significance of key decisions for the future.

Reflections

As the curator of the *Hall of Human Origins*, I began to develop an environmental approach to the exhibition soon after arriving at the Smithsonian in 1985. Twenty-five years ago, it was a difficult decision to leave Yale University, where

I was a young assistant professor, working in a setting with great potential for developing my research career. Eventually, I saw the move to the U.S. National Museum as a special opportunity not only to lead digs and expeditions but also to make sure that the profound questions of human origins and the scientific finds that illuminate these questions would not be confined to a university classroom. My transition to the Smithsonian meant an opportunity to bring research discoveries on human evolution to the widest public audience.

It did not happen all at once, though. In fact, it took nearly 20 years to assemble the best combination of people. John Gurche, to name just one early member of our team, is the foremost artist-anatomist in the lifelike reconstruction of early human species. John is responsible for the astonishing reconstructions of the heads and statues of several early human species that are featured in the Hall.

The 20 years also gave me time to explore new scientific avenues, which ultimately shaped the exhibition. After several years of digging in the Great Rift Valley of southern Kenya, at the stone handaxe site of Olorgesailie, I realized that what I thought we knew about the ancient setting of human evolution—long assumed to have been the African savanna grassland—was by no means a single, consistent environment. The geological clues indicated, instead, that the climate kept changing.

As I delved into the environmental sciences, the more I realized that rather than any one environment or trend, the continual shifting of the landscapes where early humans lived characterized the period of human evolution. This was a story worth telling—and a huge area of scientific investigation that had not yet been presented in a public exhibition.

By 2005, it became one of the museum's top priorities to present this environmental theme along with the vast number of fossils found over the previous two decades. By January 2007, our exhibition core team began to meet, and a three-year period for developing the entire Hall was placed on a fast track to develop all its interactive displays, the many objects for people to see, and the state-of-the-art reconstructions of our early ancestors.



Back to the Beginning

On the evening of March 17, the Smithsonian hosted a gala dinner to commemorate the opening of the *Hall of Human Origins* and our museum's Centennial. The dinner honored Mr. David Koch and Dr. Peter Buck, the exhibition's two principal benefactors. Meave and Richard Leakey among other notable scientists attended, as did members of Congress, the Smithsonian leadership, key members of our exhibition team, and many other fascinating people.

I had dreamed of this exhibit off and on for 25 years and then almost miraculously I had the opportunity to work on it nearly every day with incredibly talented exhibit designers, writers, tech experts, educators, and fellow scientists. I had not thought much about the final day actually arriving. Still, as the long-awaited day unfolded, I could not help think that it was passing way too quickly!

In many conversations that evening, I kept mentioning the exhibition tours we were to give in the coming days, the lecture series that would start in a couple of weeks, and the network of educators and scientists eager to help bring the exhibition's ideas and messages to the American and international public. Gradually, it dawned on me that the opening of the Hall was not the end of the road, but the start of an ongoing endeavor of great responsibility.

I am eager to return to the field and continue our digs in Kenya, China, and other countries. But now there is more to it than that. Our Smithsonian team can hardly wait for new discoveries by researchers all over the world that will make the updates to our exhibition, additions to our new website, and our educational events for the public exciting possibilities for the future. As with science itself, where each new significant discovery leads to new ideas and explorations, I now see that our efforts to present the science of human origins to the public will lead to new ways of making the science as exciting and as relevant to as many people as possible.

The opening of the exhibition has become in retrospect the signal of a terrific beginning. If there is any answer the exhibition gives to the question 'What does it mean to be human?' it is that 'being human' has been, in part, a matter



Rick Potts in his Smithsonian office.

of 'becoming human'—a wondrous process of change over time, an ancestry that connects all people to one another and our species to every form of life on planet Earth. Every day this hall and its rich website will continue to help people explore and learn about this amazing scientific quest.

For further information about the exhibit and the Smithsonian's Human Origins Program, consult its companion publication and website:

Potts, Richard and Christopher Sloan. 2010. *What Does It Mean to be Human?* National Geographic.

Human Origins Website: <http://humanorigins.si.edu/>

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