What is it that makes us human? That gives us the ability to reflect on the past and ponder the future? Who we are as a species and where we came from make up the basis of a fantastic story, spanning more than 4 million years.

I’m Don Johanson, and I’m one of the many researchers dedicated to discovering and interpreting the evidence for human origins. Evidence that provides the framework for the human story. It’s a story that begins in Africa, where our ancestors first stood up. Over millions of years they continued to evolve and eventually spread out across the globe. Some species adapted to the changing world while others went extinct. Today only a single species of humans survives. That species flourished because they developed a culture, a culture more complex than has ever been seen before. This is their story, this is our story.
Hadar Ethiopia is a place of pilgrimage for those of us who study human origins. It is located in the northern Afar region of the country and can be inhospitable at times when temperatures reach 125 degrees. My first trip to Hadar in 1972 was a short exploratory trip but I was there long enough to realize that I was going to do field work. Hadar had the right kind of geology and was very, very rich in animal fossils dating to about 3 million years and I thought to myself that if we could find hominid fossils this and deposits this old we might just open up a new chapter in human evolution.

In 1973 I made my first fossil hominid discovery; a knee joint. The specimen came from a geological stratum dated to nearly 3.4 million years. Detail study of the functional anatomy of the knee showed beyond a shadow of a doubt that it was a creature that walked upright - a hominid. Then in 1974 we returned to Hadar and in late November, near the end of the field season, I made a discovery that firmly placed Hadar on the map as one of the most significant hominoid fossil sites in the world.
Not spoken but appearing as a title on the screen:

Lucy

Voice of Donald C. Johanson

I remember very clearly, it was about noon and I had been surveying since just after breakfast. The temperature was approaching 110 degrees. I hadn’t found much except a few teeth of a horse, part of a skull of an extinct pig, some antelope molars and a bit of a monkey jaw but as I turned to leave a fossil caught my eye, and I kneeled down for a closer look. It was in fact part of an elbow. As I looked further I saw another bone and then another. It was truly unbelievable. What I found was a partial skeleton eroding from the ancient Hadar sediments. I knew immediately it was a hominid. A very old one and astonishingly complete. That night in camp we examined the fossils and in the background the Beatles song; “Lucy in the sky with diamonds” played over and over on a small tape recorder. Because of the petite stature of the skeleton I suspected right from the start that it was a female. At some point during the evening the new fossil picked up the nickname Lucy. And she’s been known as Lucy ever since.

Her discovery did indeed open up a major new window in the study of human origins. Until the discovery of Lucy there were few hominid discoveries dating back to more than 3 million years. So Lucy at 3.2 million years now offered many new insights to our ancestral past. Because of her unique anatomy we dubbed her and the other Hadar fossils a new species; Australopithecus afarensis. Australopithecus means “southern ape” and afarensis celebrates the Afar people in the region where Lucy was discovered. In terms of her relationship to other hominid species, we suggested that afarensis was the last common ancestor to all later branches to human evolution.

Although today more complete skeletons and older fossils have been found, Lucy remains the benchmark by which all other human ancestors’ fossil discoveries are judged. She was the ape that stood up and as it turned out the woman who shook up man’s family tree all rolled into one spectacular find.

In many ways she led the research in Ethiopia. She provided the catalyst for other expeditions which continue to uncover an ever increasing number of important hominid fossil finds, assuring Ethiopia’s critical role in understanding human origins. It seems that no matter what we find, Lucy continues to be an extraordinarily important discovery in human evolutionary studies.
Transcript
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Not spoken but appearing as a title on the screen:
Reconstructing Environments

Voice of Donald C. Johanson
Kaye Reed is a researcher at the Institute of Human Origins and a professor in the Department of Anthropology at the Arizona State University. As a paleoecologist, Reed attempts to reconstruct the environment in which our ancestors lived.

Voice of Kaye Reed
Hadar today is a very barren, dusty place. There is very little rain fall. Three million years ago we know that there were lots and lots of browsing animals which means there were lots and lots of trees. These trees probably extended from the ancient Awash River for miles. You could see fruit trees, dates and figs and things for monkeys to eat and more importantly, things for the hominids to eat.

Voice of Don Johanson
Reed works with the local Afar people and collects the remains of many animal fossil found in association with the hominids. The Afars are the guides and the guards and without them the work at Hadar would be impossible.

Voice of Kaye Reed
We work with the local Afar people to show them what kind of fossils we are looking for and we do this by taking fossils that we found previously and showing them, for example, a carnivore tooth; its long an narrow and it slices meat. We show a lot of different fossils this way, so that when we are out looking for fossils that they know when they find something important, that they can call and say “This is a cat” or “This is “ or whatever they find.

Voice of Don Johanson
Every fossil we find contains valuable information and knowing what process affects the preservation of bones between the time of death and the moment of discovery millions of years later, provides valuable insights into the world of our ancestors.

Voice of Kaye Reed
We do a lot of what’s called “taphonomy” which is the study of laws of burial or how animals got into the deposits in the first place. In an average fossil assemblage, bones accumulate over a long period of time, sometimes thousands of years. Specific marks on bones and environmental exposure like weathering or rolling in water provide clues into what might have happened.
Many of the fossils found at Hadar show different signs of trauma. Carnivores have chewed many of the bones collected here and they have also chewed many of the hominid bones. And the fossil record indicates saber tooth cats, hyenas and lions were found at Hadar. Now Lucy didn’t have big canines like a baboon and she didn’t have stone tools or fire for protection. You have to remember that Lucy stood 4 feet tall and was a biped so she probably didn’t have much defense against the power of these huge carnivores. I think the fact that Lucy had fairly long arms was a benefit that allowed her to climb a tree and get away from these predators. If our early ancestors were sitting on the ground and they saw a hyena loping towards them, and didn’t have a tree to climb, they surely would not have survived.

*Voice of Don Johanson*

There seems to be magic in the fossilized bones of our ancestors that transcend time. And specimens like Lucy become touch stones for discussing human origins.
In 1871, naturalist Charles Darwin, working without the benefit of the fossil record or modern genetic research, proposed that humans and African apes must have shared a common ancestor. Today, thanks to a variety of anatomical and molecular studies we know that our closest living relative is the African chimpanzee. Incredibly, our two species share about 98% of the same genes but this close relationship doesn’t mean we evolved from chimpanzees nor does it mean that chimpanzees will evolve into humans but what it does mean is that millions of years in the past we shared a common ancestor. As we journey back in time, our ancestors begin to look less like us and more and more ape like. The fossil record gives important clues about where we come from. Eight million years ago, a period known as the Miocene a major portion of the continent was covered in lush forests. A great diversity of apes thrived in these forests, feeding sleeping and easily navigating this world above ground. Evolutionary adaptation in their anatomy such as grasping toes and joint mobility and arms and shoulders made the apes extremely successful animals in the arboreal environment. But beginning about 6 million years ago the world became a much drier and colder place. The African forests, home to the Miocene apes started to thin and were gradually replaced by open woodlands. Although most of the ape species went extinct, in time a few started to adapt to the new environment. One species that survived was a common ancestor of the African apes and humans.
Three and a half million years ago at the beginning of the rainy season in what is now Tanzania, a volcano we know as Saddaman erupted. The eruption covered the surrounding landscape with an ash that was fine and gritty much like beach sand, and then it rained. The moistened ash of Saddaman became a type of natural cement recording the tracks of many animal species who walked across it that day: monkeys, rhinos, giraffes, and incredibly, two of our own ancestors, hominids. They were probably from Lucy’s species, *Australopithecus afarensis*. Unearthed in 1978 by Mary Leakey and her excavation team, the Laetoli foot prints are unique and dramatic evidence for one of the defining characters of being a hominid - bipedalism. Walking upright requires a unique set of anatomically correct features and one of the obvious features is the human foot. Unlike chimps who have a divergent big toe used for grasping, the human big toe is aligned with the other toes and helps to propel the body forward. The human condition is clearly preserved in the Latolii foot prints. To better understand the origins of upright walking we need to look even deeper into our ancestral past. Nina Jablonski at the California Academy of Sciences is a paleoanthropologist who studies bipedalism.

When you watch chimpanzees or gorillas interact with one another, they occasionally make bipedal displays in front of one another. Usually they do this when there is some kind of competition for resources among them. As soon as animals begin to be more bipedal there are so many other things that they can then do with their forelimbs’ and hands. This is exactly how we think bipedalism evolved. And so a whole host of positive feedback mechanisms the use of hands in feeding, in caring and playing in gesture. All of these things would feed into the system and propel bipedalism into a firm and anatomical adaptation.

Recent hominid fossil discoveries in Kenya by paleoanthropologist Maeve Leakey at the site of Kanapoi mear Lake Turka, have provided even older evidence of bipedalism. Roughly a million years older than Lucy *Australopithecus amenensis* was even more ape like. However the anatomy of the shin bone indicated an upright posture and gait. So, bipedalism was the initial feature that set us apart from the apes but it was not until much later that evolutionary changes that would set our own genus *Homo* apart from the Australopithecines.
Transcript
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*Not spoken but appearing as a title on the screen:*
Turkana Boy

Voice of Don Johansson
The hominid fossil record between two and three million years is frustratingly sparse yet by roughly two million years ago fossils assigned to *Homo* make an appearance. However, today there is very little agreement as to how many species of *Homo* actually existed. By about 1.8 million years ago we encounter a hominid, *Homo erectus*, that stands in contrast to all earlier ancestors. The skeletons to this species were larger and built more like our own and most importantly their brains were significantly larger. Alan Walker teaches Anthropology at Penn State University and conducts field research in Kenya.

Voice of Alan Walker
The brain size, - body size is interesting because the large brain is one of the hallmarks of ourselves. It turns out the easiest way to get a big brain is to get a big body. Brain size and body size are a intricately linked and it is a complicated linkage.

Voice of Don Johanson
In 1984, in Lake Turkana in northern Kenya Allen Walker and Richard Leekey uncovered the most complete fossil skeleton of *homo erectus* ever found. Dated roughly at almost one and a half million years, this is the skeleton of a young male, probably about 9 years-old. Nicknamed the Turkana Boy he stood about five feet four inches but as an adult he would have been at least six feet tall.

Voice of Alan Walker
Homo erectus not only had big brains they had big bodies and the stuff they left on the archeological sites shows us that they were eating animals. We suspect they were catching them too. There are consequences to becoming a carnivore. Carnivores eat meat and meat is meat where ever it is found. Were as herbivores eat plants and individual herbivores species are matched in their plant community. Carnivores aren’t like that. Carnivores have huge home ranges so *Homo erectus* is pushing its own range further and further away from the ancestral home range by little territorial increments. And the pressure that pushes it is number of *Homo erectus* that are still there in the ancestral homeland. This is not a migration in the sense that song birds might migrate south in the winter this is a dispersal of a species.

Voice of Don Johanson
About a million and a half years ago, *Homo erectus* left Africa and began to populate the rest of the globe. In a sense, *Homo erectus* was the evolutionary parent of our own species. They carried with them not only advances and cultures but indelible assets began with our earliest ancestors. With a bold confident stride, *Homo erectus* crossed the threshold into a new world.
Voice of Don Johanson

In August, 1856, workman digging in a limestone cave, called Feldhofer in Germany’s Neander Valley, discovered the fossil remains of an unknown creature. At first they thought the bones were those of an ancient cave bear but a local naturalist defined them as human. The Felldhofer cave yielded an impressive selection; the skull cap, bones from both arms, part of the pelvis and fragments of the shoulder blades and ribs. Some of the bones look strikingly different from those of modern humans. The arm bones were heavily built and large brow ridges protruded above the eye socket on the skull cap. Geologist William King recognized the distinct anatomy of the specimen from the skull cap. Even without facial bones he decided that these fossils fell outside the range of modern humans. In 1864, King named this species, Homo neanderthalensis. When you say the word Neanderthal, people automatically picture a brutish cave man shuffling around with his knees bent holding a club. Yet it would be wrong to think of the Neanderthals as a primitive, less evolved version of modern humans. For over 200,000 years, they were a well adapted, successful species in their own right. They probably evolved in the cold, periglacial climate in Europe which would remain the center of their range thanks to barriers of geology and climate. During the 20th century dozens of sites across Europe and western Asia have yielded hundreds of Neanderthal fossils. The relative isolation in this region allowed the Neanderthals to evolve a unique set of behaviors and anatomy that sets them distinctly apart from modern humans.
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Not spoken but appearing as a title on the screen:
Lineages

Voice of Don Johanson
Ever since the discovery of the first Neanderthals, anthropologists have wrestled with might have seemed a simple question; Were they one of our direct ancestors or were they a side branch that went extinct without contributing any of their genes to modern humans? Paleoanthropologist Ian Tattersall, of the American Museum of Natural History, feels strongly that the fossil bones give us the answer to that question.

Voice of Ian Tattersall
Neanderthals are distinctly different from modern humans particularly in the structure of the face and in the structure of the brain case. The Neanderthal skull was long and low instead of being high and short, the way the skull of the Homo sapiens is. Homo sapiens have a little face that is tucked underneath the front of the skull. The Neanderthals have a big face that protruded in front of the skull. All through the body skeleton there are distinctions between them and us. We are a closely related species but very different species.

Voice of Don Johanson
Cathy Willermet a PhD candidate in the department of Anthropology at Arizona State University is researching Neanderthals and has a different idea of their status.

Voice of Cathy Willermet
No one is suggesting the Neanderthals evolved into modern humans, what we are suggesting is that Neanderthals were an ancient population that blended with early modern humans moving into the area and over time the population of Neanderthals as a distinct population went extinct although Neanderthal genes have continued on and may be with us today. At the very center of the Neanderthal range is a site called Vendiha in Croatia. At this site we see several Neanderthal occupation levels spanning thousands of years. In the early Neanderthal levels the fossil evidence shows your typical classic Neanderthal features. Then in the later levels we find something very interesting; the Neanderthals are showing facial features that look very much like early modern humans and this suggests to me that they were interbreeding with early modern humans.
Not spoken but appearing as a title on the screen:
Extinction

Voice of Ian Tattersal
The Neanderthals had been very, very successful, throughout Europe and Western Asia, for a couple of hundred thousand years and then they suddenly disappeared and it is very difficult to imagine that the Neanderthal went extinct for any other reason than that *Homo sapiens* came on the scene. Exactly what happened? I don’t know. It is possible that there was direct conflict and that *Homo sapiens* triumphed in an ecological, in an economic kind of conflict but either one way or another, *Homo sapiens* arrived and the Neanderthals departed and surely a causal relationship between these two things.

Voice of Cathy Willermet
There is no evidence of actual conflict between Neanderthals and an Early Moderns. The superior modern technology like bows and arrows and spear throwers don’t show up until much later. Neanderthals were successful for a very, very long time. Their behavior is very similar to ours in terms of they buried their dead, they had fire, complex tools, shelter, clothing. Whether they are a different species from us or their genes are still around today, the fact is they a very compelling, interesting group of people. We want to know what happened to them.

Voice of Don Johanson
If Neanderthals were a separate species that did not interbreed with modern humans, they should have distinctly different DNA sequences. Anthropological genetics is in its infancy but DNA sequences have been reported from four Neanderthal skeletons. In each instance Neanderthal DNA is distinct from that of modern humans, prompting some scientists to conclude that Neanderthal went extinct without contributing to the modern human genome.
Transcript
Becominghuman.org – The Documentary

Last section of the documentary: **Culture**

_Not spoken but appearing as a title on the screen:_
**Koonalda**

_Voice of Don Johnson_
Stretching the length of the central coast of southern Australia is a desolate region known as the Nullabor Plain. Today this land is flat and treeless and it is largely lacking in visible signs of water. This is the last place you would expect to find early evidence of human activity yet this place is sacred to the Australian aboriginals, whose people have lived here continuously for the last forty thousand years. This entire region is full of connected caves that were formed by acidic water percolating through the lime-stone. Sinking 200 feet below the parched and dusty landscape, Koonalda is one such cave that was once used by our ancient ancestors. Over time the cave became a place for personal expression. In this smaller, darkened room every inch of the soft limestone walls within reach of human hands has been finger incised into a meandering series of swirling lines. These first human impressions have been dated to about twenty four thousand years making them older than almost all the fabled cave art found in Europe. These engravings are simple yet they represent a profound change in the way our ancestors viewed the world. They mark the birth of their ability to understand abstract concepts both about their world and about themselves. This was the dawn of consciousness.

_Not spoken but appearing as a title on the screen:_
**Arnhem Land**

_Voice of Don Johnson_
In another remote corner of Australia called Arnhem Land researchers are documenting later examples of prehistoric art. Peggy Grove is a Cultural Historian and a specialist in Australian rock art.

_Voice of Peggy Grove_
Arnhem Land is a land of huge stone escarpments. And by that I mean by that is that there are stones piled on top of each other and these giant ridge lines, and the water pours down through them in the wet season and it bakes them in the dry season. But they make perfect canvases for the aboriginal artist to paint on.
Voice of Don Johanson
Since many of the sites of considered sacred, Grove and her colleagues cannot use traditional dating methods that might damage the art. Instead, they use changes in artistic style in the environment over the last fifty thousand years to date the art.

Voice of Peggy Grove
Unlike European rock art, where most of the images tend to be animals, in Arnhem, at least 90% or more of the figures tend to be the of the human female and I think that this is environmentally predicated because it’s an area that is very fertile and there is an immense amount of plant life so therefore the image that was chosen to be portrayed on the walls tended to be that of the female.

Voice of Don Johanson
While the cultures that produced European cave art ended 20,000 years ago, in Australia the stories never stopped. Even today, aboriginal people still learn about their ancestors and hone their artistic skills by interacting with the rock art of former generations. This is a living cultural record, one that stretches from the distance ancestral past right up to the modern era.

Voice of Peggy Grove
There are sites where there are hand prints juxtaposed with steamships, with images of ripples. These are a form of communication telling us about the world around the aboriginal artists at that time. They were documenting the influx of Europeans that were coming into their land.

Not spoken but appearing as a title on the screen:
Quercy, France

Voice of Don Johanson
In other parts of the world, modern investigators are looking more and more to living cultures of Australia for clues about the meaning and techniques of ancient rock art. Michel Lorblanchet is one of a new breed of archeologists who draw from still living traditions among the rock painters of Arnhem Land. In selected caves in the south of France Lorblanchet recreates prehistoric images using only the tools and pigments that were available to the ancient artist. Working in dim light, using techniques learned from Australian aboriginals, he first uses a piece of charcoal to sketch a rough outline of a subject on the uneven cave wall. Then Lorblanchet uses his mouth as an effective paint brush, first grinding the charcoal and ochre with his teeth then gently spitting out onto the outline. He uses his hands to guide the flow of the primitive paint. The techniques he uses are ancient and are probably similar to the ones our ancestors used thousands of years ago.
Voice of Michel Lorblanchet
The breath is probably, I think, the most important part of the human being and the artist by spitting the paint is projecting himself onto the rock face and during this action he became the horse, he was transformed into a horse.

Voice of Peggy Grove
When you look at the rock art it was painted with the hands and the emotions and the mind of the artist that created it. To witness what the ancestors left behind is an incredible gift.

end of transcript

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