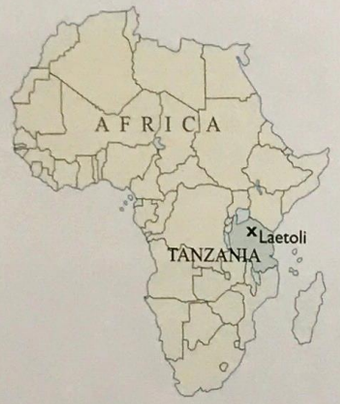
CHAPTER 4

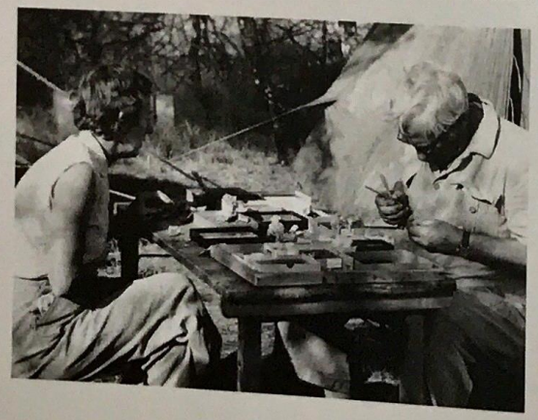
A WALK ON THE WILD SIDE

BIPEDS STEP OUT

FOSSILIZED FOOTPRINT IN TANZANIA



Louis and Mary Leakey, who were husband and wife, often worked together in Africa. Midday, when the heat is at its worst, is a good time to clean, catalog, and catch up on paperwork.



One afternoon in September 1976, the archaeologist Mary Leakey was busy cataloging the fossils and artifacts spread across her worktable. She loved feeling the weight of the pieces in her hand—holding things that someone else had held millions of years before. It gave her a strange sensation to know that someone like her, but not like her, may once have turned it over just as she was doing now. She picked up a fossilized leaf that looked like a present-day acacia leaf and made notes in her field book. Her dog, Sophie, flopped down by her feet. Sophie alternated between panting and licking her forepaw that had been cut by a wild asparagus thorn. Leakey noticed her guests starting out for an afternoon walk. She may have warned them to watch out for the poisonous puff adders. Pay attention to the starlings, she would have said, the birds will squawk if a snake is nearby.

The heat of the African day had cooled pleasantly when the visiting scholars set out across the paleontological site, Laetoli in the Serengeti Plain of northern Tanzania. Serengeti comes from a word the local people, the Maasai, use meaning "endless plains." And indeed, the open grasslands seemed to reach to the horizon. The scholars followed the dried-up riverbed. Now and then they passed a muddy puddle that stank of rhino urine. They probably swapped complaints about the jaw-rattling ride to the site. There were no roads to Laetoli and the grass was tall. Vehicles overheated again and again when grass seed clogged the radiators.

Elephants had passed through a riverbed days before. Bowling-ball-sized clumps of sunbaked elephant dung clotted the path. The temptation was too much for these distinguished scholars. Within seconds dung was zooming in all directions. One scholar ducked, avoiding a ball of dung bigger than his head. He scooped a handful and wound up to throw, but his feet must have tangled when he turned, and he fell. Holding one hand up, fingers spread as wide as possible to protect his head, face turned to the ground, he must have begged for mercy. Then his cries changed from pleading to disbelief. Quick, he would have urged his colleagues, come look.

His friends stepped forward carefully, possibly wondering if this was just a trick to get them within firing range. But instantly they were all down on their knees. All thoughts of elephant dung were forgotten. Hundreds of fossilized animal tracks were locked in the rock-hard, compacted volcanic ash known as tuff.

Mary Leakey wrote about Laetoli in her autobiography, *Disclosing the Past*, "Of all my major projects, Laetoli was certainly one of the most demanding, . . . but it also proved one of the most worthwhile." Although Laetoli was loaded with fossils, scientists were most excited about the dramatic area known as Footprint Tuff. Mary Leakey explained why it is so important: "There are a number of sites in the world that have produced animal tracks, though none in such extraordinary quantities and variety as Laetoli." And they *are* varied. She wrote, "literally tens of thousands of prints have been found in this deposit, ranging from the trail left by an insect, and the tracks of birds, to the footprints of large elephants."

As exciting as it was to uncover prints made by animals such as a three-toed horse, it was nothing compared to what they found two years later. Captured in the volcanic tuff was evidence that more than 3.5 million years ago, three hominids decided to take a stroll—walking upright and on two legs.

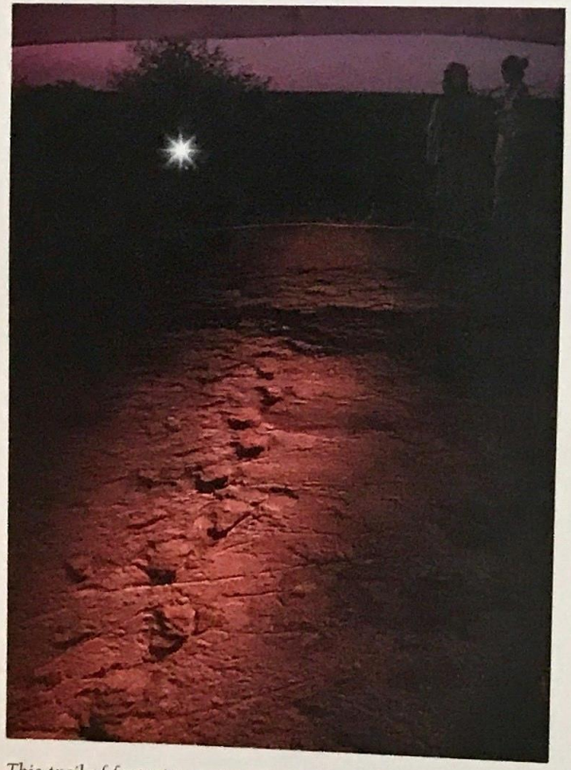
What made these footprints last? A nearby volcano helped preserve them. The six-inch-thick Footprint Tuff is made up of layers—a layer for each volcanic eruption. Each eruption shot a cloud of fine ash up into the sky. The ash

Fossilized footprint, Laetoli, Tanzania, 3.6 million years ago

fell onto the ground like beach sand. Then rain fell softly, soaking the ash until it turned to mud. Animals slogged through the mud, leaving depressions that hardened when the sun baked the ash. It dried like cement. And then the volcano erupted again and more animals walked through. This sequence repeated at least six times until one massive volcanic flare-up sealed the whole lot of tracks in a thick layer of ash. Gradually, over millions of years, water and wind wore through until one day three scholars—dodging dung—fell on them.

bi + *peds* = "two" + "feet"
If you walk on two feet, you're a biped.

Walking on two legs is one of the things that makes us human. There are other mammals that are **bipeds**—kangaroos, for example. But kangaroos hop. A hop is nothing like our heel-toe stride. Monkeys and apes can walk on two legs for short periods of time, but they quickly get tired. Humans have a long spine that curves, allowing them to center their weight over their lower body for balance. Apes have to stand with their feet wide apart forcing them to throw their weight from side to side when they walk. And because they can't lock their knee joints to stand on a straight leg, their muscles must work to hold them upright.



This trail of footprints in Laetoli, Tanzania, is proof that hominids walked upright 3.6 million years ago.

Mary Leakey wrote about evenings with her friends at the Laetoli dig, "I found myself sitting at the head of a longer table than I could remember on any dig, with the line of faces on each side seeming to stretch away into the darkness." It was a good time to wonder and to share ideas. There is one question that was certain to have come up—*Why would animals that had always scurried through the treetops come down to the ground and walk on two feet?* The scholars spent more than one evening talking about possible explanations for why our ancestors stood up:

Did our earliest ancestor stand up to hunt dinner? Some scholar would have pointed out there was no evidence of hunting at that time.

So if the earliest hominids were scavengers, did they stand up to follow herds waiting for one of the animals to die and then feast on the carcass? Some scholar must have mentioned how hard it would be to keep up with fast moving herds and that even if it were easy, hominids began standing in the forest. Forest-dwelling animals don't form herds.

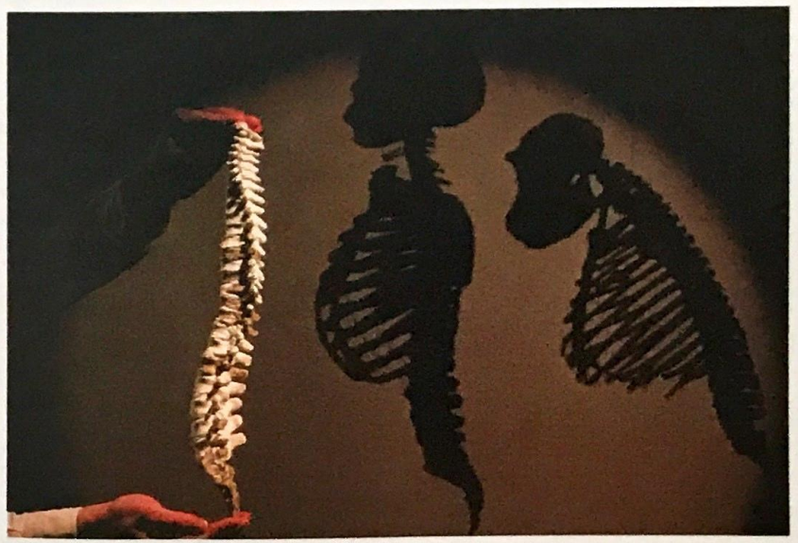
Standing tall can look fierce and scare off enemies—another possibility.

What if the hominids were eating as if they were at an outdoor buffet, standing as they moved from one low bush to another low bush to a low branch? It could have begun this way *in* the trees, eating while standing on branches.

What *was* it that made us stand up on two feet? Imagine yourself living like our earliest ancestors millions of years ago in the forest or woodland. What would make you stand up?

WHICH CAME FIRST?

Walking on two legs is one of the main features that defines humans. Another is big brains. Scientists have argued for years which came first. Footprint Tuff settled that argument. The hominids who walked upright through the volcanic tuff had brains the size of a chimpanzee's. Hominids were bipeds before they were big-brained.



These spines come from (left to right) the hominid species that made the Laetoli footprints, a modern human, and a chimpanzee. The fact that the hominid and modern human spines are similar is evidence supporting the theory that hominids walked upright more than 3 million years ago.