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00:00:00,000 --> 00:00:07,000

Tonight, the conclusion of our expedition unknown evolutionary event.

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00:00:07,000 --> 00:00:11,000

This is the Rosetta Stone of human evolution.

3

00:00:11,000 --> 00:00:17,000

I journey far from civilization and deep into our prehistoric past.

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00:00:17,000 --> 00:00:19,000

If you fall in, you're pretty much done.

5

00:00:19,000 --> 00:00:20,000

Classic death trap.

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00:00:20,000 --> 00:00:26,000

To find out what our ancient ancestors can tell us about ourselves.

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00:00:26,000 --> 00:00:29,000

That's the step that pushes us towards humans.

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00:00:29,000 --> 00:00:36,000

And unlock secrets hidden in our DNA to learn how much of them lives on in us.

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00:00:36,000 --> 00:00:41,000

When we look at your DNA, these are ancestors who many folks might not even call human.

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00:00:41,000 --> 00:00:44,000

Can lessons from the first humans.

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00:00:44,000 --> 00:00:46,000

Unbelievable.

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00:00:46,000 --> 00:00:49,000

Prevent us from becoming the last humans?

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00:00:49,000 --> 00:00:51,000

Yeah!

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00:00:51,000 --> 00:00:52,000

Stone! Evan!

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00:00:52,000 --> 00:00:53,000

F***!

16

00:00:55,000 --> 00:00:56,000

Almost there!

17

00:00:56,000 --> 00:00:59,000

Oh, oh, oh!

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00:01:03,000 --> 00:01:05,000

My name is Josh Gates.

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00:01:05,000 --> 00:01:07,000

I got it!

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00:01:07,000 --> 00:01:08,000

Explorer.

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00:01:08,000 --> 00:01:09,000

Adventure.

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00:01:09,000 --> 00:01:10,000

Woo!

23

00:01:10,000 --> 00:01:14,000

And a guy who ends up in some very strange situations.

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00:01:14,000 --> 00:01:15,000

Woo!

25

00:01:15,000 --> 00:01:17,000

That was exciting.

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00:01:17,000 --> 00:01:21,000

With a degree in archaeology and a passion for the unexplained.

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00:01:21,000 --> 00:01:23,000

I travel to the ends of the earth,

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00:01:23,000 --> 00:01:26,000

investigating the greatest legends in history.

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00:01:26,000 --> 00:01:28,000

Kaelic Pudget.

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00:01:28,000 --> 00:01:31,000

This is Expedition Unknown.

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00:01:33,000 --> 00:01:36,000

It's the greatest mystery of all.

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00:01:36,000 --> 00:01:38,000

What makes us human?

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00:01:38,000 --> 00:01:43,000

To find out what our earliest ancestors can teach us about ourselves and our future.

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00:01:43,000 --> 00:01:46,000

I met with Professor John Hawks.

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00:01:46,000 --> 00:01:51,000

And it turns out everything I thought I knew about human evolution was wrong.

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00:01:51,000 --> 00:01:54,000

People think of it like that diagram that we've all seen.

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00:01:54,000 --> 00:01:56,000

It doesn't work that way at all.

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00:01:56,000 --> 00:01:58,000

We're not a chain of progress.

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00:01:58,000 --> 00:02:00,000

We are this crazy diverse tree.

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00:02:00,000 --> 00:02:04,000

Paleontologists keep digging up new human ancestors.

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00:02:04,000 --> 00:02:08,000

And our family tree is beginning to look more like a tangle of vines.

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00:02:08,000 --> 00:02:13,000

But by about 35,000 years ago, just one species was left.

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00:02:13,000 --> 00:02:14,000

Homo sapiens.

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00:02:14,000 --> 00:02:17,000

Understanding why our relatives are all gone,

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00:02:17,000 --> 00:02:23,000

we're the only ones left, is going to be essential to understanding how we can survive in the future.

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00:02:23,000 --> 00:02:30,000

So Dr. Hawks sent me on a journey into our collective past in Tanzania,

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00:02:30,000 --> 00:02:34,000

where I met Dr. Charles Musiba at a site called Leitoi.

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00:02:34,000 --> 00:02:37,000

It was here that four million-year-old footprints,

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00:02:37,000 --> 00:02:41,000

the first evidence of our ancestors walking upright, were discovered.

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00:02:41,000 --> 00:02:46,000

To determine if these early relatives were organized and intelligent hunters,

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00:02:46,000 --> 00:02:50,000

or ape-like scavengers, we tracked a pride of lions.

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00:02:50,000 --> 00:02:53,000

They're going to kill. It's a wildebeest.

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00:02:53,000 --> 00:02:59,000

By comparing bite marks on the carcasses to knife cuts on a three-million-year-old wildebeest fossil,

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00:02:59,000 --> 00:03:05,000

we learned that our ancestors were hunters who possessed an intelligence far beyond other primates.

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00:03:05,000 --> 00:03:09,000

Their ability to secure protein led to bigger brains,

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00:03:09,000 --> 00:03:13,000

and over the next two million years, our gray matter tripled in size.

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00:03:13,000 --> 00:03:20,000

The addition of consuming high amounts of protein fundamentally alters our evolution.

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00:03:20,000 --> 00:03:24,000

It does. This episode brought to you by the Meat Council.

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00:03:24,000 --> 00:03:32,000

To see the secrets of a prehistoric hunt firsthand, I joined one of the last hunter-gatherer tribes on Earth,

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00:03:32,000 --> 00:03:33,000

the Hadza.

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00:03:33,000 --> 00:03:36,000

Each hunt is a game of risk and reward.

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00:03:36,000 --> 00:03:38,000

To win, you have to sweat.

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00:03:38,000 --> 00:03:42,000

But if you miss your target, you don't earn any food to replenish your strength.

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00:03:42,000 --> 00:03:44,000

No kill, no dinner.

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00:03:46,000 --> 00:03:50,000

But in the modern world, heart disease is the leading cause of death,

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00:03:50,000 --> 00:03:56,000

in part because we're responding to instincts encoded in our ancestors millions of years ago.

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00:03:56,000 --> 00:04:02,000

To understand how traits passed down from ancient relatives influence our health and behavior today,

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00:04:02,000 --> 00:04:11,000

I had a swab of my own DNA analyzed and flew to a lab in San Diego to see how much of them still lives on in me.

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00:04:12,000 --> 00:04:13,000

Nathan?

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00:04:13,000 --> 00:04:14,000

Oh, hey.

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00:04:14,000 --> 00:04:15,000

Hey, how are you, man? Nice to meet you.

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00:04:15,000 --> 00:04:16,000

Pleasure.

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00:04:16,000 --> 00:04:18,000

Actually, it's not nice to meet you. I'm very nervous to meet you.

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00:04:18,000 --> 00:04:19,000

Why?

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00:04:19,000 --> 00:04:23,000

Because, you know, when we talk about early human ancestors, it's all been very hypothetical up to this point,

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00:04:23,000 --> 00:04:27,000

but now you have my DNA. It's getting real. It's getting real. It's personal now.

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00:04:27,000 --> 00:04:34,000

That's right. When we look at your DNA, there are traces, little snippets, that hint at early, quite mysterious,

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00:04:34,000 --> 00:04:39,000

forebears who probably date back 40 to 50,000 years ago.

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00:04:39,000 --> 00:04:41,000

Who am I related to?

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00:04:41,000 --> 00:04:46,000

I'm not sure if you're ready. These are ancestors who many folks might not even call human.

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00:04:47,000 --> 00:04:48,000

Okay.

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00:04:48,000 --> 00:04:50,000

So they looked a lot like this.

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00:04:52,000 --> 00:04:53,000

These are Neanderthals.

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00:04:54,000 --> 00:04:58,000

I'm sorry. I have Neanderthal DNA.

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00:04:58,000 --> 00:04:59,000

You have Neanderthal DNA.

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00:04:59,000 --> 00:05:01,000

What percentage Neanderthal am I?

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00:05:01,000 --> 00:05:02,000

Roughly two.

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00:05:02,000 --> 00:05:03,000

Wow.

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00:05:03,000 --> 00:05:05,000

I'm a Neanderthal. It's official.

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00:05:06,000 --> 00:05:11,000

In 2010, geneticists extracted and sequenced DNA from Neanderthal fossils.

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00:05:12,000 --> 00:05:18,000

The results shocked the world. Humans and Neanderthals were getting together and getting it on.

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00:05:18,000 --> 00:05:26,000

If your family traces largely to East Asia or to Europe, you likely have some Neanderthal ancestry.

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00:05:26,000 --> 00:05:30,000

Does having some Neanderthal in my DNA, could that mean some?

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00:05:30,000 --> 00:05:37,000

Yeah, it could for you. You've got spellings of a gene called Adam TSL3, which helps make muscles and helps them run.

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00:05:37,000 --> 00:05:39,000

We don't know exactly how yet that spelling...

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00:05:39,000 --> 00:05:41,000

I was hoping you were going to say it was going to make me strong.

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00:05:41,000 --> 00:05:43,000

Well, we don't know yet.

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00:05:43,000 --> 00:05:53,000

The science is still young, but Neanderthal DNA has been linked to everything, from muscle physiology to tobacco addiction to immune system responses.

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00:05:54,000 --> 00:05:58,000

But not all of the relatives that Nathan found are ancient history.

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00:05:58,000 --> 00:06:00,000

You can identify relative of mine.

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00:06:00,000 --> 00:06:04,000

We can identify relative of yours and in fact, this is another TV gate.

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00:06:05,000 --> 00:06:07,000

Another TV gate?

103

00:06:08,000 --> 00:06:09,000

Skip.

104

00:06:09,000 --> 00:06:13,000

Hand in the loose gate, skip gate from PBS, so faces of America and finding your roots.

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00:06:13,000 --> 00:06:15,000

It's like looking in a mirror. Almost.

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00:06:15,000 --> 00:06:20,000

It turns out that Skip and I share genetic material from an Irish medieval king.

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00:06:20,000 --> 00:06:23,000

So do about 3 million other people.

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00:06:23,000 --> 00:06:28,000

It sounds impressive, but finding royal ancestry is surprisingly, well, common.

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00:06:28,000 --> 00:06:34,000

Charlemagne can be linked to most folks from Europe and if you're Asian, chances are there's a

little Genghis Khan in you.

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00:06:34,000 --> 00:06:36,000

It's all a numbers game.

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00:06:36,000 --> 00:06:43,000

You have two parents, four grandparents, eight great-grandparents, and on and on in an ever-increasing pool.

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00:06:43,000 --> 00:06:49,000

Go back just 3,000 years and every person on earth has a shared common ancestor.

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00:06:49,000 --> 00:06:52,000

In other words, we're all related.

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00:06:53,000 --> 00:07:01,000

The one other part of this that jumps out at me is that you start to really see pretty quickly that all of these notions of race,

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00:07:01,000 --> 00:07:09,000

all these sort of tribal notions that we have about who we are, it's just laid so bare that we are

all just such a mix of everybody.

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00:07:09,000 --> 00:07:12,000

Everybody's inherently mixed. That's the point.

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00:07:12,000 --> 00:07:22,000

It just seems to me that this is in some ways really the most important part of all of this because it continues to be such a major issue in the world today.

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00:07:22,000 --> 00:07:26,000

This idea of, you know, we are these people, you are those people.

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00:07:26,000 --> 00:07:29,000

Our family trees are now all entangled.

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00:07:29,000 --> 00:07:33,000

Right. This is awesome. Thank you so much. I really appreciate it. Thanks for taking the time, man.

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00:07:33,000 --> 00:07:36,000

Likewise. All the best. I'll see you at the family reunion.

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00:07:36,000 --> 00:07:37,000

Absolutely. Next year.

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00:07:38,000 --> 00:07:45,000

Ancient DNA not only shapes our bodies, we're learning that it affects our health and could even drive our actions.

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00:07:45,000 --> 00:07:51,000

To learn firsthand about what makes us tick today, I need to go back in time and meet my makers.

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00:07:51,000 --> 00:07:55,000

The only way to do that is to meet our closest living genetic relatives.

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00:07:56,000 --> 00:08:03,000

I catch a flight to the remote western frontier of Kigoma, Tanzania and make my way to a waiting boat.

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00:08:03,000 --> 00:08:08,000

The only way to access a remote wilderness preserve at the edge of the country.

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00:08:13,000 --> 00:08:20,000

I'm cruising north on Lake Tanganyika to the south Zambia and on the opposite shore, the Congo.

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00:08:20,000 --> 00:08:27,000

This is the longest lake in the world and holds about 16% of the planet's fresh water.

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00:08:27,000 --> 00:08:32,000

My destination is a remote Gombe National Park near the border of Burundi.

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00:08:32,000 --> 00:08:37,000

It's a place made famous by Dr. Jane Goodall and her pioneering work with primates.

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00:08:37,000 --> 00:08:40,000

And I'm hoping for a close encounter with her subjects.

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00:08:40,000 --> 00:08:50,000

We steam on and civilization swirls away to reveal a landscape from the distant past.

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00:08:54,000 --> 00:09:01,000

Several hours later, we approach a remote dock, the gateway to the Jane Goodall Institute and Gombe National Park.

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00:09:01,000 --> 00:09:07,000

Baboons patrol the beach and under the canopy, there are research labs and a camp.

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00:09:07,000 --> 00:09:11,000

Nearby, I find my guides, Dr. Deis Majungu.

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00:09:11,000 --> 00:09:14,000

How are you? I'm good. Welcome to Gombe National Park. Great to meet you.

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00:09:14,000 --> 00:09:18,000

And visiting scholars, Dr. Ian Gilby and Dr. Anthony Collins.

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00:09:18,000 --> 00:09:22,000

You guys are off the grid up here. That's how we like it.

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00:09:22,000 --> 00:09:24,000

So this is where Dr. Goodall did her work.

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00:09:24,000 --> 00:09:29,000

When Jane Goodall came here in 1960, she had a nice big tent. It was just here.

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00:09:29,000 --> 00:09:35,000

She discovered chimpanzees using tools, not only using tools but making tools.

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00:09:35,000 --> 00:09:42,000

Goodall discovered chimpanzees fashioning wands and dipping them into termite mounds to pull out a quick snack.

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00:09:42,000 --> 00:09:48,000

This was a stunning revelation. Toolmaking was thought to be humanity's singular achievement.

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00:09:48,000 --> 00:09:53,000

But it turns out our closest living relatives may be more like us than we imagined.

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00:09:53,000 --> 00:09:58,000

So I want to understand chimps a little bit. Let's start by dispelling a common mistake that many people make,

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00:09:58,000 --> 00:10:02,000

that I'm sure you hear all the time. Chimps are not monkeys.

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00:10:02,000 --> 00:10:05,000

That is correct. Correct. They are apes.

149

00:10:05,000 --> 00:10:08,000

So monkeys have tails. That's right.

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00:10:08,000 --> 00:10:12,000

And so in terms of the great apes, if you don't count us, there are four species left.

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00:10:12,000 --> 00:10:16,000

Orangutans, gorillas, chimpanzees and bonobos.

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00:10:16,000 --> 00:10:19,000

And out of the great apes, which one are we most closely related to?

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00:10:19,000 --> 00:10:22,000

Chimpanzee. How closely related are we genetically?

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00:10:22,000 --> 00:10:27,000

98% DNA. We share 98% of our genetic material with chimps.

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00:10:27,000 --> 00:10:32,000

And in fact, we're more closely related to chimpanzees than chimpanzees are to gorillas.

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00:10:32,000 --> 00:10:33,000

Really? Yeah.

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00:10:33,000 --> 00:10:36,000

Wow. Can we study chimps and learn about humans?

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00:10:36,000 --> 00:10:38,000

That's why we're here. Let's go.

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00:10:38,000 --> 00:10:39,000

Let's go.

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00:10:42,000 --> 00:10:46,000

But to observe our chimpanzee cousins, we've got to find them.

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00:10:46,000 --> 00:10:52,000

And that means leaving the relative safety of the research camp and trekking deep into the apes' domain.

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00:10:52,000 --> 00:11:00,000

So what's the process? Do you know where they are on any given day or it's a guess?

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00:11:00,000 --> 00:11:03,000

Chimpanzees, they make nests in a different place each night.

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00:11:03,000 --> 00:11:09,000

If we don't know where they are, we'll go and listen for calls or we'll visit recently visited fruit trees.

165

00:11:16,000 --> 00:11:18,000

This is stunning.

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00:11:19,000 --> 00:11:25,000

As we hike into the interior, it becomes clear that this is no zoo.

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00:11:25,000 --> 00:11:30,000

There are no fences here and the animals are not domesticated.

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00:11:30,000 --> 00:11:34,000

Pound for pound, chimps are five times stronger than humans.

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00:11:34,000 --> 00:11:39,000

They're highly territorial and out here, we are vastly outnumbered.

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00:11:39,000 --> 00:11:41,000

How many chimps total are in the park?

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00:11:41,000 --> 00:11:44,000

Right now it's around 90 chimpanzees in the whole park.

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00:11:44,000 --> 00:11:45,000

Wow.

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00:11:48,000 --> 00:11:53,000

We press on seeking higher ground to try and spot our elusive quarry.

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00:11:55,000 --> 00:12:02,000

But on these steep slopes, my director of photography learns bipedalism isn't all it's cracked up to be.

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00:12:02,000 --> 00:12:03,000

Oh!

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00:12:03,000 --> 00:12:04,000

Oh!

177

00:12:04,000 --> 00:12:05,000

Stone!

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00:12:05,000 --> 00:12:06,000

Heaven!

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00:12:07,000 --> 00:12:12,000

To learn more about the fundamental characteristics that make us human,

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00:12:12,000 --> 00:12:19,000

I'm in Tanzania's Gombe National Forest investigating our closest living relatives, the chimpanzees.

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00:12:19,000 --> 00:12:24,000

The quest to track wild chimps has taken us far off the beaten path,

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00:12:24,000 --> 00:12:30,000

where my director of photography has discovered that this particular mission is a slippery slope.

183

00:12:30,000 --> 00:12:31,000

Oh!

184

00:12:31,000 --> 00:12:32,000

Oh!

185

00:12:32,000 --> 00:12:33,000

Ah!

186

00:12:33,000 --> 00:12:34,000

Stone!

187

00:12:34,000 --> 00:12:35,000

Heaven!

188

00:12:35,000 --> 00:12:37,000

You okay?

189

00:12:37,000 --> 00:12:39,000

Yeah, I'm okay.

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00:12:39,000 --> 00:12:40,000

I took a misstep.

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00:12:40,000 --> 00:12:42,000

Yeah, you took a job on this show.

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00:12:42,000 --> 00:12:44,000

I broke another eyepiece.

193

00:12:44,000 --> 00:12:46,000

It's okay, I'll send you a bill.

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00:12:46,000 --> 00:12:47,000

Uh-huh.

195

00:12:47,000 --> 00:12:48,000

You okay?

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00:12:48,000 --> 00:12:49,000

Yeah, I'm okay.

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00:12:49,000 --> 00:12:50,000

Let's keep going.

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00:12:50,000 --> 00:12:52,000

Okay, here we go everybody.

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00:12:52,000 --> 00:12:56,000

We spend the next four hours trekking deeper into the jungle.

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00:12:56,000 --> 00:12:58,000

We're going to go to the forest.

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00:12:59,000 --> 00:13:03,000

We spend the next four hours trekking deeper into the jungle.

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00:13:07,000 --> 00:13:10,000

Turns out they're finding chimps in a chimp preserve.

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00:13:10,000 --> 00:13:11,000

Not that easy.

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00:13:14,000 --> 00:13:18,000

Until finally, they find us.

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00:13:18,000 --> 00:13:20,000

Shhh!

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00:13:20,000 --> 00:13:22,000

Two chimps.

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00:13:22,000 --> 00:13:24,000

We freeze in our tracks.

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00:13:24,000 --> 00:13:27,000

Two chimps are heading straight for us.

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00:13:27,000 --> 00:13:29,000

And as we give them the right of way,

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00:13:29,000 --> 00:13:33,000

they pass so closely we could reach out and touch them.

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00:13:33,000 --> 00:13:35,000

So the one in front is named Faustino.

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00:13:35,000 --> 00:13:37,000

And the one behind, what's his name?

213

00:13:37,000 --> 00:13:38,000

Gimli.

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00:13:38,000 --> 00:13:39,000

Like Lord of the Rings Gimli?

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00:13:39,000 --> 00:13:42,000

Yeah, there are several Tolkien inspired chimps here.

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00:13:42,000 --> 00:13:44,000

Okay, are they related?

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00:13:44,000 --> 00:13:46,000

They are not, they're from different lineages.

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00:13:46,000 --> 00:13:47,000

How old is Gimli?

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00:13:47,000 --> 00:13:49,000

Around 14 years old.

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00:13:49,000 --> 00:13:52,000

So we've got the teenager hanging out with the older cool dude.

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00:13:52,000 --> 00:13:53,000

Is that what's happening here?

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00:13:53,000 --> 00:13:54,000

That's exactly what's happening.

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00:13:54,000 --> 00:13:55,000

And is that common?

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00:13:55,000 --> 00:13:57,000

Sometimes you have one of these younger guys who sort of

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00:13:57,000 --> 00:13:59,000

hero worships one of the older males.

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00:13:59,000 --> 00:14:02,000

We'll follow him around and learn how to behave,

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00:14:02,000 --> 00:14:04,000

how to be a male, how to...

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00:14:04,000 --> 00:14:05,000

Pick up girls.

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00:14:05,000 --> 00:14:07,000

Potentially, yeah, that's always part of it, right?

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00:14:07,000 --> 00:14:11,000

Chimps and humans learn how to behave in their community

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00:14:11,000 --> 00:14:13,000

by aping their older counterparts.

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00:14:13,000 --> 00:14:18,000

The alpha male Faustino is grooming the beta Gimli as an ally.

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00:14:18,000 --> 00:14:22,000

His right hand man in dominance struggles with other male chimps.

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00:14:22,000 --> 00:14:24,000

So should we follow them?

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00:14:24,000 --> 00:14:25,000

I think we should follow them.

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00:14:25,000 --> 00:14:26,000

Okay, let's follow them.

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00:14:26,000 --> 00:14:27,000

Okay.

238

00:14:33,000 --> 00:14:36,000

We pause briefly to put on surgical masks.

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00:14:36,000 --> 00:14:39,000

Because we share 98% of our DNA with chimps,

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00:14:39,000 --> 00:14:42,000

they're susceptible to many of our diseases.

241

00:14:45,000 --> 00:14:50,000

Faustino and Gimli lead us into the most remote reaches of the preserve.

242

00:14:51,000 --> 00:14:53,000

Literally swinging from vines.

243

00:14:57,000 --> 00:15:01,000

Sweating, slipping and sliding, we track them to a clearing.

244

00:15:01,000 --> 00:15:03,000

Hey, Josh, we got a group here.

245

00:15:03,000 --> 00:15:04,000

Okay.

246

00:15:09,000 --> 00:15:11,000

Unbelievable.

247

00:15:13,000 --> 00:15:16,000

Faustino and Gimli have disappeared into the forest,

248

00:15:16,000 --> 00:15:19,000

but they've led us to a group of females and babies.

249

00:15:19,000 --> 00:15:23,000

Undisturbed by our presence, we are safe to observe them.

250

00:15:24,000 --> 00:15:26,000

Give me a snapshot of chimp life.

251

00:15:26,000 --> 00:15:32,000

It's all about food, dominance, mating and raising offspring.

252

00:15:32,000 --> 00:15:34,000

Males will help each other in fights,

253

00:15:34,000 --> 00:15:37,000

and that will really help them increase in dominance,

254

00:15:37,000 --> 00:15:41,000

and that usually leads to better reproductive success.

255

00:15:41,000 --> 00:15:44,000

Dr. Goodall's work showed that chimps are intelligent

256

00:15:45,000 --> 00:15:47,000

and can be exceedingly gentle,

257

00:15:47,000 --> 00:15:51,000

but male chimps are also in constant competition with each other.

258

00:15:51,000 --> 00:15:56,000

This leads to acts of violence, tribalism and sexual assault.

259

00:15:56,000 --> 00:15:58,000

Traits that are sadly familiar.

260

00:15:58,000 --> 00:16:03,000

Male-dominated violence is prevalent in both ape and human society.

261

00:16:03,000 --> 00:16:07,000

Men commit homicide at about 20 times the rate that women do.

262

00:16:07,000 --> 00:16:11,000

And at Gombe, while chimp violence is relatively rare,

263

00:16:11,000 --> 00:16:13,000

it can also be brutal.

264

00:16:13,000 --> 00:16:17,000

Each alpha male seems to have a different kind of dominance strategy.

265

00:16:17,000 --> 00:16:20,000

So some of them are big bullies that don't really have any friends.

266

00:16:20,000 --> 00:16:22,000

And they just sort of beat everybody else up.

267

00:16:22,000 --> 00:16:24,000

And then others are more political,

268

00:16:24,000 --> 00:16:27,000

so they'll have allies that help them stay in power.

269

00:16:28,000 --> 00:16:31,000

In fact, chimps are capable of another activity

270

00:16:31,000 --> 00:16:34,000

we once thought was uniquely human, warfare.

271

00:16:35,000 --> 00:16:38,000

In 1974, a competition for dominance

272

00:16:38,000 --> 00:16:44,000

led two rival clans at Gombe to spend four years brutally attacking each other.

273

00:16:44,000 --> 00:16:47,000

And their motivations appeared to be all too human,

274

00:16:47,000 --> 00:16:50,000

two communities competing for power.

275

00:16:52,000 --> 00:16:54,000

So what makes us different?

276

00:16:54,000 --> 00:16:56,000

To be honest, not much.

277

00:16:56,000 --> 00:16:58,000

While our superior communication skills

278

00:16:58,000 --> 00:17:01,000

give us the ability to form societies with rules

279

00:17:01,000 --> 00:17:03,000

that govern our violent impulses,

280

00:17:03,000 --> 00:17:06,000

human history is rife with destructive behavior.

281

00:17:09,000 --> 00:17:12,000

Some anthropologists have suggested

282

00:17:12,000 --> 00:17:15,000

that early humans practiced self-domestication.

283

00:17:15,000 --> 00:17:19,000

It's a nice way of saying that excessively violent males were eliminated,

284

00:17:19,000 --> 00:17:22,000

so that reproductive success went to the less violent.

285

00:17:22,000 --> 00:17:26,000

Over time, it produced a species more inclined toward cooperation,

286

00:17:26,000 --> 00:17:28,000

at least in theory.

287

00:17:29,000 --> 00:17:32,000

One of the things that's really interesting about chimp culture

288

00:17:32,000 --> 00:17:35,000

is that it seems really complex,

289

00:17:35,000 --> 00:17:37,000

but it doesn't seem to change that much over time.

290

00:17:37,000 --> 00:17:40,000

So that is one of the huge differences between chimpanzees and humans.

291

00:17:40,000 --> 00:17:44,000

They don't build on the innovations that they have.

292

00:17:44,000 --> 00:17:45,000

Do they teach?

293

00:17:45,000 --> 00:17:46,000

No, they do not teach.

294

00:17:46,000 --> 00:17:48,000

It's all observational learning,

295

00:17:48,000 --> 00:17:52,000

so the offspring intently watch, usually their mothers.

296

00:17:52,000 --> 00:17:54,000

They're kind of technologically plateaued.

297

00:17:54,000 --> 00:17:55,000

Yeah, I would say that.

298

00:17:55,000 --> 00:17:56,000

Yeah.

299

00:17:56,000 --> 00:17:59,000

And this is the critical difference,

300

00:17:59,000 --> 00:18:03,000

one that caused the first humans to become more than what they were.

301

00:18:03,000 --> 00:18:07,000

However, while millions of years later, chimps remain virtually unchanged.

302

00:18:07,000 --> 00:18:10,000

As I leave my friends at the Goodall Institute,

303

00:18:10,000 --> 00:18:12,000

I think about this fact.

304

00:18:12,000 --> 00:18:14,000

We have a cumulative culture.

305

00:18:14,000 --> 00:18:17,000

We innovate and add to our knowledge,

306

00:18:17,000 --> 00:18:20,000

instead of starting over with each new generation.

307

00:18:20,000 --> 00:18:23,000

But how did this distinction happen?

308

00:18:23,000 --> 00:18:26,000

And how does it impact who we are today?

309

00:18:26,000 --> 00:18:30,000

An anthropologist in South Africa thinks he might know,

310

00:18:30,000 --> 00:18:33,000

and he's digging up proof 2,000 miles south,

311

00:18:33,000 --> 00:18:36,000

just outside of Johannesburg.

312

00:18:47,000 --> 00:18:50,000

You know, if you'd asked me 10 years ago what I thought of Johannesburg,

313

00:18:50,000 --> 00:18:54,000

I rather ignorantly would have said, not much.

314

00:18:54,000 --> 00:18:57,000

And that's because Joberg, or Josie, as the locals call it,

315

00:18:57,000 --> 00:18:59,000

was a place with a reputation.

316

00:19:00,000 --> 00:19:03,000

It's a city forever scarred by apartheid,

317

00:19:03,000 --> 00:19:08,000

decades of segregation that heroes like Nelson Mandela fought to end.

318

00:19:08,000 --> 00:19:11,000

Joburg is still coming to terms with this grave injustice,

319

00:19:11,000 --> 00:19:14,000

but a great change is in the air.

320

00:19:14,000 --> 00:19:16,000

Vibrant art lines the city streets,

321

00:19:16,000 --> 00:19:20,000

and abandoned factories like this one are being reborn.

322

00:19:20,000 --> 00:19:22,000

DJs and dancing on the roof,

323

00:19:22,000 --> 00:19:25,000

and inside a bustling community market

324

00:19:25,000 --> 00:19:28,000

with just about every food from the continent.

325

00:19:28,000 --> 00:19:31,000

Honey-infused bacon with chili.

326

00:19:33,000 --> 00:19:36,000

And a few that have just been invented.

327

00:19:36,000 --> 00:19:37,000

Boosie ice cream?

328

00:19:37,000 --> 00:19:38,000

Yep.

329

00:19:38,000 --> 00:19:40,000

My God, I've been waiting my whole life for this.

330

00:19:40,000 --> 00:19:42,000

This vodka-infused vanilla.

331

00:19:44,000 --> 00:19:46,000

That's so good.

332

00:19:46,000 --> 00:19:47,000

Oh, it's crazy.

333

00:19:47,000 --> 00:19:48,000

Can I hug you?

334

00:19:48,000 --> 00:19:49,000

Yes, you may.

335

00:19:49,000 --> 00:19:50,000

Can I hug you? Oh, my God.

336

00:19:50,000 --> 00:19:51,000

You can hug me.

337

00:19:51,000 --> 00:19:52,000

God bless you.

338

00:19:52,000 --> 00:19:54,000

That's so good.

339

00:19:54,000 --> 00:19:56,000

Can I get drunk off this?

340

00:19:56,000 --> 00:19:57,000

If you have six.

341

00:19:57,000 --> 00:19:58,000

Well, that's easy.

342

00:19:58,000 --> 00:19:59,000

What if I have 12?

343

00:20:02,000 --> 00:20:04,000

I sober up for my ice cream

344

00:20:04,000 --> 00:20:06,000

on the way to Witwatersrand University,

345

00:20:06,000 --> 00:20:09,000

famous for its collection of fossils.

346

00:20:09,000 --> 00:20:12,000

I've arranged to meet with Dr. Dominic Stratford.

347

00:20:12,000 --> 00:20:13,000

Dominic.

348

00:20:13,000 --> 00:20:14,000

Josh.

349

00:20:14,000 --> 00:20:15,000

How are you, man?

350

00:20:15,000 --> 00:20:16,000

Very good. Pleased to meet you.

351

00:20:16,000 --> 00:20:17,000

Nice to meet you as well.

352

00:20:17,000 --> 00:20:18,000

Yeah, thank you for coming through.

353

00:20:18,000 --> 00:20:20,000

I can't wait to see what you guys have hidden away in here.

354

00:20:20,000 --> 00:20:22,000

Well, we've got some beautiful fossils in the vault.

355

00:20:22,000 --> 00:20:23,000

Let's go and have a look.

356

00:20:23,000 --> 00:20:24,000

To the vault.

357

00:20:25,000 --> 00:20:28,000

Dominic grants me exclusive access to the vault.

358

00:20:29,000 --> 00:20:31,000

The secure laboratory where some of the rarest

359

00:20:31,000 --> 00:20:34,000

and most valuable fossils on Earth are housed.

360

00:20:35,000 --> 00:20:38,000

Bones, whose discovery shocked the scientific world

361

00:20:38,000 --> 00:20:42,000

and rewrote the book on where the human story began.

362

00:20:42,000 --> 00:20:46,000

This is the single largest collection of fossils

363

00:20:46,000 --> 00:20:49,000

documenting our evolution anywhere in the world.

364

00:20:50,000 --> 00:20:52,000

And then, the pride and glory,

365

00:20:52,000 --> 00:20:54,000

I'd like to introduce you to Littlefoot.

366

00:20:57,000 --> 00:20:58,000

Wow.

367

00:20:58,000 --> 00:21:03,000

Littlefoot is about 3.67 million years old.

368

00:21:03,000 --> 00:21:06,000

This is the Rosetta Stone of human evolution.

369

00:21:07,000 --> 00:21:09,000

The structure of Littlefoot's ankle bone

370

00:21:09,000 --> 00:21:12,000

proves that his species, called Australopithecus,

371

00:21:12,000 --> 00:21:16,000

had mastered a crucial new skill, bipedalism.

372

00:21:16,000 --> 00:21:18,000

What are the advantages of standing upright?

373

00:21:18,000 --> 00:21:20,000

You can see a lot further.

374

00:21:20,000 --> 00:21:23,000

It's also more efficient in walking long distances.

375

00:21:23,000 --> 00:21:25,000

It's all about ranging and getting these horses.

376

00:21:25,000 --> 00:21:29,000

In fact, studies suggest that species like Australopithecus

377

00:21:29,000 --> 00:21:33,000

could travel twice as far in a day as their tree-bound cousins.

378

00:21:33,000 --> 00:21:37,000

So bipedalism really is the first step, literally,

379

00:21:37,000 --> 00:21:38,000

in our evolution.

380

00:21:38,000 --> 00:21:39,000

Yep.

381

00:21:39,000 --> 00:21:40,000

What comes next?

382

00:21:40,000 --> 00:21:41,000

So I can actually show you.

383

00:21:41,000 --> 00:21:44,000

Some colleagues and I are working out at the Staghams Tain Cave,

384

00:21:44,000 --> 00:21:46,000

close to where Littlefoot was found.

385

00:21:46,000 --> 00:21:48,000

So let's go and have a look.

386

00:21:48,000 --> 00:21:49,000

Great. Let's see.

387

00:21:49,000 --> 00:21:50,000

Great. Perfect.

388

00:21:52,000 --> 00:21:54,000

To learn about our next step

389

00:21:54,000 --> 00:21:56,000

and see how it led to a cycle of innovation

390

00:21:56,000 --> 00:21:59,000

that spurs our development to this day,

391

00:21:59,000 --> 00:22:02,000

I arranged to meet Dominic at Sturkfontein Caves.

392

00:22:02,000 --> 00:22:05,000

You know, when we think of ancient fossils,

393

00:22:05,000 --> 00:22:07,000

we don't tend to think of modern cities.

394

00:22:07,000 --> 00:22:11,000

And yet a whopping 40% of all fossilized remains

395

00:22:11,000 --> 00:22:13,000

of our ancient ancestors have been found

396

00:22:13,000 --> 00:22:16,000

within about 30 miles of Johannesburg.

397

00:22:17,000 --> 00:22:19,000

This treasure trove of ancient relatives

398

00:22:19,000 --> 00:22:22,000

has earned this region another name,

399

00:22:22,000 --> 00:22:24,000

the Cradle of Humankind.

400

00:22:24,000 --> 00:22:27,000

And here, amidst the red dirt and gentle hills,

401

00:22:27,000 --> 00:22:29,000

is Sturkfontein.

402

00:22:30,000 --> 00:22:34,000

And the caves that offer a window into our destiny.

403

00:22:34,000 --> 00:22:37,000

This is the top upper chamber of the Sturkfontein Cave.

404

00:22:37,000 --> 00:22:40,000

So if we were here two million years ago,

405

00:22:40,000 --> 00:22:42,000

we would be quite a long way underground.

406

00:22:42,000 --> 00:22:44,000

This whole place looks blasted out.

407

00:22:44,000 --> 00:22:46,000

That's exactly what happened.

408

00:22:47,000 --> 00:22:51,000

Over a century ago, Johannesburg was a gold mining boom town.

409

00:22:51,000 --> 00:22:53,000

A blast uncovered little foot.

410

00:22:53,000 --> 00:22:56,000

Embedded in concrete-like rock,

411

00:22:56,000 --> 00:22:59,000

the skeleton remained untouched for decades.

412

00:22:59,000 --> 00:23:01,000

Excavations to extract the fossils

413

00:23:01,000 --> 00:23:03,000

took almost 20 years

414

00:23:03,000 --> 00:23:06,000

and were only completed in 2017.

415

00:23:06,000 --> 00:23:10,000

So this is where we're going in.

416

00:23:10,000 --> 00:23:12,000

In the crack.

417

00:23:12,000 --> 00:23:14,000

I was expecting a big cave entrance.

418

00:23:14,000 --> 00:23:16,000

Maybe some stairs, a nice ramp.

419

00:23:16,000 --> 00:23:18,000

So all over the cradle of humankind,

420

00:23:18,000 --> 00:23:20,000

what you find are these tiny little holes on the surface

421

00:23:20,000 --> 00:23:24,000

that lead straight down to these huge chambers underground.

422

00:23:24,000 --> 00:23:27,000

And that's why, if you fall in, they're pretty much done.

423

00:23:28,000 --> 00:23:29,000

A classic death trap.

424

00:23:29,000 --> 00:23:31,000

Boy, you're really selling it, Dominic.

425

00:23:31,000 --> 00:23:33,000

Well, you'll be all right, I'm sure.

426

00:23:33,000 --> 00:23:37,000

Dominic theorizes that this is exactly what happened to Littlefoot,

427

00:23:37,000 --> 00:23:40,000

and the countless other bodies buried in these chambers.

428

00:23:40,000 --> 00:23:44,000

They either fell down or washed in and became trapped,

429

00:23:44,000 --> 00:23:48,000

leaving the remains for us to find millions of years later.

430

00:23:48,000 --> 00:23:49,000

So Helmut's on.

431

00:23:49,000 --> 00:23:51,000

If you're going to fall, remember to fall on your head.

432

00:23:51,000 --> 00:23:53,000

They don't let you write the tourist brochures, right?

433

00:23:55,000 --> 00:23:58,000

There's only one way to reach Dominic's dig site,

434

00:23:58,000 --> 00:24:01,000

and learn the secrets that made us who we are today.

435

00:24:01,000 --> 00:24:04,000

And it's down the same hole that swallowed Littlefoot.

436

00:24:04,000 --> 00:24:06,000

Okay, now.

437

00:24:06,000 --> 00:24:08,000

Okay, right behind you.

438

00:24:08,000 --> 00:24:10,000

Got any pointers on this descent?

439

00:24:10,000 --> 00:24:13,000

Yeah, don't fall.

440

00:24:13,000 --> 00:24:15,000

Yeah, knew that was coming.

441

00:24:15,000 --> 00:24:16,000

You got it.

442

00:24:16,000 --> 00:24:18,000

Okay, here we go.

443

00:24:19,000 --> 00:24:24,000

The claustrophobic entrance shaft is just wide enough to shimmy through.

444

00:24:26,000 --> 00:24:28,000

This is how people die.

445

00:24:28,000 --> 00:24:31,000

Okay, left foot there, that's good.

446

00:24:31,000 --> 00:24:33,000

Okay, left foot down.

447

00:24:33,000 --> 00:24:35,000

Left foot a little bit further.

448

00:24:35,000 --> 00:24:37,000

I'm here.

449

00:24:37,000 --> 00:24:39,000

Oh, f***!

450

00:24:44,000 --> 00:24:48,000

My quest to understand how human evolution led to us

451

00:24:48,000 --> 00:24:51,000

brings me to the so-called Cradle of Humankind,

452

00:24:51,000 --> 00:24:54,000

South Africa's Sturkfontane Caves.

453

00:24:54,000 --> 00:24:59,000

Where archaeologist Dr. Dominic Stratford is searching for the secret

454

00:24:59,000 --> 00:25:02,000

that jump-started our intellectual development.

455

00:25:02,000 --> 00:25:07,000

But finding it involves a dangerous descent down a narrow entrance shaft.

456

00:25:07,000 --> 00:25:10,000

This is how people die.

457

00:25:11,000 --> 00:25:13,000

Okay, left foot down.

458

00:25:13,000 --> 00:25:15,000

Left foot a little bit further.

459

00:25:15,000 --> 00:25:16,000

Right?

460

00:25:16,000 --> 00:25:18,000

I'm here.

461

00:25:18,000 --> 00:25:20,000

Oh, f***!

462

00:25:20,000 --> 00:25:22,000

Here we go.

463

00:25:22,000 --> 00:25:25,000

I got it. I'm okay.

464

00:25:25,000 --> 00:25:27,000

There we go, I got a foothold there now.

465

00:25:27,000 --> 00:25:28,000

That's the one.

466

00:25:28,000 --> 00:25:30,000

Coming down, right foot.

467

00:25:31,000 --> 00:25:33,000

And we're all alive.

468

00:25:33,000 --> 00:25:34,000

Congratulations.

469

00:25:34,000 --> 00:25:36,000

All right, after you, come on.

470

00:25:36,000 --> 00:25:37,000

Okay.

471

00:25:38,000 --> 00:25:43,000

Dominic and I climbed through a seemingly endless labyrinth of ancient rock

472

00:25:43,000 --> 00:25:46,000

toward his team's excavation site.

473

00:25:50,000 --> 00:25:52,000

Look at the ceiling in here.

474

00:25:52,000 --> 00:25:54,000

It's just covered in these beautiful tiny crystals.

475

00:25:54,000 --> 00:25:58,000

So these beautiful calcium carbonate crystals are actually growing on top of

476

00:25:58,000 --> 00:26:00,000

the fossil-bearing deposits.

477

00:26:00,000 --> 00:26:02,000

So there could be fossils anywhere in here?

478

00:26:02,000 --> 00:26:05,000

There could be fossils everywhere, most likely just underneath us.

479

00:26:05,000 --> 00:26:07,000

This place really is like a time machine.

480

00:26:07,000 --> 00:26:09,000

It is. Almost none of it's really been explored.

481

00:26:09,000 --> 00:26:12,000

That's crazy. All right, push on.

482

00:26:13,000 --> 00:26:17,000

Despite being deep underground in a maze of nearly pitch black caves,

483

00:26:17,000 --> 00:26:20,000

it turns out Dominic and I aren't alone down here.

484

00:26:23,000 --> 00:26:26,000

Look at that. All sorts of things hanging around down here.

485

00:26:26,000 --> 00:26:27,000

What?

486

00:26:27,000 --> 00:26:29,000

That's a bad joke.

487

00:26:33,000 --> 00:26:36,000

At last, in the depths of the cave, we reach the dig site.

488

00:26:38,000 --> 00:26:42,000

It's here that Dominic introduces me to Dr. George Leder.

489

00:26:43,000 --> 00:26:44,000

Welcome to our excavation.

490

00:26:44,000 --> 00:26:45,000

Thank you.

491

00:26:45,000 --> 00:26:48,000

So at the bottom of your pit here, how far back are we?

492

00:26:48,000 --> 00:26:53,000

So you're looking at about four million years of time in this sequence.

493

00:26:53,000 --> 00:26:56,000

So as we saw in the vault on this march of evolution,

494

00:26:56,000 --> 00:26:59,000

bipedalism is this first key that we see.

495

00:26:59,000 --> 00:27:02,000

As we get into the younger deposits, what's the next link in that chain?

496

00:27:02,000 --> 00:27:06,000

That's what I'm really interested in, and that's stone tool technology.

497

00:27:06,000 --> 00:27:07,000

And you're finding those in here?

498

00:27:07,000 --> 00:27:09,000

We are finding lots of them in here.

499

00:27:09,000 --> 00:27:10,000

You want to come on in?

500

00:27:10,000 --> 00:27:11,000

Yeah, for sure.

501

00:27:11,000 --> 00:27:12,000

Let's do it.

502

00:27:15,000 --> 00:27:18,000

Let's start working in this section and let's just see what we find.

503

00:27:18,000 --> 00:27:20,000

Okay, so loose stuff here first?

504

00:27:20,000 --> 00:27:21,000

Loose stuff there first.

505

00:27:21,000 --> 00:27:26,000

But figuring out what's natural stone and what's been shaped by our ancient ancestors

506

00:27:26,000 --> 00:27:30,000

takes hours of patience and an expert eye,

507

00:27:30,000 --> 00:27:33,000

or at least being next to someone with an expert eye.

508

00:27:36,000 --> 00:27:37,000

Different?

509

00:27:40,000 --> 00:27:41,000

Absolutely different.

510

00:27:42,000 --> 00:27:43,000

This is not just a stone?

511

00:27:43,000 --> 00:27:44,000

No.

512

00:27:44,000 --> 00:27:47,000

That is a beautiful, beautiful find.

513

00:27:47,000 --> 00:27:48,000

What is it?

514

00:27:48,000 --> 00:27:49,000

What is it?

515

00:27:49,000 --> 00:27:51,000

That is an old-a-wan core.

516

00:27:51,000 --> 00:27:57,000

One of your and my hominid ancestors picked up this 2.1 million years ago,

517

00:27:57,000 --> 00:28:01,000

took another rock and knocked flakes off of it.

518

00:28:02,000 --> 00:28:06,000

And they took those sharp little flakes and they were able to use those as tools.

519

00:28:06,000 --> 00:28:08,000

That really is something.

520

00:28:08,000 --> 00:28:10,000

It's a really exciting find.

521

00:28:10,000 --> 00:28:11,000

That's crazy.

522

00:28:12,000 --> 00:28:16,000

We continue to search, literally leaving no stone unturned.

523

00:28:16,000 --> 00:28:19,000

And eventually, we hit paydirt.

524

00:28:21,000 --> 00:28:22,000

Josh, look at this.

525

00:28:22,000 --> 00:28:23,000

Is that a tool?

526

00:28:23,000 --> 00:28:25,000

That is absolutely a tool.

527

00:28:26,000 --> 00:28:29,000

That is a 2.1 million-year-old stone flake.

528

00:28:30,000 --> 00:28:32,000

It really does have a sharp edge.

529

00:28:32,000 --> 00:28:35,000

And what about someone who's watching this who says it's not a tool?

530

00:28:35,000 --> 00:28:36,000

It's a rock.

531

00:28:36,000 --> 00:28:38,000

Well, I agree to the untrained eye.

532

00:28:38,000 --> 00:28:42,000

It might just look like a rock, but I can prove it to you that that's a stone tool.

533

00:28:42,000 --> 00:28:43,000

Okay, let's see it.

534

00:28:43,000 --> 00:28:44,000

Let's do it.

535

00:28:47,000 --> 00:28:51,000

To prove that what we found was actually a 2 million-year-old tool

536

00:28:51,000 --> 00:28:55,000

and illustrate how this ancient technology changed us forever,

537

00:28:55,000 --> 00:28:59,000

George, Dominic and I take our finds back to their lab at the surface,

538

00:28:59,000 --> 00:29:03,000

where they invite me to replicate the work of our ancestors.

539

00:29:06,000 --> 00:29:07,000

Stand by.

540

00:29:11,000 --> 00:29:12,000

Okay, first of all, how's this for pathetic?

541

00:29:12,000 --> 00:29:14,000

I can't even break the rock.

542

00:29:14,000 --> 00:29:19,000

Experiments have shown that your best bet is to find an angle that's less than 90 degrees.

543

00:29:19,000 --> 00:29:24,000

You're going to strike it on one side and hopefully be able to remove a flake on the other.

544

00:29:36,000 --> 00:29:37,000

Here's some blood on that one.

545

00:29:37,000 --> 00:29:38,000

Nice.

546

00:29:38,000 --> 00:29:39,000

These are sharp.

547

00:29:39,000 --> 00:29:40,000

Medic.

548

00:29:40,000 --> 00:29:42,000

Yeah, also you'll be hearing from my attorneys.

549

00:29:43,000 --> 00:29:49,000

So little super sharp pieces here and then this with again a really fine edge.

550

00:29:50,000 --> 00:29:55,000

The experiment proves that stones don't naturally break into razor sharp blades.

551

00:29:55,000 --> 00:29:59,000

It takes the helping hand of a human to shape them.

552

00:29:59,000 --> 00:30:02,000

If you hadn't helped me, I wouldn't have done this.

553

00:30:02,000 --> 00:30:06,000

Anyone who looks at these and thinks this is just people smashing rocks together,

554

00:30:06,000 --> 00:30:10,000

there's actually skill and knowledge that has to go into this.

555

00:30:10,000 --> 00:30:16,000

I cut down that time that you're going to struggle just by giving you a couple tips.

556

00:30:16,000 --> 00:30:18,000

This is as basic as it gets.

557

00:30:18,000 --> 00:30:19,000

Right.

558

00:30:19,000 --> 00:30:20,000

So then what happens?

559

00:30:20,000 --> 00:30:21,000

Well, let me show you.

560

00:30:21,000 --> 00:30:28,000

George brings me to a row of stone tools illustrating 2 million years of evolving designs.

561

00:30:28,000 --> 00:30:30,000

Some of them elegant pieces of work.

562

00:30:32,000 --> 00:30:36,000

20 minutes ago, you might have shown me this and I wouldn't have been that impressed by it.

563

00:30:36,000 --> 00:30:40,000

Now that I see what it takes to make even that, this is like the Mona Lisa.

564

00:30:40,000 --> 00:30:45,000

As we learn from the chimps in Gombe, other primates make simple tools.

565

00:30:45,000 --> 00:30:48,000

But there's something more on display here.

566

00:30:48,000 --> 00:30:55,000

A revolution in human thought that accounts for an exponentially increasing complexity of craftsmanship.

567

00:30:55,000 --> 00:30:59,000

Most of chimp's learning comes from observation and trial and error.

568

00:30:59,000 --> 00:31:06,000

It can take a young chimp eight or nine years to learn to successfully crack a nut.

569

00:31:06,000 --> 00:31:12,000

By teaching, humans have lessened that period of learning.

570

00:31:12,000 --> 00:31:16,000

That's the step that pushes us towards human.

571

00:31:16,000 --> 00:31:23,000

So when we talk about this march of evolution, for you tools really are at the center of it.

572

00:31:23,000 --> 00:31:24,000

Right.

573

00:31:24,000 --> 00:31:27,000

It's a formula that drives us to this day.

574

00:31:27,000 --> 00:31:32,000

Modern tools allow us to improve our health and expand our lifespan.

575

00:31:32,000 --> 00:31:36,000

But could they also paint us into a technological corner?

576

00:31:36,000 --> 00:31:38,000

Today we are primarily consumers.

577

00:31:38,000 --> 00:31:41,000

Most of us don't hunt or farm.

578

00:31:41,000 --> 00:31:45,000

And our tools are now so complex, few of us know how to make them.

579

00:31:45,000 --> 00:31:51,000

For the first time in history, our children are being taught to live in a digital world.

580

00:31:51,000 --> 00:31:58,000

But if our society faced a disaster, will they be able to fend for themselves as our ancient ancestors did?

581

00:31:58,000 --> 00:32:01,000

This also raises another question.

582

00:32:01,000 --> 00:32:08,000

If making tools gave our ancestors such an advantage, why did homo sapiens end up as the sole survivors,

583

00:32:08,000 --> 00:32:13,000

while so many other tool-using species like the Neanderthals went extinct?

584

00:32:13,000 --> 00:32:15,000

There must be something else.

585

00:32:15,000 --> 00:32:19,000

Another secret that explains our success.

586

00:32:19,000 --> 00:32:22,000

I'm meeting a scientist who thinks he's got the answer.

587

00:32:22,000 --> 00:32:29,000

And he found it in one of the most remote regions on the continent, a place called Pondoland.

588

00:32:29,000 --> 00:32:35,000

About 500 miles south of Johannesburg on Africa's so-called Wild Coast.

589

00:32:35,000 --> 00:32:41,000

To say that Pondoland is off the beaten path implies there was a path to begin with.

590

00:32:42,000 --> 00:32:45,000

I off-road to my rendezvous point with Dr. Eric Fisher,

591

00:32:45,000 --> 00:32:50,000

whose archaeological team has been working out here for months.

592

00:32:50,000 --> 00:32:52,000

Somewhere.

593

00:32:59,000 --> 00:33:01,000

Hey, Josh!

594

00:33:01,000 --> 00:33:03,000

Eric!

595

00:33:03,000 --> 00:33:05,000

Do I come to you?

596

00:33:05,000 --> 00:33:07,000

Yeah, come on over!

597

00:33:07,000 --> 00:33:09,000

Is there a bridge?

598

00:33:09,000 --> 00:33:10,000

Nope!

599

00:33:10,000 --> 00:33:12,000

Super!

600

00:33:12,000 --> 00:33:16,000

On the other side of this title inlet, the answer to why our ancestors

601

00:33:16,000 --> 00:33:19,000

outlasted every other early human species.

602

00:33:19,000 --> 00:33:21,000

Where's the best place?

603

00:33:21,000 --> 00:33:23,000

Why don't you cut straight across here?

604

00:33:23,000 --> 00:33:25,000

Got it!

605

00:33:25,000 --> 00:33:32,000

But as I make my way across the slippery rocks, I find out why the Wild Coast got its name.

606

00:33:41,000 --> 00:33:47,000

I'm in the region of Pondoland on South Africa's Wild Coast.

607

00:33:47,000 --> 00:33:52,000

In search of the secret to why Homo sapiens came to dominate the world

608

00:33:52,000 --> 00:33:55,000

while other early human species died out.

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00:33:55,000 --> 00:33:58,000

Paleoanthropologist Eric Fisher may have the answer,

610

00:33:58,000 --> 00:34:01,000

but first I have to reach him.

611

00:34:01,000 --> 00:34:04,000

And the tide is not on my side.

612

00:34:11,000 --> 00:34:15,000

Wet socks aside, I cross the river unscathed.

613

00:34:15,000 --> 00:34:17,000

Hey! How are you, man?

614

00:34:17,000 --> 00:34:19,000

Nice to meet you. I'm a little wet, but I'm good.

615

00:34:19,000 --> 00:34:20,000

You ready to go?

616

00:34:20,000 --> 00:34:22,000

Yeah. Oh, hold on.

617

00:34:24,000 --> 00:34:26,000

Okay, let's go.

618

00:34:28,000 --> 00:34:31,000

Eric and I strike out toward his excavation site,

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00:34:31,000 --> 00:34:36,000

where he's found evidence of how ancient Homo sapiens survived a planetary challenge

620

00:34:36,000 --> 00:34:40,000

that affected all species living at the time, the last Ice Age.

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00:34:42,000 --> 00:34:45,000

As glaciers advanced across the African continent,

622

00:34:45,000 --> 00:34:48,000

our ancestors faced increasingly brutal conditions.

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00:34:48,000 --> 00:34:52,000

Eric has found evidence that many of them came here,

624

00:34:52,000 --> 00:34:55,000

to the coast of Pondoland.

625

00:34:57,000 --> 00:34:59,000

This is unbelievable.

626

00:34:59,000 --> 00:35:02,000

It's one of those places where we could be today,

627

00:35:02,000 --> 00:35:04,000

we could be 100,000 years ago.

628

00:35:04,000 --> 00:35:05,000

It feels like primordial.

629

00:35:05,000 --> 00:35:07,000

Yeah, no one is around.

630

00:35:07,000 --> 00:35:10,000

These environments are absolutely pristine.

631

00:35:10,000 --> 00:35:12,000

Just be careful out here.

632

00:35:12,000 --> 00:35:14,000

They don't call it the wild coast for nothing.

633

00:35:15,000 --> 00:35:19,000

Yeah! Unbelievable!

634

00:35:20,000 --> 00:35:22,000

We are in the splash zone, Eric.

635

00:35:22,000 --> 00:35:24,000

Now I see why you're on my right-hand side.

636

00:35:24,000 --> 00:35:27,000

That's a survival mechanism, is what that is.

637

00:35:28,000 --> 00:35:33,000

After another hour of hiking through some of the most pristine and scenic coastline on Earth,

638

00:35:33,000 --> 00:35:35,000

we reach the dig site.

639

00:35:39,000 --> 00:35:42,000

Josh, that is waterfall bluff.

640

00:35:45,000 --> 00:35:48,000

Waterfall bluff is, in a word, epic.

641

00:35:48,000 --> 00:35:53,000

Stacked layers of ocean sediment laid down over 300 million years,

642

00:35:53,000 --> 00:35:56,000

rising 400 feet over our heads.

643

00:35:56,000 --> 00:35:58,000

Now I see what you're working here, man.

644

00:35:58,000 --> 00:35:59,000

You found paradise.

645

00:35:59,000 --> 00:36:01,000

It's absolutely amazing, isn't it?

646

00:36:01,000 --> 00:36:02,000

Yeah!

647

00:36:04,000 --> 00:36:07,000

We hike up the waterfall, where Eric's team is waiting.

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00:36:09,000 --> 00:36:17,000

They call this groundbreaking work the Pondoland Paleo Climate Paleo Environment Paleo Ecology Paleo Anthropology Project,

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00:36:17,000 --> 00:36:20,000

or to save room on their business cards, P5.

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00:36:20,000 --> 00:36:22,000

Josh, this is our dig team.

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00:36:22,000 --> 00:36:23,000

Hi, everybody!

652

00:36:23,000 --> 00:36:24,000

Hello.

653

00:36:24,000 --> 00:36:25,000

Hi!

654

00:36:25,000 --> 00:36:27,000

I'd like to introduce you to one of our project co-directors.

655

00:36:27,000 --> 00:36:29,000

This is Dr. Justin Parchner.

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00:36:29,000 --> 00:36:30,000

Good to meet you.

657

00:36:30,000 --> 00:36:31,000

Good to meet you too.

658

00:36:31,000 --> 00:36:32,000

What an amazing place you guys have here.

659

00:36:32,000 --> 00:36:33,000

We're really happy to have you.

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00:36:33,000 --> 00:36:35,000

So, can you show me what's going on here?

661

00:36:35,000 --> 00:36:36,000

Absolutely.

662

00:36:36,000 --> 00:36:37,000

Alright, let's drop the packs.

663

00:36:37,000 --> 00:36:38,000

Let's do it.

664

00:36:38,000 --> 00:36:42,000

First things first, I assume it goes without saying people were living here.

665

00:36:42,000 --> 00:36:43,000

Absolutely.

666

00:36:43,000 --> 00:36:44,000

Right?

667

00:36:44,000 --> 00:36:45,000

In high density.

668

00:36:45,000 --> 00:36:46,000

Okay, so let's get into it.

669

00:36:46,000 --> 00:36:47,000

What do we got?

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00:36:47,000 --> 00:36:50,000

So, I mean, the first thing that we're looking at here is essentially a midden, which is

671

00:36:50,000 --> 00:36:53,000

basically a big fancy word for a trash heap.

672

00:36:53,000 --> 00:36:54,000

Right, got it.

673

00:36:54,000 --> 00:36:55,000

A garbage pile.

674

00:36:55,000 --> 00:36:58,000

But what this actually tells us is a whole bunch about the diet of the people that were

675

00:36:58,000 --> 00:37:02,000

living here, the kinds of environments that they were existing in, and most importantly

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00:37:02,000 --> 00:37:04,000

the technologies that they were using.

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00:37:04,000 --> 00:37:07,000

This is one of our coolest bone tools.

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00:37:07,000 --> 00:37:11,000

This would have been a tool that's like what you use today to shuck shellfish.

679

00:37:11,000 --> 00:37:13,000

Yeah, you could shuck an oyster easy with that.

680

00:37:13,000 --> 00:37:19,000

Tools like this allowed the homo sapien community that was here 30 to 40,000 years ago to tap

681

00:37:19,000 --> 00:37:22,000

a nearly inexhaustible food supply.

682

00:37:22,000 --> 00:37:23,000

The ocean.

683

00:37:23,000 --> 00:37:28,000

The thousands of discarded shells here reveal they were eating well, while their Neanderthal

684

00:37:28,000 --> 00:37:33,000

peers faced rapidly depleting resources inland as the climate cooled.

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00:37:33,000 --> 00:37:35,000

So they're clearly eating shellfish.

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00:37:35,000 --> 00:37:36,000

What else are they eating?

687

00:37:36,000 --> 00:37:39,000

Well, we also have evidence of them eating fish out of the ocean.

688

00:37:39,000 --> 00:37:41,000

Here's an actual fish bone.

689

00:37:41,000 --> 00:37:42,000

Look at that.

690

00:37:42,000 --> 00:37:44,000

And we find thousands of fish bones.

691

00:37:44,000 --> 00:37:46,000

Big fish too.

692

00:37:46,000 --> 00:37:51,000

The early humans here developed a survival toolkit customized for this environment.

693

00:37:51,000 --> 00:37:57,000

To understand how they used waterfall bluff to weather the ice age, the P5 team is attempting

694

00:37:57,000 --> 00:38:03,000

to put these and the thousands of other objects they've found in a digital 3D model.

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00:38:03,000 --> 00:38:08,000

A sort of archaeological time machine turning back the clock and placing their finds by

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00:38:08,000 --> 00:38:11,000

in the surrounding landscape.

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00:38:11,000 --> 00:38:16,000

To build this model, Eric brings me to the cliff while Justin sets up gear below.

698

00:38:16,000 --> 00:38:19,000

And now we're at this big, huge cliff face.

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00:38:19,000 --> 00:38:24,000

One of the things that we're trying to do here is to not only understand the archaeology

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00:38:24,000 --> 00:38:27,000

within the site, but we have to understand the evolution of the entire landscape.

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00:38:27,000 --> 00:38:28,000

The context.

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00:38:28,000 --> 00:38:29,000

The context, exactly.

703

00:38:29,000 --> 00:38:31,000

So we have a really cool process that we're going to do.

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00:38:31,000 --> 00:38:35,000

It's called photogrammetry, where you fly over and take a lot of photographs and then

705

00:38:35,000 --> 00:38:37,000

create a 3D model of the landscape.

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00:38:37,000 --> 00:38:38,000

Which is aerial mapping.

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00:38:38,000 --> 00:38:39,000

That's correct.

708

00:38:39,000 --> 00:38:40,000

It's aerial mapping.

709

00:38:40,000 --> 00:38:41,000

That's super cool.

710

00:38:41,000 --> 00:38:42,000

I love it.

711

00:38:42,000 --> 00:38:43,000

Let's do it.

712

00:38:43,000 --> 00:38:44,000

Yes, I'm ready.

713

00:38:44,000 --> 00:38:45,000

Come on.

714

00:38:45,000 --> 00:38:46,000

Here we go.

715

00:38:46,000 --> 00:38:49,000

Eric and I start by placing markers on the cliff face.

716

00:38:49,000 --> 00:38:51,000

That's a good spot right there.

717

00:38:51,000 --> 00:38:56,000

These targets will act as reference points, allowing Eric to digitally stitch together

718

00:38:56,000 --> 00:39:01,000

aerial photographs with measurements from a laser distance meter to build a photo

719

00:39:01,000 --> 00:39:02,000

of the site.

720

00:39:02,000 --> 00:39:03,000

Okay.

721

00:39:03,000 --> 00:39:08,000

This 21st century technology allows us to penetrate deep into the past and see how our

722

00:39:08,000 --> 00:39:11,000

ancestors interacted with this environment.

723

00:39:11,000 --> 00:39:14,000

All right, this is fun.

724

00:39:14,000 --> 00:39:15,000

I like this.

725

00:39:15,000 --> 00:39:16,000

Yeah, it's not too bad, eh?

726

00:39:16,000 --> 00:39:17,000

Yeah.

727

00:39:17,000 --> 00:39:18,000

This is just the easy wall.

728

00:39:18,000 --> 00:39:24,000

We need someone to go up on that cliff face and put in all of those other targets.

729

00:39:24,000 --> 00:39:26,000

Well, good luck finding that guy.

730

00:39:26,000 --> 00:39:27,000

I wish he'd the best of...

731

00:39:27,000 --> 00:39:28,000

Give me the targets.

732

00:39:28,000 --> 00:39:32,000

While Eric retreats to the safety of the dig site to launch the drone, I continue to the

733

00:39:32,000 --> 00:39:33,000

upper ridge.

734

00:39:33,000 --> 00:39:34,000

How you doing?

735

00:39:34,000 --> 00:39:36,000

Hey, you yet, Jag, the targets?

736

00:39:36,000 --> 00:39:38,000

Unfortunately for me, I think I am, yeah.

737

00:39:38,000 --> 00:39:44,000

There I meet Gustav, a team member on hand to help me with a rappel to cover the face

738

00:39:44,000 --> 00:39:45,000

of the target.

739

00:39:45,000 --> 00:39:47,000

I'm going to go ahead and get him.

740

00:39:47,000 --> 00:39:49,000

I'm going to go ahead and get him.

741

00:39:49,000 --> 00:39:54,000

There I meet Gustav, a team member on hand to help me with a rappel to cover the face

742

00:39:54,000 --> 00:39:57,000

of the cliff with markers.

743

00:39:57,000 --> 00:40:01,000

Okay, I got targets.

744

00:40:01,000 --> 00:40:03,000

I got duct tape.

745

00:40:03,000 --> 00:40:04,000

I got major regrets.

746

00:40:04,000 --> 00:40:05,000

Here we go.

747

00:40:05,000 --> 00:40:07,000

All right, good luck.

748

00:40:07,000 --> 00:40:10,000

We're watching from below.

749

00:40:10,000 --> 00:40:14,000

Okay, Eric, you ready for the first target?

750

00:40:14,000 --> 00:40:18,000

How about you come down just another foot or two and then there on your left hand side

751

00:40:18,000 --> 00:40:19,000

good spot for a target.

752

00:40:19,000 --> 00:40:28,000

Okay, I'm dropping down.

753

00:40:28,000 --> 00:40:30,000

Okay, okay, first target is on.

754

00:40:30,000 --> 00:40:31,000

How's that look?

755

00:40:31,000 --> 00:40:32,000

That looks fantastic.

756

00:40:32,000 --> 00:40:34,000

We're shooting it in now.

757

00:40:34,000 --> 00:40:37,000

How far do you want me to drop down for the second target?

758

00:40:37,000 --> 00:40:42,000

Why don't you come down about another 20 feet or so?

759

00:40:42,000 --> 00:40:47,000

Copy that.

760

00:40:47,000 --> 00:40:49,000

How about right here?

761

00:40:49,000 --> 00:40:50,000

Yeah, right there.

762

00:40:50,000 --> 00:40:55,000

Looks really good.

763

00:40:55,000 --> 00:40:58,000

Okay, second target's on.

764

00:40:58,000 --> 00:41:02,000

Headed down.

765

00:41:02,000 --> 00:41:04,000

I'll tell you one thing about ancient humans.

766

00:41:04,000 --> 00:41:14,000

They would have been smart enough to not do this for sure.

767

00:41:14,000 --> 00:41:15,000

Perfect, Josh.

768

00:41:15,000 --> 00:41:18,000

That's awesome.

769

00:41:18,000 --> 00:41:20,000

So, Eric, we've got an overhang here.

770

00:41:20,000 --> 00:41:24,000

Once I pass this, it might be a little more problematic.

771

00:41:24,000 --> 00:41:27,000

To complete the scan, I need to place one more target.

772

00:41:27,000 --> 00:41:32,000

But the way the cliff face slopes in, I can't use the rocky wall to propel myself there.

773

00:41:32,000 --> 00:41:35,000

But I might need a little help to swing onto it.

774

00:41:35,000 --> 00:41:41,000

Gustav swings the line, building momentum to try to propel me onto the ledge.

775

00:41:41,000 --> 00:41:43,000

Good again.

776

00:41:43,000 --> 00:41:47,000

You got it!

777

00:41:47,000 --> 00:41:51,000

Almost there!

778

00:41:51,000 --> 00:41:55,000

Almost!

779

00:41:55,000 --> 00:41:59,000

Whoa, whoa, whoa!

780

00:42:04,000 --> 00:42:10,000

On a side street in Johannesburg, South Africa, I find a one-stop shop for whatever ails you.

781

00:42:10,000 --> 00:42:12,000

You have an amazing store.

782

00:42:12,000 --> 00:42:13,000

I love your shop.

783

00:42:13,000 --> 00:42:17,000

And I've got about close to about 5,000, 6,000 different labs.

784

00:42:17,000 --> 00:42:23,000

The shelves are loaded with everything from fennel seed for the flu, to umla bello, a snake bite balm.

785

00:42:23,000 --> 00:42:27,000

To treatments my HMO definitely doesn't cover.

786

00:42:27,000 --> 00:42:31,000

This is the bungalow. It's an African Viagra.

787

00:42:31,000 --> 00:42:36,000

Oh, the African Viagra. Wow. This is hard to get your hands on.

788

00:42:36,000 --> 00:42:38,000

That's a cheap shot. And does it work?

789

00:42:38,000 --> 00:42:39,000

Yes.

790

00:42:39,000 --> 00:42:41,000

Really? It smells good.

791

00:42:41,000 --> 00:42:45,000

Oh, does work. Fast acting. Wow.

792

00:42:45,000 --> 00:42:47,000

Uh, what's embarrassing?

793

00:42:53,000 --> 00:42:58,000

Searching for the key to why Homo sapiens outlasted all other prehistoric hominids,

794

00:42:58,000 --> 00:43:04,000

I find myself dangling hundreds of feet over the remote South Africa coast of Pondoland.

795

00:43:04,000 --> 00:43:09,000

I'm positioning targets on a cliff to build a digital scan of the landscape

796

00:43:09,000 --> 00:43:14,000

to try and understand how the early humans who lived here interacted with this environment.

797

00:43:14,000 --> 00:43:18,000

But the last spot is just out of reach.

798

00:43:18,000 --> 00:43:20,000

Almost there.

799

00:43:31,000 --> 00:43:32,000

Whoa, whoa, whoa.

800

00:43:34,000 --> 00:43:37,000

Okay. Okay. All right. I'm on the ledge.

801

00:43:39,000 --> 00:43:41,000

That is absolutely fantastic.

802

00:43:41,000 --> 00:43:42,000

Where do you want to target?

803

00:43:42,000 --> 00:43:46,000

How about you put a target there just to your left?

804

00:43:46,000 --> 00:43:48,000

Yeah, perfect.

805

00:43:48,000 --> 00:43:50,000

Okay, coming down.

806

00:43:52,000 --> 00:43:57,000

The last of the targets is in place, and I'm slowly lowered back down to Terra firma.

807

00:43:57,000 --> 00:44:04,000

Safely on the ground, I reconvene with Justin and Eric and head to base camp to review the data we just captured.

808

00:44:05,000 --> 00:44:09,000

What you're looking at here is these are all of the positions where we took our photographs.

809

00:44:09,000 --> 00:44:10,000

Right.

810

00:44:10,000 --> 00:44:13,000

And we're able to use that to create this 3D model.

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00:44:13,000 --> 00:44:17,000

Wow, look at that. And this is the site here.

812

00:44:17,000 --> 00:44:18,000

That's our site, right there.

813

00:44:18,000 --> 00:44:21,000

So what are all these small dots that we're seeing here, the different colors?

814

00:44:21,000 --> 00:44:25,000

So each one of these dots represents an artifact from the excavation.

815

00:44:25,000 --> 00:44:28,000

So we're looking at stone, shell, burn.

816

00:44:28,000 --> 00:44:30,000

That is so unbelievable.

817

00:44:30,000 --> 00:44:33,000

So this really is a kind of time machine in a sense.

818

00:44:33,000 --> 00:44:37,000

You can spin it forwards and backwards, look at the artifacts from the site, and see change over time.

819

00:44:37,000 --> 00:44:39,000

Absolutely, yeah.

820

00:44:39,000 --> 00:44:46,000

The model reveals more than just the location of the thousands of man-made objects and discarded shells found here.

821

00:44:46,000 --> 00:44:50,000

It illustrates how our ancestors survived and thrived.

822

00:44:50,000 --> 00:44:55,000

The cliffs provided shelter, and the sea a fertile hunting ground.

823

00:44:55,000 --> 00:45:01,000

This was a safe haven for humanity when the rest of the world was freezing over.

824

00:45:02,000 --> 00:45:04,000

So this brings us to the big question.

825

00:45:04,000 --> 00:45:10,000

You know, science has identified 27 different species of human ancestors.

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00:45:10,000 --> 00:45:13,000

But in the end, we're the ones left standing.

827

00:45:13,000 --> 00:45:15,000

Yeah, just us.

828

00:45:15,000 --> 00:45:16,000

The big question is why.

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00:45:16,000 --> 00:45:19,000

Does this site in some way prod at those answers?

830

00:45:19,000 --> 00:45:20,000

Yes, absolutely.

831

00:45:20,000 --> 00:45:23,000

The site tells us everything we need to know about why we're here.

832

00:45:23,000 --> 00:45:26,000

So animals tend to fall into two different groups.

833

00:45:26,000 --> 00:45:31,000

They're either generalists, they exploit a wide range of habitats and food types.

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00:45:31,000 --> 00:45:32,000

Or they're specialists.

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00:45:32,000 --> 00:45:37,000

They hunker down, they target a single kind of niche and food type, and that's what they do.

836

00:45:37,000 --> 00:45:40,000

Humans exploit both of those adaptations.

837

00:45:40,000 --> 00:45:43,000

We've invented technology.

838

00:45:43,000 --> 00:45:49,000

Culture is a strategy for learning, for surviving and adapting to climate change in unique kinds of habitats.

839

00:45:49,000 --> 00:45:54,000

Right, clearly the people that were living here knew how to do everything to exploit this place.

840

00:45:54,000 --> 00:45:56,000

And what about our competitors?

841

00:45:56,000 --> 00:45:57,000

What about Neanderthals?

842

00:45:57,000 --> 00:45:59,000

Why aren't we finding Neanderthal remains here?

843

00:45:59,000 --> 00:46:01,000

So Neanderthals were hyperspecialists.

844

00:46:01,000 --> 00:46:05,000

They got locked into single adaptations, like for example, big game hunting.

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00:46:05,000 --> 00:46:10,000

And those kinds of adaptations became less and less viable towards the end of their evolution,

846

00:46:10,000 --> 00:46:13,000

especially when climate started to change very rapidly.

847

00:46:13,000 --> 00:46:20,000

As big game dwindled in the Ice Age and other species failed, Homo sapiens changed up their playbook.

848

00:46:20,000 --> 00:46:24,000

We headed to the coast and exploited the seas.

849

00:46:24,000 --> 00:46:30,000

So the reason for our success, and in some ways, I guess a very cautionary tale,

850

00:46:30,000 --> 00:46:35,000

is you have to remain flexible and adaptive.

851

00:46:35,000 --> 00:46:37,000

Absolutely.

852

00:46:38,000 --> 00:46:45,000

New relatives from our ever-expanding family tree continue to be discovered,

853

00:46:45,000 --> 00:46:52,000

and geneticists are finding traces of those relatives still alive in our DNA.

854

00:46:52,000 --> 00:46:57,000

Walking upright and hunting added protein to our diet, which made us smarter.

855

00:46:57,000 --> 00:47:03,000

But it also hardwired our brains, with cravings better suited to an ancient world.

856

00:47:03,000 --> 00:47:11,000

Tools and teaching also made us who we are, but have left us dangerously dependent on technology for our survival.

857

00:47:12,000 --> 00:47:16,000

Still, the more we learn about the traits that define humaneness,

858

00:47:16,000 --> 00:47:23,000

the more it seems that one fundamental characteristic led to the rise of modern Homo sapiens.

859

00:47:23,000 --> 00:47:25,000

Adaptability.

860

00:47:25,000 --> 00:47:32,000

Change is, after all, the one constant, and our planet is changing before us once again.

861

00:47:32,000 --> 00:47:34,000

This time by our own hand.

862

00:47:34,000 --> 00:47:38,000

We need only to look at the vanished relatives on our family tree,

863

00:47:38,000 --> 00:47:46,000

to realize that we too could end up as just another fossil, preserved for whoever comes after us.

864

00:47:46,000 --> 00:47:53,000

To endure, we must effectively respond to environmental, social, and technological upheaval,

865

00:47:53,000 --> 00:47:59,000

to collaborate, and to pass on the best of who we are to the next generation.

866

00:48:02,000 --> 00:48:05,000

you