

The background of the page is a photograph of the Machu Picchu ruins in Peru, showing stone terraces and buildings nestled in a mountainous landscape. Overlaid on this is a circular stone relief depicting a profile of an Inca ruler, likely Pachacuti, wearing a feathered headdress and holding a staff. The relief is inscribed with the text 'Yu Pan qui Decimo' and 'Pachacuti'.

MACHU PICCHU

Machu Picchu: The City that Defied Gravity

This Inca estate proves you don't need wheels, iron tools, or a single dump truck to build a literal world wonder. Constructed high in the mountains, this architectural marvel features stone masonry so perfect you can't even slide a piece of paper between the rocks. Best of all, it includes an advanced plumbing system that still works today, making it history's most sophisticated royal vacation home.

**0:00**

*Hand moving large leaves;
collage of several World
Wonders; Incan ruins of Machu
Picchu with Pikachu hovering
over; Machu Picchu overlaid
with an illustration of emperor
Pachacuti; cartoon drawings of
Inca people; map of South
America; stone ruins of Machu
Picchu beneath a mountain at
night overlaid with large eyes.*

Behold: Machu Picchu! One of the Seven Wonders of the Modern World! An ancient city high in the Andes mountains of Peru, Machu Picchu —

Wait, are you talking about that yellow mouse from Japan?

What? No, no, no! That's Pikachu. This is Machu Picchu. These ruins, commissioned by a great Inca emperor, are equal in size to four city blocks. That's twenty football fields.

Wait, back up. What's "Inca?"

You mean "Who?" Who were the Inca? I'm getting there! The Inca were an Indigenous American people who built the largest empire in the Americas before European colonization. At its height, the Inca empire stretched across what we now call Peru, Ecuador, Bolivia, Chile, Argentina, and Colombia. Built by the Inca and hidden from the world until 1911, Machu Picchu —

Wait, how can something twenty-football-fields big be "hidden"?

1:01

*Hiram Bingham standing on
ruins next to an American flag;
Bingham slouched and looking
downward; images of World
Wonders, Dubai, and New York
City; stone ruins of Machu
Picchu overlaid with large eyes;
stone citadel overlaid with the
year 1450; images of a large
stone, elephant, and dump
truck.*

Ahem. Because it's *high in the Andes*. Hiram Bingham discovered the site in 1911 after a local farmer showed him the way.

LOL. He didn't discover it if someone told him where it was.

Fair.

Also, what's a "wonder"?

Oh, a "wonder" is a human-made structure showing astonishing technical achievement and cultural significance.

Okay, but why is that grassy, falling apart mess of rocks a "wonder"? Have you ever been to New York City or Dubai? Talk about astonishing!

You don't understand what you're looking at. The rocks are definitely *not* "falling apart." That's what's so impressive! And this was built way before New York City or Dubai!

OK! So touchy! What are we looking at?

A touchstone of human innovation! Those stones weigh up to several tons — more than elephants...or dump trucks. And they were moved and stacked perfectly with no machinery.

2:01

*Outdoor construction sites;
hand crafting bamboo;
illustration of an Inca carrying a
huge boulder over their
shoulders; text "Quipu" above
knotted cords; mountain under
a blue sky; Statue of Liberty; up
close shots of Incan ruins;
historical timeline comparing
ancient architectures; a vintage
book being closed; laptop
zoomed into an internet search
bar.*

Wait, no backhoe? No crane?

Correct. There were no backhoes or hydraulic cranes in the 15th century. The Inca didn't use beasts of burden or wheels either. For communication across the empire, they used quipu — a recording device that consisted of colored, knotted strings. The oldest quipu —

Wait — how old is Machu Picchu? You never said that this happened centuries ago. You said "one of the Seven Wonders of the *Modern* World." This is *ancient* history.

Welp, "Modern" is relative.

To what?

Ancient.

But did you say it's an *ancient* city?

Yes, it was built over 600 years ago, but it's nuanced. The same words in different contexts carry different meanings. Both Machu Picchu and — Okay, you don't care. Just...not about "Different-Context-Carry-Meanings."



Okay, what do you want to know?

How they built it.

They used ropes and ramps —

3:01

Illustration of an Inca pulling a huge boulder with rope; map of South America; illustration of Pachacuti with two figures running toward him; archaeological ruins; hands passing along large stone slabs; Inca figure standing in front of large coins; citadel of Machu Picchu; figure looking through a telescope on a dark mountain peak; star constellation formed as praying hands; illustration of a human sacrifice.

Thousands of workers pulled the stones up steep inclines. They came from all over the continent, and it took 100 years to complete. Let me explain.

Under the ruler Pachacuti, the Inca Empire expanded dramatically, which made it possible to get laborers from across the region. At its height, the Inca ruled over 12 million people who spoke 30 different languages. All of this suggests there was a highly organized labor system. Scholars believe that people paid their taxes not with money, but with physical labor, or the products of their labor. The Inca called this mandatory public service labor “Mit'a.”

Most scholars agree that Pachacuti commissioned Machu Picchu as a royal estate to house royals part of the year. Some point to evidence that it was an astronomical observatory, given its location high in the mountains. And some think the site may have had religious or spiritual uses. Very, very rarely on very special occasions, the Inca probably practiced human sacrifice. But it wasn't scary; it was an incredible honor.

4:08

Illustration of Incan holding a staff standing over a second figure, set against Machu Picchu; close up of Inca stonework; Inca people pulling huge stones with rope; hands working with stones; hiker climbing a mountain from daytime to nighttime; hiker on top of a mountain overlooking Machu Picchu.

Okay, wow! That's pretty neat. Royal estate. Spiritual uses! Human sacrifice!

Yes, it *IS* neat! Okay, now let's zoom in. Notice how perfectly these stones fit together? You can't even slide a piece of paper between them. And they did that without modern day tools. Picture generations of workers spending nearly 100 years — pulling rocks the size of dump trucks up the mountain and then shaping them until they fit together *perfectly*.

It's on the tippity top of a mountain, so high up that visitors today have to spend several days acclimating to the elevation or else they might get altitude sickness: headaches, dizziness, shortness of breath, vomiting.

Then, when you're finally there, and you're seeing it in real life, you're struck by how utterly impossible it seems. The earthquake-proof structures. The whole water system.

What water system?

Oh my goodness, you're right! We haven't even gotten to the water system!

5:11

Water streaming down a mountain; water channel with large arrow pointing downward; water cascading down stone faces; massive landslide; large flood; gully erosion; shots of tall city buildings, farm, busy highway, aeration basins, wastewater, sinks, water channel, wrench tightening a metal faucet.

Machu Picchu has an insanely advanced-for-its-time water system. A natural spring farther up the mountain feeds a canal that is carved into the rock. The canal is at a slight angle so that fresh water is always flowing to the city thanks to gravity. That canal feeds a bunch of fountains. And it's all **STILL WORKING TODAY**. Plus, there's underground drainage to prevent landslides, flooding, and erosion.

Think about it: Have you ever been to a big city — or anywhere, really — and wondered how the sinks and toilets in all the kitchens and bathrooms *get* and *get rid* of water? Like, what does the plumbing system look like in New York or Dubai? It's pretty amazing to think about it, and that's with modern technology! Imagine all this happening in the 1450s. They didn't have pipes! They didn't even have metal to make pipes!



6:07

Bowl of water atop a mountain with water flowing down the sides; figures walking along pyramids with a vessel of water; large eyes superimposed over the Brunelleschi Dome; Hall of Supreme Harmony on top of a mountain; Inca wearing a feathered headdress holding flowers in front of Machu Picchu; fanned out book pages; aerial views of Machu Picchu.

Yet, they had running water. On the top of the mountain, with limited tools.

Hmmmm.

You seem less enthusiastic all of a sudden.

Well, not to poke holes or anything, but didn't the ancient Egyptians have running water, like, *thousands* of years before the Inca built Machu Picchu? Why are we supposed to be so impressed with the Inca?

Well, it's not a competition. The Inca had different challenges –

Not that I'm comparing, but if I were, the Brunelleschi Dome was constructed around the same time, right? And the Forbidden City in Beijing. Are those wonders, too?

But those feats of engineering aren't built on the top of a mountain in the middle of a jungle. And they had more resources!

OK, OK. So, what we're gathering is that the wondrousness of Machu Picchu is more about what the ancient society was able to achieve with limited technology given the circumstances. Not comparing it to other cultural sites. And not considering what it looks like today.

Yes. And there's also a lot that we *don't* know about the Inca and about Machu Picchu. Like I said, they didn't even keep written records, so most of what we think we know comes from piecing together the evidence. Part of the allure is that Machu Picchu is so mysterious. We don't *really* know how they did it or why they did it, not 100%.

7:28

Illustration of Inca people in front of ruins; images of the Battle of Cajamarca, sickness from Florentine Codex, the Spanish conquest, and historical document title page; statue of Pachacuti; painting of a chaotic death scene; Inca woman leading a horse; Inca man wearing a traditional hat; cultural festival.

So what happened to the Inca? Where are they today?

Ah, important question. The Inca Empire was wiped out. War, European disease, and Spanish conquests.

What the! That's awful.

I know, a lot of history isn't pretty, especially when it comes to the rise and fall of empires. But let me finish. The Inca story isn't over. The Inca Empire fell, and a lot of the people died, but not all of them. Descendants of the Inca from centuries ago are still alive today. Many of them still speak the official Inca language, Quechua.

8:09

Inca in a traditional poncho working with a wooden oar; images of Machu Picchu; map of South America; Inca working on a stone hut against the backdrop of Machu Picchu.

And some Quechua words show up in Spanish.

So the Inca live on! Amazing!

Yes!

I can do this just as well as that guy! When we look at Machu Picchu, we don't just see an *intact* pile of stones; we see proof of the Inca Empire's incredible political and social achievement. The largest empire in the Americas, built without money, iron tools, or the wheel, unified by centralized governance, communal labor, and engineering so brilliant that Machu Picchu still stands today! Behold! Machu Picchu!