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00:00:00,000 --> 00:00:10,040

You know what? I've been around for a while. I've traveled the world, met some interesting

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00:00:10,040 --> 00:00:16,260

people, done some crazy things. So you might just think there's not much that could take

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00:00:16,260 --> 00:00:25,080

me by surprise. You'd be wrong. The world is full of stories and science and things

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00:00:25,080 --> 00:00:30,880

that amaze and confound me every single day. Incredible mysteries that keep me awake at

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00:00:30,880 --> 00:00:39,160

night. Some I can answer. Others justify logic.

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00:00:39,160 --> 00:00:44,080

Like in Germany where forensic scientists testing 3,000-year-old Egyptian mummies make

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00:00:44,080 --> 00:00:50,160

one of the most remarkable and controversial discoveries in history. All the thousands

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00:00:50,160 --> 00:01:00,400

of sea lions that leave San Francisco before an earthquake, did they sense impending disaster?

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00:01:00,400 --> 00:01:07,360

And in Rome, a mysterious medieval book is unearthed. Do its secrets hold the fate of

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00:01:07,360 --> 00:01:09,800

all mankind?

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00:01:10,800 --> 00:01:17,800

Yep. It's a weird world. And I love it.

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00:01:17,800 --> 00:01:40,240

Elementary history tells us that in 1492, the great navigator and explorer Christopher

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00:01:40,240 --> 00:01:47,280

Columbus traveled from Spain to the Bahamas and on to the Americas. We all know that Columbus

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00:01:47,280 --> 00:01:51,640

was the first to bring back artifacts and treasure from the new world of the Americas

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00:01:51,640 --> 00:02:02,320

to the old world of Europe. But it's a true. What if the historians are wrong and someone

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00:02:02,320 --> 00:02:10,000

else did all this thousands of years before Senior Colon? This next weird tale suggests

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00:02:10,000 --> 00:02:19,120

just that and the proof might be found in a guy like this.

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00:02:19,120 --> 00:02:31,320

In 1992, a German forensic team makes an extraordinary discovery. Inside several 3,000-year-old Egyptian

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00:02:31,320 --> 00:02:38,600

mummies, they find what appears to be evidence of a hardcore narcotic not present in Egypt

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00:02:38,600 --> 00:02:51,560

until the late 19th century. Outrageous hoax? Or is the impossible true?

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00:02:51,560 --> 00:02:58,320

The ancient Egyptians are a constant source of fascination, an extraordinary civilization

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00:02:58,320 --> 00:03:07,320

that gave us the pyramids, sphinx, and the dark mysteries of the mummies. But new research

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00:03:07,400 --> 00:03:12,520

has unearthed shocking evidence that may present them in a different light and leads us to

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00:03:12,520 --> 00:03:19,080

ask what was really going on in the Valley of the Kings. It would open a big can of worms

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00:03:19,080 --> 00:03:25,280

for the scientific community. Recent advances in forensic science have enabled us to dig

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00:03:25,280 --> 00:03:32,920

deeper into our past than ever before. But what could it tell us about the lives of people

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00:03:33,000 --> 00:03:40,000

who lived 3,000 years ago? Could forensics unlock the secrets of the ancient Egyptians?

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00:03:42,080 --> 00:03:47,800

Searching for clues, the German forensic team began the chemical analysis of fragile and

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00:03:47,800 --> 00:03:57,800

priceless ancient mummies. They're amazed by what they find. Inside hair and tissue samples,

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00:03:58,440 --> 00:04:11,440

they discover evidence of cocaine. So how did these Egyptian mummies, some dating back

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00:04:11,560 --> 00:04:16,760

to 300 centuries, get traces of cocaine inside them thousands of years before the substance

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00:04:16,760 --> 00:04:23,760

was thought to have reached the Middle East? The only possible answer then, that ancient

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00:04:23,880 --> 00:04:29,880

Egyptians had the coca leaf, in other words the pheros, made contact with the native South

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00:04:29,880 --> 00:04:36,880

American several millennia before Columbus. Is that weird or what?

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00:04:40,200 --> 00:04:46,720

Let's look for answers. The mystery begins with the cocoa plant from which cocaine derives,

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00:04:46,720 --> 00:04:53,720

and only in South America. The plant is not native to Africa, so how did South American

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00:04:54,600 --> 00:05:01,600

cocaine get into Egyptian mummies? Bernard Ortiz de Montelano is a medical anthropologist.

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00:05:07,040 --> 00:05:11,400

Like many in the academic community, he questioned the findings.

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00:05:11,400 --> 00:05:15,520

I was very skeptical and knew I would have to look at the original literature and do some

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00:05:15,560 --> 00:05:20,560

research myself. Anthropologist Charlene Klingman is also baffled.

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00:05:20,560 --> 00:05:26,560

The idea of it appearing in ancient Egyptian mummies is surprising.

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00:05:27,560 --> 00:05:33,400

Examining the Egyptian and South American cultures might help solve this bizarre mystery. So

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00:05:33,400 --> 00:05:40,400

could there be a connection? Both civilizations built pyramids and both mummified their dead.

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00:05:40,680 --> 00:05:45,680

The Egyptians used salts and resins while the natives of Peru allowed their mummies to

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00:05:45,680 --> 00:05:52,680

dry naturally. But were the Peruvians using cocaine 3,000 years ago?

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00:05:54,120 --> 00:06:01,120

Larry Cartmel is a forensic pathologist. He has tested several mummies from Peru.

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00:06:01,560 --> 00:06:07,520

The first few we tested were all negative, but then out of the eight samples, number five

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00:06:07,520 --> 00:06:14,520

we tested was positive. We had no idea that cocaine metabolite would last a thousand years.

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00:06:14,720 --> 00:06:21,120

And later on we found that actually our oldest one we've had is 3,000 years old.

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00:06:21,120 --> 00:06:25,600

Cocaine is a very good local anesthetic and it's a good pain reliever. So they could have

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00:06:25,600 --> 00:06:32,600

used it for medicinal purposes as well. And then we found that about half the population

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00:06:32,720 --> 00:06:39,720

tested positive for coca leaf use. So it was probably used more frequently than a lot of

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00:06:40,360 --> 00:06:47,360

anthropologists had speculated up until that time. Evidence of cocaine in Peruvian and

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00:06:47,360 --> 00:06:54,360

Egyptian mummies poses an intriguing question. Did the cultures actually interact? Could

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00:06:55,080 --> 00:07:02,000

the Egyptians have traveled to South America? If someone could prove the theory of transatlantic

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00:07:02,000 --> 00:07:06,560

travel and back it up with a significant amount of evidence, it would open a big can of worms

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00:07:06,560 --> 00:07:11,840

for the scientific community. Could the Egyptians have made the perilous

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00:07:11,840 --> 00:07:18,840

Atlantic crossing before Columbus? So here's the problem for the Egyptians. A round trip

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00:07:21,360 --> 00:07:28,360

to go pick up some cocaine would have been around 32,000 miles. Of course they would

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00:07:29,040 --> 00:07:34,520

have had to endure the perils of an Atlantic crossing and they would need to sail around

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00:07:34,520 --> 00:07:39,920

the tip of the Americas. This is an area known as Cape Horn, home to some of the world's

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00:07:39,920 --> 00:07:45,880

most treacherous waters, with winds so fierce that even today's ships start to make headway.

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00:07:45,880 --> 00:07:52,760

If they survived the Cape they would head north to Peru. Now for their time the ancient Egyptians

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00:07:52,760 --> 00:07:58,160

were probably the most sophisticated civilization on earth. But did they really have the sailing

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00:07:58,200 --> 00:08:04,000

technology to make such an epic voyage? The ancient Egyptians built many of their boats

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00:08:04,000 --> 00:08:11,000

out of papyrus, a reed-like plant. Due to the boat's small size, primitive sails and

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00:08:11,000 --> 00:08:17,160

rigging, it is highly unlikely a vessel like this could survive a voyage to South America

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00:08:17,160 --> 00:08:20,360

and back. It just doesn't seem possible. It would be

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00:08:20,360 --> 00:08:25,440

an amazing, amazing feat. And looking at what the ancient Egyptians have left behind, they

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00:08:25,440 --> 00:08:30,640

wrote down all of their conquests, the heroic activities that they embarked upon and there

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00:08:30,640 --> 00:08:35,440

is little to no evidence of that. There's evidence of maritime technology, but there's

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00:08:35,440 --> 00:08:40,440

nothing that shows that they came and saw unconquered.

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00:08:40,440 --> 00:08:46,440

And there's another problem. With the transatlantic theory of the Egyptians did go to South America,

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00:08:46,440 --> 00:08:52,440

why didn't they leave a trace? No artifacts from South American have ever been found in

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00:08:52,440 --> 00:08:59,440

ancient Egyptian sites. One would think that if they made contact with the South Americans,

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00:08:59,440 --> 00:09:06,440

things like corn or other cultural commodities would have returned with them and that's just

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00:09:06,440 --> 00:09:11,440

not appearing in the archaeological record. So you have no record in the new world, you

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00:09:11,440 --> 00:09:17,440

have no record in the old world, there is no record in Egypt of a trip. And that's

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00:09:17,440 --> 00:09:22,440

not true. You have no record in the old world. There is no record in Egypt of a trip that

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00:09:22,440 --> 00:09:26,440

mentions cocaine or going to the new world or going in a re-boat in the world.

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00:09:26,440 --> 00:09:31,440

There just hasn't been anything to support the theory that these ancient individuals were

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00:09:31,440 --> 00:09:35,440

making contact. We're actually making successful journeys across the Atlantic.

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00:09:35,440 --> 00:09:40,440

You have to be doing two, three hundred round trips a year to get that much coca leaf into

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00:09:40,440 --> 00:09:47,440

the Egyptian population. So right there you have an enormous number of assumptions.

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00:09:48,440 --> 00:09:53,440

The mystery deepens. If there was no way for cocaine to have crossed the ocean, why was

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00:09:53,440 --> 00:10:00,440

it found in Egyptian mummies? It could have been a lab contamination, it could have been

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00:10:00,440 --> 00:10:05,440

a transfer contamination. Any number of the mummies that you would see in a museum today

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00:10:05,440 --> 00:10:10,440

have traveled beyond getting buried in their tombs. There's plenty of opportunities for

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00:10:10,440 --> 00:10:16,440

contamination to occur. If it was housed in for say a crate that might have been used

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00:10:16,440 --> 00:10:21,440

to hold something else at one point in time, there's opportunities for trace contamination there.

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00:10:22,440 --> 00:10:28,440

So we know that there is no way the Egyptians made it all the way over to South America.

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00:10:28,440 --> 00:10:35,440

Oh well, it was fun when it lasted. Columbus you can stop spinning in your grave now.

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00:10:35,440 --> 00:10:41,440

But the question remains, how did cocaine get in the Egyptian mummies?

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00:10:42,440 --> 00:10:48,440

The 19th century was a golden age in archeological exploration. The rediscovery of lost and ancient

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00:10:48,440 --> 00:10:52,440

civilizations captured the public's imagination.

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00:10:52,440 --> 00:10:59,440

The idea of ancient Egypt was a sensation. It was as popular as our blockbuster films

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00:10:59,440 --> 00:11:03,440

today. People had an interest in it. They were reading about it. They were studying it.

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00:11:03,440 --> 00:11:08,440

They had a vested interest in this culture. They wanted a part of it. They wanted it as close to

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00:11:08,440 --> 00:11:10,440

them as in their own homes.

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00:11:11,440 --> 00:11:16,440

For the European elite, owning an Egyptian mummy was a must have status symbol.

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00:11:17,440 --> 00:11:22,440

And a lot of the ancient Egyptian collections that are out there have been housed in people's

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00:11:22,440 --> 00:11:28,440

homes throughout the years. Coffins, mummies, funerary objects. A lot of it comes from

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00:11:28,440 --> 00:11:29,440

private collections.

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00:11:30,440 --> 00:11:36,440

Those days rich people in nobles and kings had collections of all kinds of things.

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00:11:36,440 --> 00:11:43,440

They would collect strange animals and shells and minerals and weird things.

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00:11:43,440 --> 00:11:48,440

And among one of the things they'd like to collect was Egyptian mummies. And they'd have these

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00:11:48,440 --> 00:11:54,440

collections of their own private little museums, which they would use on social occasions to

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00:11:54,440 --> 00:11:56,440

take people and show them their collection.

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00:11:57,440 --> 00:12:02,440

The archeological methods of the time were very unsophisticated, often allowing modern

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00:12:02,440 --> 00:12:06,440

debris to become trapped next to the mummified remains.

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By the late part of the 1800s, cocaine was introduced into Europe and commonly used as a medicine.

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00:12:14,440 --> 00:12:19,440

Is it possible these mummies somehow became contaminated during this time?

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00:12:20,440 --> 00:12:22,440

It's a conceivable situation.

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00:12:23,440 --> 00:12:26,440

Hmm, conceivable but improbable.

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00:12:28,440 --> 00:12:33,440

The evidence of cocaine found by the forensic team had been ingested into the body through

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00:12:33,440 --> 00:12:40,440

eating or inhalation. These traces then became incorporated into body tissue and air while alive.

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00:12:41,440 --> 00:12:48,440

Brief contact couldn't produce the same result, plus the team had carefully washed their samples to

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00:12:48,440 --> 00:12:50,440

remove any contaminants.

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00:12:51,440 --> 00:12:53,440

So the mystery lives on.

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00:12:54,440 --> 00:13:00,440

How did these drugs end up inside these ancient bodies?

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00:13:00,440 --> 00:13:05,440

Well, perhaps these mummies weren't from ancient Egypt at all.

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00:13:06,440 --> 00:13:12,440

During the time period when ancient Egyptian mummies were being sold as a commodity, there is an

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00:13:12,440 --> 00:13:17,440

opportunity for scam artists to get on board and create fake mummies in order to turn a profit.

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00:13:18,440 --> 00:13:26,440

So fake mummies were being produced and sold abroad to individuals seeking something glamorous and

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00:13:26,440 --> 00:13:30,440

interesting. What they got might have been something different than what they paid for.

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00:13:31,440 --> 00:13:34,440

And so there's enormous demand for mummies.

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00:13:35,440 --> 00:13:38,440

And like I said, in Egypt there weren't that many mummies available.

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00:13:39,440 --> 00:13:44,440

And so what you would do is the enterprising people would go out there and get linen and they wrap up some

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00:13:44,440 --> 00:13:45,440

cadaver.

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00:13:46,440 --> 00:13:53,440

So a fake mummy is one that has been made in the 19th century and then sold as an authentic mummy.

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00:13:53,440 --> 00:13:59,440

And the argument that some people would make is these fake mummies in fact were contaminated.

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00:14:00,440 --> 00:14:03,440

But the mummies examined by the researchers aren't fake.

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00:14:04,440 --> 00:14:08,440

They've been certified genuine by the museum where they reside.

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00:14:09,440 --> 00:14:15,440

So for now, it seems unlikely, we will ever know the truth of the cocaine mummies.

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The researchers have never let anyone else test their samples and evidence of cocaine in other

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00:14:21,440 --> 00:14:24,440

Egyptian mummies has yet to be found.

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00:14:27,440 --> 00:14:32,440

At the end of the day, the scientific community is left with a lot of open-ended questions.

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00:14:33,440 --> 00:14:35,440

There's a lot of things that have yet to be answered.

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00:14:35,440 --> 00:14:37,440

For now, this is all we've got.

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00:14:38,440 --> 00:14:40,440

Is that weird or what?

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00:14:52,440 --> 00:14:55,440

All...

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00:14:57,440 --> 00:15:00,440

It's common knowledge that we human beings have five senses.

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00:15:01,440 --> 00:15:06,440

Touching, taste, smell, hearing, sight.

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00:15:07,440 --> 00:15:08,440

But what about the animal kingdom?

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00:15:09,440 --> 00:15:13,440

As it turns out, there are lots of animals out there that can sense things that we cannot.

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00:15:14,440 --> 00:15:22,440

Bats use sonar to perceive objects and submarine life can sense subtle electrical impulses.

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00:15:23,440 --> 00:15:30,440

But some creatures may even have more mysterious awareness.

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00:15:31,440 --> 00:15:32,440

Be quiet!

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00:15:34,440 --> 00:15:38,440

The ability to sense disaster.

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00:15:39,440 --> 00:15:44,440

San Francisco, December 2009.

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00:15:46,440 --> 00:15:48,440

A mysterious event shocks the city.

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00:15:49,440 --> 00:15:54,440

Thousands of sea lions living on its docks suddenly disappear overnight.

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00:15:57,440 --> 00:16:00,440

Days later, an earthquake rocks the region.

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00:16:01,440 --> 00:16:05,440

Did the sea lions sense impending doom?

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00:16:06,440 --> 00:16:09,440

Weird or what?

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00:16:13,440 --> 00:16:17,440

San Francisco is one of the most popular tourist destinations in America.

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00:16:18,440 --> 00:16:24,440

One of its leading attractions is the thousands of sea lions that live on Pier 39.

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00:16:25,440 --> 00:16:33,440

They've made this their happy home for the past 20 years, but in December 2009, something remarkable happened.

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00:16:34,440 --> 00:16:37,440

Suddenly, the sea lions were gone.

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00:16:39,440 --> 00:16:41,440

They virtually disappeared overnight.

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00:16:44,440 --> 00:16:45,440

Why?

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00:16:46,440 --> 00:16:47,440

Can I ask you that one?

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00:16:48,440 --> 00:16:50,440

That would be like the ravens leaving the Tower of London.

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00:16:51,440 --> 00:16:53,440

All this dark used to be full of them.

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00:16:55,440 --> 00:16:59,440

We were quite disappointed when we came and just saw one or two pontoons, you know.

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00:17:00,440 --> 00:17:03,440

We really don't know why the animals left.

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00:17:04,440 --> 00:17:06,440

Jim Oswald runs the Bay Area Marine Mammal Center.

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00:17:07,440 --> 00:17:10,440

He witnessed the sea lions' disappearance.

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00:17:11,440 --> 00:17:16,440

In November, that number went from 927 down to 20.

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00:17:17,440 --> 00:17:20,440

And that really surprised people.

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00:17:21,440 --> 00:17:27,440

Especially if you're expecting to see massive numbers of sea lions to only see 20, it's quite a shock.

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00:17:28,440 --> 00:17:33,440

It's highly unusual behavior, but was there a darker side to this mystery?

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00:17:35,440 --> 00:17:46,440

On January 9, 2010, soon after the sea lions left San Francisco, a 6.5 magnitude earthquake rocked the coast of northern California near the town of Eureka.

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00:17:47,440 --> 00:17:52,440

The quake left thousands without power and cost damage, worth millions of dollars.

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00:17:53,440 --> 00:18:00,440

The U.S. Geological Survey is responsible for monitoring seismic activity, but was unable to predict the earthquake.

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00:18:01,440 --> 00:18:05,440

Is it possible? A sea lion sensed it and left?

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00:18:07,440 --> 00:18:08,440

It's an intriguing theory.

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00:18:09,440 --> 00:18:13,440

Jim Birkeland is a geologist and former U.S. Coast Guard advisor.

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00:18:15,440 --> 00:18:19,440

He studied the ability of animals to sense disaster for more than 20 years.

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00:18:20,440 --> 00:18:22,440

I know animals can predict earthquakes.

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00:18:23,440 --> 00:18:26,440

It's clear to me that they left the Bay Area for good reason.

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00:18:27,440 --> 00:18:30,440

And it wasn't because the tourists were failing to feed them or applaud.

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00:18:32,440 --> 00:18:35,440

Jim has found an unusual way to test his theory.

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00:18:36,440 --> 00:18:38,440

So I started keeping track of missing pets.

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00:18:40,440 --> 00:18:46,440

In 1979, after four earthquakes rocked California, Jim checked the missing pet ads at the back of local newspapers.

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00:18:46,440 --> 00:18:51,440

He was looking to see if the number of missing animals increased before the tremors.

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00:18:53,440 --> 00:18:56,440

We had record numbers of missing pets just before local quakes.

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00:18:57,440 --> 00:19:02,440

Never had seen more than 15 missing cat ads and there were 27.

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00:19:03,440 --> 00:19:05,440

And there were 58 missing dog ads. These were record numbers.

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00:19:06,440 --> 00:19:09,440

Something had to be going on that the animals were alert to.

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00:19:10,440 --> 00:19:16,440

Remarkably, there have been similar reports of this type of animal behavior worldwide.

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00:19:17,440 --> 00:19:23,440

In May 2008, residents of Taijum, China witnessed thousands of frogs cross a bridge.

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00:19:24,440 --> 00:19:28,440

A few days later, an earthquake killed more than 60,000 people.

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00:19:29,440 --> 00:19:32,440

Can animals sense something we can't?

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00:19:33,440 --> 00:19:38,440

There are tremendous changes in the electromagnetic field in the area of earthquakes.

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00:19:39,440 --> 00:19:48,440

Some scientists believe increased strain on the Earth's crust near earthquake fault lines produces electromagnetic signals, hours before an earthquake strikes.

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00:19:50,440 --> 00:19:58,440

We know the electromagnetic field is troubled by changes in the solar flares, by stresses in the crust,

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00:19:58,440 --> 00:20:04,440

and the animals have been using changes in the magnetic field for navigation for millions of years.

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00:20:05,440 --> 00:20:10,440

But not everyone is convinced that the sea lions knew of the impending earthquake.

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00:20:11,440 --> 00:20:17,440

Kim Ram Sariah is a marine biologist at the Marine Animal Institute at Oregon University.

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00:20:18,440 --> 00:20:21,440

I'm sure that they have the ability to sense things that we don't,

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00:20:22,440 --> 00:20:26,440

but there have been many earthquakes over the past 20 years and the sea lions have not left San Francisco.

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00:20:26,440 --> 00:20:29,440

I don't think that they left because of an earthquake.

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00:20:30,440 --> 00:20:37,440

So, if they didn't leave San Francisco because of an earthquake, why did so many sea lions leave their home so abruptly?

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00:20:38,440 --> 00:20:39,440

Why don't we ask them?

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00:20:40,440 --> 00:20:42,440

Why the sea lions left is still a mystery.

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00:20:43,440 --> 00:20:49,440

But where they went would soon become clear thanks to a discovery in nearby Oregon.

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00:20:50,440 --> 00:20:57,440

Dan Harkin runs the sea lion caves in Florence, Oregon, 500 miles up the coast from San Francisco.

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00:20:59,440 --> 00:21:07,440

Just one week after the massed exodus from San Francisco, Dan noticed that the population of sea lions in Oregon had grown dramatically.

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00:21:08,440 --> 00:21:10,440

Were these the sea lions from Pier 39?

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00:21:11,440 --> 00:21:15,440

The stellar sea lions are the largest of the sea lion family.

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00:21:15,440 --> 00:21:20,440

At this time of year in the winter we have around 500 stellar sea lions inside the cave.

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00:21:21,440 --> 00:21:29,440

And then just before Thanksgiving we started getting reports that there were sea lions gathering about a quarter mile up the road here.

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00:21:30,440 --> 00:21:34,440

The numbers were way above anything we'd ever seen.

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00:21:36,440 --> 00:21:43,440

So we investigated and we find out that the beach was just completely clustered with sea lions.

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00:21:43,440 --> 00:21:52,440

So when you have two or three thousand more than we normally do, people were bringing in cameras and showing us what they had taken and I just couldn't believe it.

217

00:21:55,440 --> 00:22:01,440

As the number of sea lions on the coast of Oregon grew it seemed likely they were the ones missing from Pier 39.

218

00:22:04,440 --> 00:22:11,440

But if it wasn't an earthquake, what had driven thousands of them 500 miles north of their home in San Francisco?

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00:22:12,440 --> 00:22:20,440

Marine biologist Kim Ram Sariah has an incredible theory. She believes the answer could lie with changes to the ocean brought on by something called El Niño.

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00:22:21,440 --> 00:22:27,440

The primary reason for them to travel is to find food. There is a strong El Niño going on and it's driving the prey to the north.

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00:22:28,440 --> 00:22:32,440

The sea lions and the other fish eating birds are taking advantage of that.

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00:22:32,440 --> 00:22:39,440

El Niño is a periodic change in climate that warms the subsurface of the Pacific Ocean by several degrees.

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00:22:40,440 --> 00:22:47,440

It can dramatically affect weather around the world. But could El Niño be responsible for the sea lions' disappearance as well?

224

00:22:48,440 --> 00:22:49,440

Maybe.

225

00:22:50,440 --> 00:22:57,440

Kim believes the powerful El Niño of 2010 could have caused sardines and herring to be a huge threat to the ocean.

226

00:22:57,440 --> 00:23:07,440

Kim believes the powerful El Niño of 2010 could have caused sardines and herring to travel north in search of cooler, food-rich waters with the sea lions in close pursuit.

227

00:23:08,440 --> 00:23:15,440

So since sea lions can't order take out, is it possible? They just went out for dinner?

228

00:23:18,440 --> 00:23:24,440

The fact that we're seeing so many baitfish off of Oregon coast this year, we're seeing a lot of young sardines.

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00:23:24,440 --> 00:23:29,440

We're seeing record numbers of gulls. We're seeing record numbers of brown pelicans.

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00:23:30,440 --> 00:23:36,440

And they're staying here during the winter where they usually head south. Food is really good here right now and the sea lions are taking advantage of that.

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00:23:37,440 --> 00:23:44,440

So my guess is that the reason that they left Pier 39 is just because there was a lack of food in that area. So they took off in search of food.

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00:23:45,440 --> 00:24:02,440

So what is the answer to the mystery of San Francisco's disappearing sea lions? Did they predict an impending earthquake? Were they simply chasing food? Was it something else?

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00:24:03,440 --> 00:24:07,440

Scientists may never know, but there is a happy ending.

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00:24:08,440 --> 00:24:16,440

In February 2010, three months after the disappearance, the sea lions returned to their home on Pier 39.

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00:24:18,440 --> 00:24:26,440

So the mystery remains, but perhaps now San Franciscans can rest easy. Is that weird or what?

236

00:24:38,440 --> 00:24:48,440

What would you say if I told you that there was a book containing the secrets of the dark arts, alchemy, and wizardry?

237

00:24:49,440 --> 00:25:00,440

A book that can literally reveal all the mysteries of the universe? A tome that threatens everything our entire civilization is founded upon?

238

00:25:00,440 --> 00:25:08,440

You'd say, yeah, right, but I bet you still want to see it.

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00:25:11,440 --> 00:25:26,440

Throughout history, mysterious books and writings have caused panic and controversy. Some believe that in his book, *The Prophecies of Nostradamus*, predicted the rise of Hitler. The 9-11 attacks, the end of the world.

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00:25:31,440 --> 00:25:41,440

But there is another mysterious book that many believe contains other cataclysmic predictions. Its dark secrets are yet to be revealed.

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00:25:42,440 --> 00:25:51,440

Historians, linguists, and code breakers are attempting to decipher its meaning. What will they reveal?

242

00:25:52,440 --> 00:26:03,440

Experts worldwide are obsessed by this item, MS408, of the rare book and manuscript library at Yale University, its current home.

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00:26:04,440 --> 00:26:15,440

First impression was that it's extraordinarily bizarre, but that it's also oddly familiar. On one level, it looks like something you've seen before.

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00:26:15,440 --> 00:26:25,440

But the more you look at it, the more you realize that it's really like nothing you've seen before. So it only gradually do you become aware that this isn't a normal kind of manuscript at all.

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00:26:28,440 --> 00:26:40,440

This mysterious book has been known as the Voynich Manuscript. It was discovered in 1912 by rare book dealer Wilfrid Voynich in a Jesuit library near Rome.

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00:26:41,440 --> 00:26:44,440

Its author has never been revealed.

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00:26:46,440 --> 00:26:54,440

Nearly a hundred years later, historians like Professor Nicholas Terpstra are still trying to decipher the manuscript's contents.

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00:26:55,440 --> 00:26:57,440

Unidentifiable plants.

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00:26:58,440 --> 00:27:00,440

Are these the plants from the Garden of Eden?

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00:27:01,440 --> 00:27:03,440

Strange astrological symbols.

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00:27:04,440 --> 00:27:07,440

Is this somehow the astrology of another level of the universe?

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00:27:08,440 --> 00:27:15,440

And most mysterious of all, pages of text that 100 years later still remain undecypered.

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00:27:16,440 --> 00:27:24,440

As you try to read the lettering, you realize that it's completely impossible to decipher. And if we can just break it out, we'll find the answer to everything.

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00:27:26,440 --> 00:27:32,440

A manuscript that promises to change the world and no one can read the thing? And if that wasn't enough?

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00:27:33,440 --> 00:27:36,440

No bio in the back cover, no one knows who wrote it?

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00:27:37,440 --> 00:27:41,440

So is there anything we do know about the Voynich Manuscript?

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00:27:42,440 --> 00:27:51,440

Well, in 2009, researchers at the University of Arizona carbon-dated it and discovered it may have been produced in the first half of the 15th century.

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00:27:52,440 --> 00:27:57,440

And that fact opens up a whole world of theories.

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00:28:02,440 --> 00:28:04,440

You won't believe what I'm saying here.

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00:28:08,440 --> 00:28:17,440

What mysterious secrets does the Voynich manuscript contain? Could there be predictions like those of Nostradamus, prophesizing Arduan?

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00:28:18,440 --> 00:28:26,440

To begin, investigators needed to find out when it was written. In 2009, they got a significant clue.

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00:28:27,440 --> 00:28:36,440

Researchers at the University of Arizona carbon-dated the parchment. They discovered it might have been produced in the first half of the 15th century.

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00:28:38,440 --> 00:28:43,440

Could this vital piece of evidence reveal the secrets of the Voynich manuscript?

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00:28:46,440 --> 00:28:53,440

Medieval Europe was a continent emerging from the Dark Ages into a new dawn of innovation and discovery.

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00:28:54,440 --> 00:29:05,440

The early 15th century is a time of extraordinary expansion, expansion of people's creativity, curiosity, people who are curious about all sorts of things in the world.

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00:29:06,440 --> 00:29:12,440

There's a certain amount of political instability, but there's a lot of economic expansion and merchants are going to all different parts of the world.

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00:29:13,440 --> 00:29:23,440

There's also a real curiosity about learning, about particularly finding out what the ancient Greeks and the ancient Romans knew and trying to take that knowledge and bring it back into contemporary society.

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00:29:24,440 --> 00:29:28,440

So everybody thought that the way to the future lay through the past.

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00:29:29,440 --> 00:29:37,440

This new era of innovation fueled interest in more controversial beliefs like alchemy and other dark arts.

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00:29:38,440 --> 00:29:44,440

Books were written which contained what many believed were ancient scientific or alchemical techniques.

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00:29:45,440 --> 00:29:49,440

One of the most famous were Giambattista de la Porta's *Magia Naturalis*.

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00:29:51,440 --> 00:30:02,440

Books of secrets were common at the time. The notion was that the only truths that are really important are the truths that aren't immediately apparent.

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00:30:03,440 --> 00:30:10,440

So that true knowledge is secret knowledge and the way to get secret knowledge was usually by revelation of some kind.

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00:30:11,440 --> 00:30:21,440

So there's a whole tradition that goes back to the Greeks of books of secrets that explain then the secret knowledge of the universe, the secret connections within the universe,

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00:30:22,440 --> 00:30:27,440

and then the way to probe this, to understand it and normally then to try to work with it.

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00:30:28,440 --> 00:30:34,440

So the whole idea of a book of secrets is that it's like a technical manual for controlling the powers of the universe.

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00:30:36,440 --> 00:30:46,440

But for a time these ancient truths were heresy. To avoid persecution, many authors would find ways to disguise sensitive information in their writings.

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00:30:47,440 --> 00:30:50,440

So it tended to be the kind of things they wanted to hide for political purposes.

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00:30:51,440 --> 00:30:56,440

One of the most common forms of disguise was to compose in a language few people could read.

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00:30:57,440 --> 00:31:04,440

What you do find, there's a whole range of languages that people are rediscovering. This is the time period, early 15th century,

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00:31:05,440 --> 00:31:14,440

when people are reacquaining themselves with things like Egyptian hieroglyphics and believe that hieroglyphics are the answer to finding out what true Egyptian knowledge was.

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00:31:15,440 --> 00:31:19,440

This is a time when people are trying to find out what Etruscan looked like, ancient Etruscan.

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00:31:20,440 --> 00:31:27,440

This is a time when people actually invent languages and a hundred years later you'll find somebody who invents a language from,

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00:31:28,440 --> 00:31:31,440

supposedly the language from the ancient biblical times that was spoken by the angels.

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00:31:32,440 --> 00:31:38,440

There's also a real curiosity about learning, about particularly finding out what the ancient Greeks and the ancient Romans knew

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00:31:39,440 --> 00:31:42,440

and trying to take that knowledge and bring it back into contemporary society.

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00:31:42,440 --> 00:31:46,440

So everybody thought that the way to the future lay through the past.

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00:31:47,440 --> 00:31:51,440

They're looking for ancient knowledge anywhere they can get it. The more ancient the better.

289

00:31:54,440 --> 00:32:03,440

Have you ever heard of a language called lac? lac. No, no, lac. See, I thought not.

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00:32:03,440 --> 00:32:14,440

This was a language that was spoken by native Alaskans and let me emphasize was in 2008 the last person who could speak lac died.

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00:32:15,440 --> 00:32:21,440

Languages come and go, in fact, of the nearly 7,000 languages around the world today, 500 of them.

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00:32:22,440 --> 00:32:25,440

That's 500 of them are teetering on the edge of extinction.

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00:32:25,440 --> 00:32:32,440

Is it possible that the Voynich manuscript is the remnant of a forgotten extinct language?

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00:32:34,440 --> 00:32:40,440

Is the Voynich manuscript a remnant of an ancient language rediscovered by a 15th century scholar?

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00:32:41,440 --> 00:32:44,440

Stephen Chrissomalus is a linguistics expert.

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00:32:45,440 --> 00:32:52,440

Throughout history there must have been tens of thousands, if not hundreds of thousands of languages spoken, most of which are now long extinct.

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00:32:53,440 --> 00:33:00,440

The Voynich manuscript is fascinating because it's so close to something that we could decipher and we could read.

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00:33:01,440 --> 00:33:07,440

Many of the letters look like letters in the Roman alphabet and yet as soon as you get into it, it falls to pieces.

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00:33:08,440 --> 00:33:12,440

Linguists call the text found in the Voynich manuscript, Voynichese.

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00:33:13,440 --> 00:33:19,440

If it is indeed a language, its complex designs make Voynichese almost impossible to recognize.

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00:33:19,440 --> 00:33:27,440

While it appears to have some familiar characters, what they mean and how they relate to each other has experts baffled.

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00:33:28,440 --> 00:33:36,440

In most languages, if you look at a page of text, the most common words in that text will be short.

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00:33:37,440 --> 00:33:48,440

So if you were to go to your shelf and pick out a book, I can absolutely tell you with 100% certainty that the common words will be nice short words, the, a, of, it, etc.

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00:33:49,440 --> 00:33:55,440

In the Voynich manuscript, the most common words aren't short words and that's a mystery.

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00:33:56,440 --> 00:34:09,440

That's one of the reasons why some scholars think that it in fact doesn't represent language at all because it doesn't have lots and lots of those little short words that we find again and again and again in languages across the world.

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00:34:10,440 --> 00:34:13,440

This is not just about English, but it's in fact a property of human language.

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00:34:14,440 --> 00:34:24,440

The Voynich manuscript seems as technically sophisticated as a real written language, but incredibly it bears no resemblance to any other language that we know of.

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00:34:25,440 --> 00:34:35,440

But some historians believe that was the intention and the Voynich manuscripts unknown author didn't want its secrets revealed. Ever.

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00:34:36,440 --> 00:34:47,440

Could the secret knowledge within the Voynich manuscript have been disguised with a code, perhaps a medieval cipher text?

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00:34:48,440 --> 00:34:54,440

Oh, damn it.

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00:34:55,440 --> 00:35:02,440

You know what a cipher is, right? It's a way you can encrypt or decrypt something.

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00:35:03,440 --> 00:35:06,440

Yeah, jumble things up to hide sensitive information.

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00:35:07,440 --> 00:35:14,440

Have you ever done a cryptogram? Well, that's a cipher. Simple, letter, substitution game.

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00:35:14,440 --> 00:35:17,440

Not for me, I suck at it.

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00:35:19,440 --> 00:35:25,440

The simplest type of code is a simple substitution cipher where you take one letter to the alphabet and replace it with another.

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00:35:25,440 --> 00:35:34,440

So A would be encoded by BCD. So while a message encrypted by this cipher might look unintelligible, if you study it closely, you'll start to see patterns.

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00:35:36,440 --> 00:35:41,440

If you're encrypting an English language, for example, E is the most common letter used in the English language, say.

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00:35:41,440 --> 00:35:47,440

So when you look at the encrypted text, you might find that the letter L is the most encrypted letter in the text.

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00:35:47,440 --> 00:35:52,440

So then you would suspect that maybe L represents E.

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00:35:52,440 --> 00:36:00,440

The problem, as some of the greatest code breakers in history have discovered, is finding those patterns in the Voynich manuscript.

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00:36:01,440 --> 00:36:08,440

By the Second World War, the art of encrypting documents had been nearly perfected by the Germans' enigma cipher machine.

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00:36:08,440 --> 00:36:15,440

To crack the enigma's code, allied code breakers had to push their technology beyond its limits.

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00:36:15,440 --> 00:36:24,440

The governments brought together teams of hundreds, if not thousands, of their brightest minds to try to figure out how these ciphers, how these substitutions were working.

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00:36:24,440 --> 00:36:32,440

And in order to break the codes, they had to try thousands and thousands and thousands of different combinations to the point where they couldn't really be done by hand

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00:36:32,440 --> 00:36:35,440

and they had to invent machines to break the codes for them.

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00:36:35,440 --> 00:36:40,440

And they started with mechanical machines and eventually built up to electronic machines.

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00:36:41,440 --> 00:36:51,440

Aided by Colossus, the world's first electronic programmable computer, the Allies deciphered what was then the most complex code in history.

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00:36:51,440 --> 00:36:55,440

But then, they tried to break the Voynich manuscript.

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00:36:55,440 --> 00:37:06,440

So many of these cryptographers from the UK and the United States and elsewhere who'd broken these extremely difficult ciphers from the 20th century, tried to break this 15th century cipher.

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00:37:06,440 --> 00:37:08,440

So why is it that they failed?

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00:37:09,440 --> 00:37:15,440

Even to the world's best minds, the Voynich manuscript seems impenetrable.

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00:37:15,440 --> 00:37:18,440

If it's a code, no one can break it.

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00:37:18,440 --> 00:37:21,440

If it's a language, no one can understand it.

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00:37:21,440 --> 00:37:25,440

Everything seen on its pages is a mystery.

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00:37:27,440 --> 00:37:33,440

Gordon Ruge is a Voynich expert. He believes he might have the answer.

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00:37:34,440 --> 00:37:40,440

He feels the mystery is not what we can see in the manuscript, but what we can't.

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00:37:40,440 --> 00:37:45,440

Even the most perfectionist modern calligraphers still make some mistakes.

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00:37:45,440 --> 00:37:50,440

They have to erase those mistakes, scratch the parchment clean and then write the correct text.

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00:37:50,440 --> 00:37:54,440

There's no evidence of that happening in the Voynich manuscript.

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00:37:54,440 --> 00:37:59,440

So the strong implication is that the content didn't matter.

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00:37:59,440 --> 00:38:03,440

The person was just writing gibberish and they knew it.

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00:38:04,440 --> 00:38:11,440

But the perfection found in the Voynich manuscript could reveal that it's a fake.

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00:38:15,440 --> 00:38:19,440

Professor Gordon Ruge believes he has the answer.

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00:38:19,440 --> 00:38:23,440

The simplest explanation for the Voynich manuscript is that it's a hoax.

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00:38:23,440 --> 00:38:25,440

It's a brilliant hoax. It's an amazing hoax.

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00:38:25,440 --> 00:38:28,440

A hoax that lasts for 500 years.

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00:38:30,440 --> 00:38:35,440

Hoax? What? You mean all the secrets of the universe are not in this one book?

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00:38:35,440 --> 00:38:39,440

That raises a kind of obvious question. Why would anyone do that?

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00:38:39,440 --> 00:38:44,440

It must have taken years. Doesn't they have anything better to do? So what could it be?

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00:38:45,440 --> 00:38:52,440

Well, let me think. Why do most people do anything usually because of this?

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00:38:52,440 --> 00:38:58,440

Could it be that the manuscript was faked to make money?

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00:39:00,440 --> 00:39:05,440

Could the Voynich manuscript be a perfect crime created by a medieval prankster?

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00:39:05,440 --> 00:39:10,440

To investigate, experts would need to go back to the 15th century.

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00:39:10,440 --> 00:39:15,440

Works like those of Nostradamus were hugely successful when they were first published.

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00:39:15,440 --> 00:39:20,440

The educated classes revered any book that promised the secrets of the universe.

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00:39:21,440 --> 00:39:27,440

There would be a big market for something like this, precisely because it's so strange and rare and because it's so secret.

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00:39:27,440 --> 00:39:34,440

For a Renaissance banker owning a manuscript was like owning a van Gogh to a modern-day Wall Street banker.

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00:39:34,440 --> 00:39:40,440

It shows that you're about more than money. You know what culture is and you're a culture intelligent individual.

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00:39:40,440 --> 00:39:43,440

So it's a mark of status. It's a mark of conspicuous consumption.

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00:39:45,440 --> 00:39:55,440

Even if there was a financial incentive to create the manuscript, how could its author make it appear as technically consistent as real language?

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00:39:55,440 --> 00:40:03,440

Most people had previously assumed that to create something the size of the Voynich manuscript as meaningless gibberish would take decades.

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00:40:03,440 --> 00:40:07,440

If you try making up gibberish out of your head, it's surprisingly difficult.

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00:40:07,440 --> 00:40:13,440

You start repeating yourself over and over again. That would be easily detectable.

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00:40:13,440 --> 00:40:23,440

There are cases of people doing things like automatic writing, but again, the record doesn't match what we see in the Voynich manuscript.

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00:40:23,440 --> 00:40:31,440

There are things that you can do like randomly combining characters, but we know the combinations are not random.

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00:40:31,440 --> 00:40:42,440

So all of the plausible, familiar ways of generating meaningless gibberish produce output, which is visibly different from what you see in the Voynich manuscript.

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00:40:42,440 --> 00:40:53,440

But Professor Ragh has an incredible new theory. Creating the manuscript was actually easy, and today he's going to put his theory to the test.

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00:40:53,440 --> 00:41:04,440

I think that what we'll see today is large quantities of text coming out, text which has got similar characteristics to Voynich cheese in different ways.

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00:41:04,440 --> 00:41:17,440

I think another thing we'll see today is how quickly text can be produced using this method, whether or not it would be feasible to use this method to produce a meaningless hoax for profit.

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00:41:17,440 --> 00:41:25,440

Gordon hopes his experiment will reveal how the author created an indecipherable manuscript quickly and easily.

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00:41:25,440 --> 00:41:39,440

To begin, Gordon is using three world-class calligraphers. Working on a table consisting of 600 blank squares, the calligraphers copy random syllables from the Voynich manuscript into the squares, leaving some of them blank.

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00:41:40,440 --> 00:41:46,440

Three squares are then cut in random positions from the heavy cardboard called a grill.

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00:41:46,440 --> 00:41:54,440

The grill is then placed anywhere on the table. This simple technique reveals a Voynich cheese word.

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00:41:54,440 --> 00:42:03,440

Finally, the word is copied onto a page of manuscript. The grill slides to the right and it's repeated.

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00:42:03,440 --> 00:42:08,440

Using this method, the entire Voynich manuscript could be created in weeks.

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00:42:08,440 --> 00:42:13,440

These people have produced text that looks like Voynich cheese. They've produced it fast.

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00:42:13,440 --> 00:42:19,440

At this speed, you'd be able to produce the entire manuscript in a matter of weeks with a team like this.

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00:42:19,440 --> 00:42:22,440

So I think this shows that my method is certainly feasible.

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00:42:22,440 --> 00:42:28,440

The experiment suggests that the author could have created the Voynich manuscript quickly and out of greed.

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00:42:28,440 --> 00:42:34,440

But until the truth is revealed, for many, the mystery remains.

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00:42:34,440 --> 00:42:42,440

If this remarkable book does contain dark and mysterious secrets, we'll need to discover new ways of finding them.

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00:42:43,440 --> 00:42:46,440

Weird or what?

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00:42:50,440 --> 00:42:52,440

I can read this.

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00:42:53,440 --> 00:43:04,440

You saw Tekema as ect. Go to now recovery.

385

00:43:08,440 --> 00:43:13,440

It's so close to what we know and yet it's so far from what we can decipher.

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00:43:13,440 --> 00:43:21,440

So something that lies just outside our grasp. We need to find out what's in there because it is so intriguing.

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00:43:23,440 --> 00:43:30,440

So there we have it. Three strange and mysterious stories.

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00:43:30,440 --> 00:43:35,440

But each with many plausible theories to explain them.

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00:43:35,440 --> 00:43:40,440

How did traces of cocaine end up on Egyptian mummies up to 3,000 years old?

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00:43:40,440 --> 00:43:45,440

A 19th century scan? Or must history be rewritten?

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00:43:45,440 --> 00:43:49,440

Did the ancient Egyptians travel to South America?

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00:43:52,440 --> 00:43:58,440

Did thousands of sea lions suddenly leave San Francisco simply because they were following their source of food?

393

00:43:58,440 --> 00:44:02,440

Or do they have the power to sense earthquakes?

394

00:44:02,440 --> 00:44:06,440

And is the Voynich manuscript a meaningless hoax?

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00:44:06,440 --> 00:44:14,440

Is it written in a forgotten tongue? Or does this medieval tome contain dark, coded secrets?

396

00:44:14,440 --> 00:44:16,440

You decide.

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00:44:16,440 --> 00:44:24,440

Join me next time for more stories that will undoubtedly be... weird or what.