

1491

What's in it for me? Discover the real New World

The first Europeans in the Americas often built their settlements on top of Indian settlements. Sometimes, they used violence to drive the inhabitants out. Often, they didn't need to, as the settlements were empty – the people who'd lived there were already dead. European diseases had traveled even faster than the settlers had. They left a trail of devastation behind them, wiping out an estimated 90 percent of a population that may have been as large as 100 million people. This catastrophic and sudden collapse of Native societies shaped European perceptions. Settlers mistook overgrown farms for pristine wilderness and saw Indians as primitive people trapped in the Stone Age instead of as what they really were: the survivors of shattered civilizations. In these blinks, we'll be correcting the record as we explore how the Americas' first inhabitants shaped the world around them. Note on language: Indigenous groups in North and South America prefer to be called by their specific tribal names. The author follows this custom, as do these blinks. When referring to the first inhabitants of the Americas in a more general way, the author uses the terms "Indians" and "Native Americans," both of which are accepted by Indigenous groups. These terms are cultural and geographical categories, not racial ones – they're the Western Hemisphere's equivalent to "European," not to "white" or "Caucasian." Along the way, you'll learn

how Indians used fire to reshape the landscape; why the Amazon isn't as wild as you might think; and how Mexican farmers changed the world's diet.

Scholars studying native cultures have often missed the forest for the trees.

Northeast Bolivia, 1948. Allan Holmberg, a young American anthropologist, has just arrived in the Beni, a vast savannah stretching from the Andes to the Amazon. Holmberg is here to study a local Indian group called the Sirionó. He'll spend two years with them before publishing a book about their lives. His account paints a bleak picture. Constantly hungry and wet, they move among makeshift camps and hunt game with crude longbows. As far as Holmberg can tell, they have neither art nor religion; they don't count or farm. He concludes that they're living examples of humans in what he calls "the raw state of nature." Like their ancestors, they eke out a tough existence in a hostile world that they lack the tools to change. Until the arrival of Europeans, he adds, life must have been like this across the Americas. For decades, Holmberg's verdict was the scholarly consensus. Today, though, a new picture is emerging. The key message here is: Scholars studying native cultures have often missed the forest for the trees. Holmberg wasn't entirely wrong: the Sirionó really did lead extremely tough lives during the time that he spent with them. But things hadn't always been that way. In the early 1920's, the Beni had been home to around 3,000 Sirionó Indians. They weren't just nomadic hunters, either – they lived in villages and also grew crops. Two things changed that. The first was disease. Over twenty years, smallpox and influenza epidemics reduced the Sirionó population from 3,000 to just 150 – a 95 percent loss in one generation. The second was state policy. As disease ripped apart Sirionó

communities, the Bolivian government backed white farmers' expansion into the Beni. The military hunted down Indians, who were sent to prison camps or forced into servitude on cattle ranches. Holmberg believed that what he had seen was an unchanging and primitive people. But the wandering hunters he encountered weren't relics of the Stone Age – they were the survivors of a recently shattered culture trying to evade an oppressive state. It's as if an anthropologist had observed refugees from Nazi concentration camps and concluded that they came from a culture that had always been starving and shoeless. With hindsight, it sounds absurd, but that's exactly the mistake Holmberg made. He also overlooked clues that the Sirionó were newcomers to the region. There was their language, for instance, which is related to many indigenous languages across South America but none in Bolivia. There was also the landscape, which was full of the remnants of a much older Indian culture.

The Beni was home to an advanced pre-Columbian society.

The Beni extends from the cold and arid foothills of the Andes in the southwest to the warm and humid Amazon rainforest in the northeast. Snowmelt and rain from the mountains flood its plains for six months. Then over the next six months comes the drought. The sun scorches the savannah into a sea of parched yellow grass. But there are pockets of life. Around 20,000 earthen mounds up to 60 feet high loom over the plain, providing soil that's moist enough to sustain plants but not so waterlogged that it drowns them. On the ground, it's easy to mistake these forested islands for flukes of nature. Seen from above, however, the savannah takes on a different appearance – it looks like it's been designed. Here's the key message: The Beni was home to an advanced pre-Columbian society. In 1961, William Denevan, an American geographer, chartered a plane to fly over the Beni. Peering out of the window of a DC-3, he observed perfectly circular islands of forest poking out of the flood plains. Connecting them were raised earthen paths that ran straight as an arrow for miles. Inside this grid of paths, meanwhile, were fields, ditches, and zigzagging ridges. Circles, rectangles, triangles – these shapes aren't features of wild landscapes. Denevan was convinced that he was looking at the work of humans. Archeological work begun in the 1990s confirmed his hunch. Take those forested mounds, or *lomas*, which are now known to be between 3,000 and 5,000 years old. Each loma was made by covering heaps of smashed crockery with earth – a technique that added height and aerated the soil, thus boosting its fertility. One of the largest, known as Ibibate or “big mound” to the locals, contains more broken pottery than Monte Testaccio in Rome. That hill was the result of the inhabitants of the Roman Empire's capital dumping broken terracotta vessels in the same place over centuries. But Ibibate is just one of hundreds of *lomas* containing similar amounts of pottery. Archaeologists still don't know a lot about the people who constructed these mounds, but they can make a couple of deductions. To produce so much crockery, they must have had a dedicated class of potters. That suggests a large society with a division of labor – someone had to feed these artisans, after all. And the scale of the earthworks indicates careful planning over hundreds of years. Whoever these “earthmovers” were, they'd left the Stone Age behind them long before Columbus set foot in the Americas.

Native Americans didn't live off the

land - they shaped their environment.

The earthmovers of the Bolivian savannah didn't just produce pottery on a scale to rival ancient Rome, a city of some one million people. They were also industrious farmers. They grew crops of beans, squash, and sweet potatoes in their raised fields, while their lomas - the raised mounds they created - supported orchards of fruit- and nut-bearing trees. They even turned the Beni's six-month wet season to their advantage, constructing earthen channels in the seasonal floodplains to drive fish into their hand-woven nets. Although they abandoned their earthworks around 1400 AD, possibly due to disease, the landscape they left behind is one of the most remarkable human achievements on the continent. It also undermines a centuries-old misconception about Indigenous societies. The key message is this: Native Americans didn't live off the land - they shaped their environment. For almost five centuries, Europeans told the same story about Native Americans. It went like this: Civilization is driven by curiosity - a trait that existed in abundance in the Old World. Europeans transformed wilderness into farmland and forests into timber and ships. But they didn't stop there. They improved crops to feed more and more people and explored the world, opening up trade networks and bringing home new technology. Each advance built on previous ones; over the centuries, European civilization gradually tamed nature. Indians, by contrast, were incurious. They lived off the land without changing it. One generation hunted game, dug roots out of the ground, and plucked fruit off trees just as countless others had before it. No one tried to domesticate animals, or plant crops and orchards. Life was an unchanging cycle of seasons. Some Europeans admired these so-called "noble savages." As an Italian observer wrote in 1556, Indians "live in that golden world of which old writers speak so much, existing simply and innocently without enforcement of laws." Others took a much dimmer view of this supposed terrestrial paradise. Native Americans, they argued, had been blessed with vast amounts of virgin land, but they had squandered the opportunity to improve themselves. For that reason, it was only just that Europeans take it instead. Admiring or hostile, these accounts deny Native Americans agency - they depict them as passive recipients of nature's bounty. That's why sites like the Beni are so important. They help disprove this centuries-old myth by demonstrating how Indian societies actively shaped the world around them.

North American Indians used fire to redesign the landscape.

There are different ways of organizing a landscape. One option is to break it up into plots for particular uses, like planting orchards or catching seafood during seasonal floods. In fact, this is a pretty universal human practice. While the Beni's earthmovers were reshaping the savannah, European peasants laid out rectangular fields for wheat and set aside hills for grazing sheep. In the Andes, Indian societies terraced some 1.5 million acres of mountainsides to grow their civilization's staple crop, the potato. Creating these kinds of landscapes requires special tools - picks, plows, hoes, sickles, and axes. But there's also another option: you can reshape entire environments. For that, you need a different tool. The key message here is: North American Indians used fire to redesign the landscape. When it came to animals, there were few good candidates for domestication in the Americas. Central America had turkeys and South America had llamas, alpacas, and guinea pigs. In North America, the pickings were slimmer - the only real option, in fact, was the dog. But, as North American Indian

societies discovered, you don't have to domesticate animals and fence them off in a field to have ready access to meat. You can also "farm" wild game. How? Well, if you want to hunt animals like elk, moose, deer, or bison efficiently, you need a lot of open space to run them down. You also need to get rid of thickets and bushes in which they can hide. Across the eastern portion of today's United States, Native Americans used fire to clear some forests entirely and to burn away the undergrowth in others. The result was two distinctive landscapes. Burning entire woodlands created rolling plains well-suited to hunting game as well as growing crops like maize. Fire turned the Midwestern prairies into vast, open-air bison farms. Clearing away the undergrowth, meanwhile, resulted in open, park-like forests. Early European settlers were so taken by these forests that it became a sport to ride horses at full gallop through them – a foolhardy undertaking in tangled, unmanaged woodland. To the untrained eyes of these new arrivals, spacious prairies and forests looked like works of nature. In reality, they'd been painstakingly established and maintained over centuries by Indians deliberately setting controlled fires. Large parts of North America, in other words, were cultivated landscapes.

So many Indians died after 1500 that it changed the global climate.

If you analyze the air trapped in ice cores in places like Antarctica or examine the sediment in lake beds, you can get a pretty good idea of how much carbon dioxide was in the atmosphere in the past. Using these methods, scientists have created a record of atmospheric CO₂ levels over the last 800,000 years. When you plot those levels out on a graph, two things jump out. The first is the huge increase in carbon dioxide in the atmosphere after the Industrial Revolution – the cause of climate change in our own day. The second is a sharp decline in global CO₂ levels after 1500. What happened in the sixteenth century to cause this change? In a word, depopulation – lots of people suddenly died. The majority were Native Americans. Here's the key message: So many Indians died after 1500 that it changed the global climate. After the arrival of Europeans in the Americas, previously unknown diseases tore through Indian societies. The losses were devastating. Take the Caddoans, a society of mound-building agriculturalists in the North American midwest. In the 1530s, there were around 200,000 Caddoans. A century later, there were just 8,500 left – a loss of 96 percent. To put that into perspective, if New York City's current population fell by the same amount, just 56,000 people would be left – barely enough to fill a single baseball stadium. It was the same in New England. There, the Patuxet people were ravaged by viral hepatitis introduced by settlers in 1616. Within three years, they'd lost 90 percent of their population. Similar losses were incurred by Indian societies across the Americas. Although the exact figures are disputed, many scholars now believe that these deaths amounted to the loss of around one-fifth of the world's population. This huge surge in mortality left its mark on the landscape. In North America, for example, the land cleared by Native Americans was reclaimed by new trees while cultivated forests became overgrown. These were the landscapes later idealized by nineteenth-century naturalists like Henry David Thoreau. He thought they'd always been this way – in fact, they were evidence of an unprecedented and recent catastrophe. The ecological impact was just as profound. Fewer Indians meant fewer fires and thus less carbon dioxide being released into the atmosphere. More trees, on the other hand, meant more CO₂ was being sucked out of the atmosphere. That's why there's a dip on the graph showing global atmospheric carbon dioxide levels after 1500.

Modern agricultural practices are destroying the Amazon rainforest.

Tangles of thick vines, putrid-smelling tropical flowers, endless layers of tree branches, beetles as big as butterflies, and butterflies as big as birds – the Amazon, as most people imagine it, teems with life. But the rainforest's vibrant canopy is deceptive: it masks an impoverished base. Stifling heat and endless rain erode the soil, washing out minerals and decomposing organic compounds. The orange-red earth that's left behind is harshly acidic and nutrient poor. Ecologists call it a "wet desert." It's hard to farm this land. Clearing the forest is tricky enough – with a traditional Indigenous stone ax, you need around 115 hours to fell a single four-foot tree. Once you've done that, you're faced with a new problem. Without leaves overhead, raindrops hit the ground with twice as much force, eroding the soil twice as quickly. The key message is this: Modern agricultural practices aren't sustainable in the Amazon. Complex societies require extensive agriculture capable of generating food surpluses to feed people who don't farm or hunt – people like soldiers, potters, priests, and emperors. Put differently, these societies can only emerge in farm-friendly places. With its hard ecological constraints on agriculture, the Amazon rainforest doesn't appear to be one of those places. Humans have found a way around these constraints, but it comes at a high price: environmental destruction. It's called slash-and-burn farming. Here's how it works. The first thing to do is upgrade from a stone ax to a European metal ax. With one of those, felling a four-foot tree takes three hours, not 115. Of course, if you have a bulldozer, it's a matter of minutes. Once you've cleared a plot of land – that's the "slashing" part – you burn everything on the ground. The alkaline ash balances out the soil's acidity and adds nutrients, giving your crops a head start. The jungle will grow back, too, but you should be able to eke something out of the ground – for a couple of years. There's the catch, though: Clear too much land, or prevent the forest from returning for too long, and the rain will wash away all the soil's minerals and nutrients. Then the sun will bake the earth into a brick-like substance that's impermeable and incapable of sustaining life. Slash-and-burn farming is currently eating away at the rainforest, releasing huge amounts of stored carbon dioxide and destroying the environment's ability to capture water. Modern agriculture, in other words, is an environmental catastrophe – but that doesn't mean all farming in the Amazon has to be destructive. That's something Amazonian Indians have long known.

Lots of crops struggle in the Amazon, but fruit orchards thrive.

In the '70s, Betty Meggers, an American archeologist, argued that Amazonian societies couldn't have expanded beyond a population of a few hundred because of the forest's ecological constraints on farming. Extensive agriculture inevitably overtaxed the soil, she claimed, and any society that tried to grow enough food to feed large numbers of people ended up laying waste to its own foundations. Meggers's argument influenced a generation of scholars and environmental activists, but new evidence suggests that Amazonian societies may have found a sustainable solution to the forest's constraints. The key message here is: Lots of crops struggle in the Amazon, but fruit orchards thrive. Around 4,000 years ago, a new society emerged on Marajó, an island roughly the size of Denmark in the mouth of the Amazon river. It was on this island that Betty

Meggers first formulated her theory. She believed that the island's inhabitants, the Marajóara, were offshoots of a sophisticated culture in the Andes. They tried to adapt their agriculture to the area, but ended up destroying the forest. In the '90s, another archeologist named Anna Roosevelt returned to the site. She dug deeper than Meggers's team had twenty years earlier, excavating pottery, rubbish heaps, earthen mounds, and evidence of intensive agriculture. The number of sites across the island suggested that the Marajóara didn't destroy the ecological basis of their own existence – they created a flourishing society of some 100,000 people that lasted from roughly 800 to 1400 AD. How did they do it? The answer is that they didn't clear the forest to grow the kind of crops favored by slash-and-burn farmers – for example, maize. Instead, they planted fruit and nut orchards inside the rainforest. Take just one tree cultivated by the Marajóara – the peach palm. Rich in vitamins and protein, its fruit can be baked, boiled, smoked, or made into beer. It fruits twice a year, which it starts doing after half a decade, and it lives for 70 years. It also yields more calories per acre than rice or beans. Best of all, it thrives without human attention. The Marajóara weren't the only Amazonians to plant orchards in the forest, either. In a widely cited article from 1989, botanist William Balée estimated that 12 percent of the forest is of anthropogenic origin – that is, created by human beings. As was noted by an anthropologist the author interviewed, visitors are often amazed by how much fruit there is in the forest. They think it's a natural bounty, not realizing that they're actually looking at very old orchards.

Amazonian Indians discovered sustainable farming thousands of years ago.

In the '90s, geologists took a closer look at the ground in which Amazonian fruit orchards grow. This wasn't the impoverished red earth that rainforests are prone to. This soil was dark, nutrient-rich, and packed with plant-friendly phosphorus, calcium, sulfur, and nitrogen. Given that it's exposed to the same conditions as the rest of the Amazon's base, its existence is a surprise. It simply, in the words of one chemist, "shouldn't be there." It is, though, and there's a lot of it. Estimates suggest some ten percent of the Amazon basin is covered in this remarkable soil. That's an area the size of France. Where did it come from? Well, we're once again looking at the handiwork of pre-Columbian Native Americans. Here's the key message: Amazonian Indians discovered sustainable farming thousands of years ago. Brazilians call the dark soil found in the Amazon terra preta do Índio, or "Indian black earth." Locals have known about its properties for a long time, and lots of rural Amazonian communities make a living digging it up and selling it to gardeners and farmers in other parts of the country. It's easy to see why their customers prize terra preta. It's rich in plant-available chemical compounds, for one. It also has more organic matter than other soils, retains more moisture, and isn't rapidly exhausted by intensive use. As the Portuguese name suggests, the origins of terra preta aren't a mystery. Until recently, however, few non-Indians knew how it was made. The answer is a technique used by Amazonian communities for thousands of years known as slash-and-char. Unlike slash-and-burn, the idea isn't to burn organic matter to ash. Instead, you create fires with fuel like weeds, cooking waste, termite mounds, and palm fronds. These lightly smoldering fires, which are cool enough to walk through, create charcoal, which is then stirred into the earth. That lends the soil structure, stores water, and gives nutrients something to latch onto.

Experiments suggest that terra preta can retain these properties for up to 50,000 years. But that's not the only benefit of slash-and-char – it's also highly sustainable. Unlike the fires used in slash-and-burn, it releases little carbon into the atmosphere. And because the soil it produces remains fertile over millennia, farmers can achieve high yields with minimal use of chemical fertilizers. For these reasons, many experts believe “Indian black earth” will play a key role in the transition to a more sustainable form of global agriculture.

Central American agriculturalists changed the way the world eats.

When did Indians first arrive in the Americas? Until fairly recently, most scholars believed that they crossed the Bering Strait from Siberia into Alaska around 13,000 years ago. Archaeological evidence unearthed in the mid-'90s changed that picture. It now seems likely that Indians reached Chile 30,000 years ago, which means they must have arrived in Alaska even earlier. Whatever the exact date, we know that they left Eurasia before the Neolithic Revolution – that is, before the birth of agriculture in the Middle East around 10,000 BC. The first inhabitants of the Americas had to do everything on their own. Amazingly, they succeeded. This second Neolithic Revolution occurred in today's Mexico. The key message is this: Central American agriculturalists changed the way the world eats. Central-southeast Mexico is a place of rugged mountains and rolling plains. The mountains gave the Indians who settled here some 11,500 years ago sheltered caves to live in; the plains provided animals to hunt. As the climate became hotter, the grasslands shrank. Game became rarer and hunting became a less -reliable source of calories. Slowly but surely, Indian communities turned their attention to plants. Their knowledge of the environment grew. Roasting agave plants, they realized, made them more edible. They also crafted special tongs to remove spines from cactus fruit and learned how to remove indigestible tannic acid from acorns by grinding them into a powder and soaking that in water. Then, around 10,000 years ago, they noticed something interesting: discarded seeds in garbage piles sprouted and fruited the next year. Homo sapiens had just discovered agriculture for the second time in its history. Indian farmers in Mesoamerica – the name given to this zone of agricultural innovation – were soon growing tomatoes, chillies, squashes, and beans. Without them, it's hard to imagine cuisines as diverse as those of Italy, Thailand, and Ghana. According to some estimates, Indians developed up to three-fifths of the crops now in cultivation worldwide, most of them in Mesoamerica. Four thousand years later, the ancestors of these pioneers started growing maize, a crop that today feeds more people globally than any other. It's hard to see how they got the idea to cultivate this grain. An entire ear of its closest relative, a mountain grass called teosinte, contains less nutritional value than a single kernel of modern maize. Getting corn out of this hardy and unappetizing plant may have been, as American geneticist Nina Federoff puts it, humanity's “greatest feat of genetic engineering.”

Final summary

The key message in these blinks is that: European settlers were struck by the vast wildernesses of the Americas. The Western Hemisphere is a big place, of course, but it had gotten a lot bigger – and emptier – before their arrival. Disease ripped through Native American populations, destroying complex and inventive societies. By the time it

was settled, thriving farms were overgrown and once-bustling settlements lay empty. But we can recover traces of these Indian societies and their ways of life. We just have to look at the landscape.