



THEN & THEORY

The Field Guide

Twenty plates from our archive,
and the true story behind each
one: what happened, and how we
know.



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Every plate is drawn for a story we have checked against its sources, which are listed under each one. Where historians still argue, the note says so. The plates are printed to order on garments, art prints, mugs and stickers at thenandtheory.com/shop/.



Fossils at the foot, standing stones, walled towns, industry, a skyline at the crown.

Reading the layers

This plate stacks history inside a letter, with fossils at the foot and a skyline at the top. Geologists read layers of rock from the bottom up. In 1669 the Danish scientist Nicolaus Steno, working in Tuscany, published the idea that layers of sediment settle one on another, so the lowest layer formed first. It is called the principle of superposition, and it let people put rocks in order long before anyone could give them an age in years. In 1666 Steno had dissected the head of a great white shark and drawn its teeth, which looked just like the “tongue stones” found in rock.

Note. Steno was not the first to match tongue stones to shark teeth, but his published drawings left little doubt.

SOURCES

1. NASA Earth Observatory, “Nicolaus Steno (1638–1686)”
2. Britannica, “Nicolaus Steno”



A reader on a ledge between shelves of rolls and bound books.

The library that faded

A reader stands between shelves of rolls and books. The most famous library of the ancient world was founded in Alexandria around 295 BC, under Egypt's Greek kings, the Ptolemies. The popular story is that Julius Caesar's fire destroyed it in 48 BC, yet later writers still mention the library. Most historians now think it declined slowly, as first royal and then Roman support fell away. The district it stood in was wrecked when the emperor Aurelian retook the city in AD 272, and again under Diocletian in 297.

Note. How the library ended is debated. Slow decline is the majority view; some historians give more weight to particular destructions.

SOURCES

1. World History Encyclopedia, "Library of Alexandria"
2. Britannica, "Library of Alexandria"



A paddler, hippos in the reeds, elephants and giraffes on the banks.

Hippos in London

Giraffes on the bank put this river in Africa, where hippos live today. Hippos once lived much farther north. Under Trafalgar Square in London, building works turned up a hippopotamus tooth about 125,000 years old, along with bones of lions and elephants. That was a warm stretch between ice ages, warmer than the present day, and animals now found only far to the south lived where London stands. When the cold came back, the hippos disappeared from Britain, and wild hippos have not lived there since.

SOURCES

1. Natural History Museum, "London calling: nine specimens from our city"
2. GeoEssex, "Formation of the modern landscape"



A tree grown from skulls and bones, a lone figure beneath it.

More than one kind of human

A tree of skulls and bones stands over one living figure. For most of our history the human family had several living branches at once. When our species spread out of Africa, Neanderthals lived in Europe and Asia, and Denisovans, known mostly from their DNA, lived farther east. Some of them met and had children together. People with ancestry from outside Africa carry about 1 to 4 percent Neanderthal DNA, and some populations in Southeast Asia and the Pacific also carry Denisovan DNA. One bone from Denisova Cave in Siberia belonged to a girl with a Neanderthal mother and a Denisovan father.

SOURCES

1. Smithsonian Human Origins, “Ancient DNA and Neanderthals”
2. Slon et al., *Nature* (2018), the Neanderthal-Denisovan genome



A caravan passing below ruined arcades and a pyramid.

A city of caravans

Ruined arcades rise above a camel caravan. The plate names no city, but Palmyra, an oasis in the Syrian desert, is the best-known place like it. Palmyra was already an established caravan stop when it came under Roman control in the first century AD, and trade made it rich. Its main street ran for 1,100 metres between columns, and its art joined Greek and Roman forms with local and Persian ones. In 2015, during Syria's civil war, its Temple of Bel and its monumental arch, built around AD 200, were blown up.

Note. The plate's pyramid is not at Palmyra. The scene is a composite, not a view of one site.

SOURCES

1. UNESCO World Heritage Centre, "Site of Palmyra"
2. UNESCO, on the destruction of the Arch of Triumph (2015)



Water poured at a well in an arcaded courtyard; washing on the line.

Rain in the middle of the house

A woman pours water at a well in an arcaded courtyard, with washing on the line and a dog in the shade. The plate names no town or century. In a Roman house, the front hall, the atrium, had a square opening in its roof called the compluvium. Rain fell through it into a basin in the floor, the impluvium, which held the water. Further in, rooms were often grouped around a second open court lined with columns, the peristyle. Light for the whole house came from these open courts.

SOURCES

1. Britannica, "Impluvium"
2. Britannica, "Compluvium"



A mammoth crossing snow towards a camp with fires.

The last mammoths

A woolly mammoth crosses the snow towards a camp of fires. The last known mammoths lived on Wrangel Island in the Arctic Ocean, cut off from Siberia as the seas rose at the end of the Ice Age. They lived there for thousands of years after mammoths vanished from the mainland, and died out around 4,000 years ago. By then the Great Pyramid of Giza had stood for several centuries. Their genomes show a small, inbred population that kept collecting mildly harmful mutations over hundreds of generations.

Note. What finally ended the Wrangel mammoths is still unknown.

SOURCES

1. Dehasque et al., Cell (2024), mammoth genome erosion
2. Smithsonian Magazine, "The last woolly mammoths died isolated and alone"
3. Britannica, "Pyramids of Giza"



Half weathered stone, half reconstruction in facets.

Statues in colour

Half of this head is weathered stone, and half is rebuilt in facets of colour. Greek and Roman marble statues were often painted, although most look white today. The paint has faded over two thousand years, but traces survive, and conservators find them with microscopes, X-ray fluorescence and special photography. One pigment, Egyptian blue, gives off a faint infrared glow that a modified camera can record, which shows where it was painted even when the eye sees nothing. Reconstructions built from this evidence show gods and warriors in brightly patterned clothes.

Note. Colour reconstructions are informed proposals. How much of each statue was painted, and how, is still argued.

SOURCES

1. Harvard Art Museums, “Gods in Color: Painted Sculpture of Classical Antiquity”
2. Applied Sciences (2023), the Met’s study of a painted Attic sphinx



A column of people and elephants on a mountain track.

Elephants in the Alps

A column of people and elephants climbs a mountain track. In 218 BC the Carthaginian general Hannibal marched an army from Spain over the Alps to fight Rome, and he brought war elephants. The Greek historian Polybius, who is said to have travelled the route himself, describes snow on the pass, rockslides and attacks by local Gauls. On the fifteenth day of the crossing, Hannibal came down into Italy with about 25,000 infantry, 6,000 cavalry and most of his original 37 elephants.

Note. Nobody knows which pass he used. Historians have argued for at least five, from Montgenèvre to the Col de la Traversette.

SOURCES

1. Britannica, "Hannibal: The Alpine crossing"



A cratered sphere over a dark sea, one red sail.

The Moon is leaving

A great sphere hangs over a dark sea, with one red sail below it. Our own Moon pulls on the whole Earth and draws the oceans into two bulges, one on the side facing it and one on the far side. Those bulges are the high tides. The Moon is also slowly moving away. Apollo astronauts left reflectors on its surface, and lasers fired at them from Earth show the distance growing by about 3.8 centimetres a year. The leading explanation for the Moon itself is a collision about 4.5 billion years ago between the young Earth and something roughly the size of Mars.

Note. The giant impact is a theory. Whether it was one Mars-sized body or a series of impacts is still open.

SOURCES

1. NASA, "The Apollo experiment that keeps on giving"
2. NASA Science, "Tides"
3. NASA Science, "Moon formation"



A four-legged animal on the shore, a whale beneath the surface.

Whales had legs

A four-legged animal stands on the shore above a whale. The earliest whales walked. *Pakicetus*, known from fossils about 48.5 million years old in Pakistan, was about the size of a wolf, had working legs, ears better suited to air than water, and teeth that suggest a diet of fish. Its descendants moved into the sea for good. DNA shows that the closest living relatives of whales are hippos, and fossils such as *Indohyus*, an extinct hoofed animal that waded in water, point to where the whale line began.

Note. Hippos as the closest living relatives is settled by DNA. Which extinct group sits closest to whales is still debated.

SOURCES

1. Britannica, "*Pakicetus*"
2. Britannica, "What's the closest living relative to whales?"
3. Thewissen et al., *Nature* (2007), *Indohyus*



A river seen from above, winding through forest and stone.

Cities under the canopy

A river winds through forest, past ruined walls half hidden by trees. The plate names no place. In 2016 an aircraft flew a lidar survey over 2,144 square kilometres of northern Guatemala, measuring the ground with laser pulses through gaps in the forest. The maps showed Maya houses, causeways, possible pyramids and defensive works, joined into interconnected settlements. Most of the structures were probably stone platforms that once carried houses of poles and thatch. The survey has made archaeologists rethink how many people lived in the Maya lowlands and how they farmed.

SOURCES

1. Canuto et al., Science (2018), lidar survey of northern Guatemala
2. Archaeology Magazine, "Lidar survey reveals thousands of Maya structures"



A hunter beside a boat and a hut; animals on the far bank.

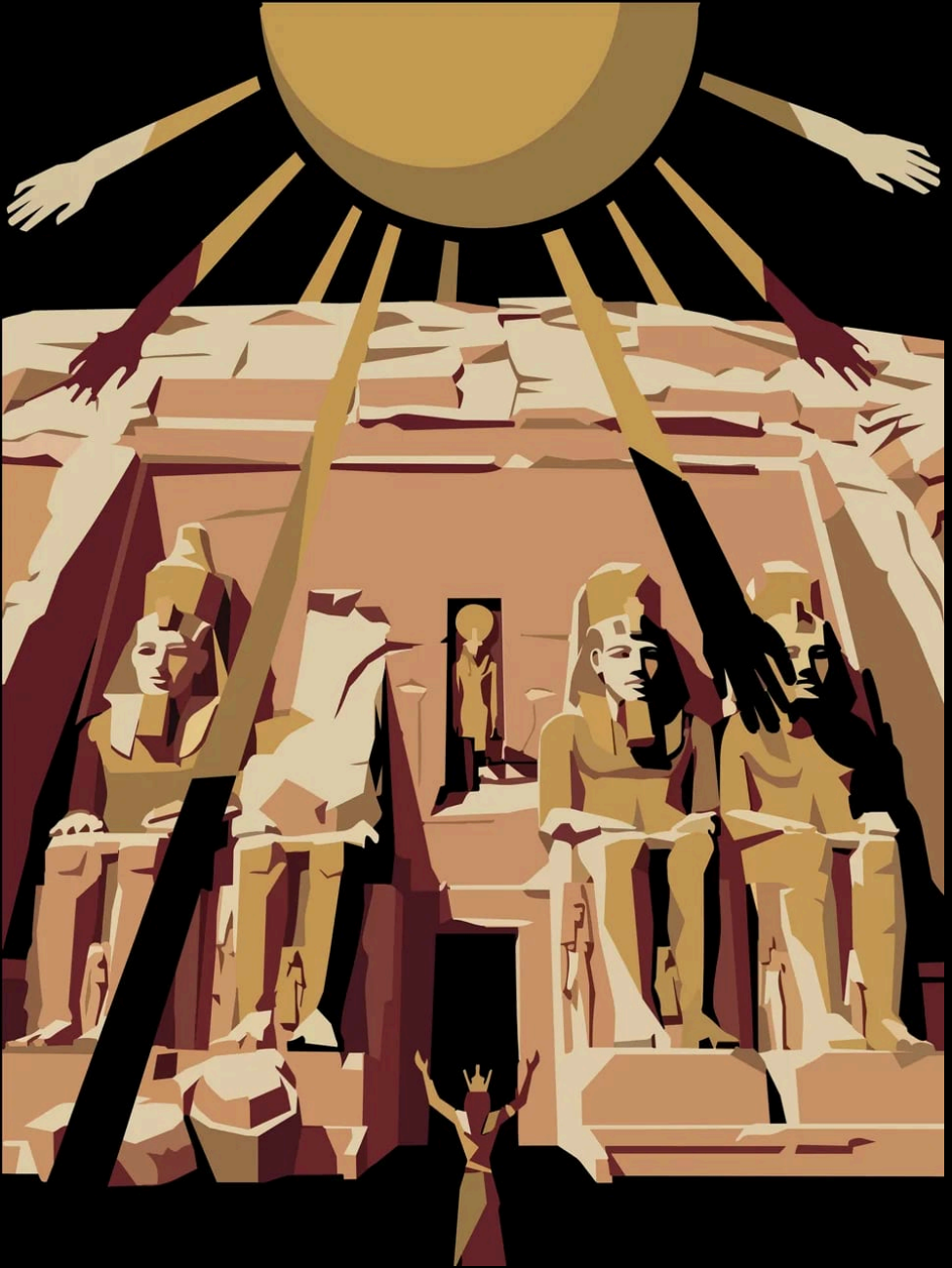
The land under the North Sea

A hunter stands by a hut and a boat as the ice pulls back. At the end of the last Ice Age, Britain was joined to mainland Europe by a wide, low land now called Doggerland. As the ice sheets melted, the rising sea covered it. In 1931 the trawler *Colinda* hauled up a lump of peat from the Leman and Ower Banks, off Norfolk, with a barbed antler harpoon inside. Radiocarbon dating in 1988 showed the harpoon was older than the peat around it had suggested, from late in the Ice Age. It was given to Norwich Castle Museum in 1932.

Note. When Doggerland finally went under is still being worked out. A 2026 study found parts survived the Storegga tsunami of about 8,150 years ago and stayed dry until about 7,000 years ago.

SOURCES

1. Norfolk Heritage Explorer, record 11171: the Leman and Ower harpoon
2. University of Bradford (2026), on Doggerland's forests and flooding



Seated colossi under a sun disc whose rays end in hands.

The temple that moved

Seated giants and a sun with hands fill this plate. At Abu Simbel in southern Egypt, four seated statues of Ramesses II, each about 20 metres tall, guard the Great Temple he built in the 1200s BC. On two days a year, around 22 February and 22 October, the morning sun reaches the whole length of the temple and lights the shrine at its far end. In the 1960s the lake behind the new Aswan High Dam would have drowned it, so an international team cut the temples apart and rebuilt them more than 60 metres higher. The sun with hands is the Aten, as Akhenaten's artists drew it.

Note. The plate joins two things that never met. Akhenaten's Aten belongs to the 1300s BC; Ramesses II came to the throne about 60 years after Akhenaten died.

SOURCES

1. Britannica, "Abu Simbel"
2. UNESCO World Heritage Centre, "Nubian Monuments from Abu Simbel to Philae"
3. Britannica, "Akhenaten"



Ferns, conifers and an animal drinking at a forest river.

Before flowers

Ferns and conifers crowd a forest river where an animal stops to drink. For much of the age of dinosaurs, forests had no flowers. Conifers and their relatives were still the dominant plants in the Early Cretaceous. Some of the oldest known flowering plants are about 130 million years old, and by about 95 million years ago flowering plants had become the main vegetation in many parts of the world. That speed puzzled Charles Darwin. In 1879 he wrote to the botanist Joseph Hooker that the rapid rise of the higher plants was “an abominable mystery”.

Note. Pollen resembling that of flowering plants has been found in rocks about 245 million years old, so their origin may be much older. That is debated.

SOURCES

1. Britannica, “Angiosperm: Paleobotany and evolution”
2. Darwin Correspondence Project, letter to J. D. Hooker, 22 July 1879



A figure cutting signs into a rock face.

Writing, more than once

A figure cuts signs into a rock face while a shadowy figure watches. Writing was invented more than once. Scholars recognise at least three systems that arose independently, in Mesopotamia, China and Mesoamerica. The Mesopotamian one is the oldest, with clear evidence from after 3200 BC. One well-known theory traces it to small clay tokens used for keeping accounts, which became pictures drawn on clay, and then, around 3000 BC, a way of writing down spoken language.

Note. The token theory is Denise Schmandt-Besserat's and not everyone accepts it. Egypt's hieroglyphs are sometimes counted as a fourth independent invention; scholars disagree.

SOURCES

1. Britannica, "Where did writing first develop?"



A city above the water and its drowned twin below.

A city on a forest

A city stands above the water, and its twin runs on below the surface. The plate names no city. Venice, the best-known city built over water, spreads across 118 islands in a lagoon, and its buildings rest on huge numbers of wooden piles driven into the soft mud and clay. Builders laid platforms of planks on the piles, then brick and stone on top. In the waterlogged mud there is too little oxygen for the fungi that rot wood, so the piles have lasted for centuries, hardened by minerals over time.

SOURCES

1. Britannica, "How was Venice built on water?"



A painted mammoth on a cave wall, lit by a raised torch.

Painting by firelight

A red mammoth fills a cave wall above a figure with a raised torch. The plate names no cave. In the Chauvet cave in southern France, sealed by a rockfall around 20,000 years ago and found in 1994, more than a thousand drawings survive, the oldest dated to over 30,000 years ago, among them a mammoth outlined in red. In 2021 archaeologists tested Ice Age lights in a cave in northern Spain. Their torches burned for 20 minutes to an hour, lit a few metres around them, smoked, and needed tending. Fat lamps gave a far weaker, steadier light with no smoke.

SOURCES

1. UNESCO World Heritage Centre, "Grotte Chauvet-Pont d'Arc"
2. French Ministry of Culture, Chauvet cave: "Red mammoth"
3. Medina-Alcaide et al., PLOS ONE (2021), lighting in Palaeolithic caves



Fallen columns and a statue on the seabed, a boat far above.

The resort that sank

Fallen columns and a statue lie on the seabed, far below a small boat. The plate names no place. In Roman times Baia, on the Bay of Naples, was the area's most famous place to live. The ground there slowly rises and sinks with the volcanic Campi Flegrei, a movement called bradyseism, and the old shoreline sank under the sea. In 1980 archaeologists excavated underwater and found the nymphaeum of the emperor Claudius with its statues. Since 2002 the drowned town has been a protected underwater park that divers can visit.

SOURCES

1. Submerged Archaeological Park of Baia, "History"



A shaded street of awnings, stairs and a channel of water.

Water by gravity

A channel of water runs down a shaded street of awnings and stairs. The plate names no town. In the dry country of Iran, qanats have carried water to towns and farms for centuries, some for millennia. A qanat taps groundwater at the head of a valley through a deep mother well, then carries it along a gently sloping tunnel, by gravity alone, often for many kilometres. Shafts along the way let diggers lift out spoil and let air in, and from above they look like a line of craters. Where the tunnel reaches daylight, channels share out the water.

SOURCES

1. UNESCO World Heritage Centre, "The Persian Qanat"



Wear it, hang it, hand it on.

Every plate in this guide is printed to order: on tees, long sleeves and hoodies, as art prints in two sizes, on mugs, and as stickers. Each parcel comes with the story card for its plate.

The films the plates come from are at thenandtheory.com/stories/. New cases open a few times a year; the list hears first.

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