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## Nazca Lines

The Nazca Lines are a series of ancient geoglyphs located in the Nazca Desert in southern Peru. They were designated a UNESCO World Heritage Site in 1994.

The high, arid plateau stretches more than 80 kilometres (50 mi) between the towns of Nazca and Palpa on the Pampas de Jumana about 400 km south of Lima. Although some local geoglyphs resemble Paracas motifs, scholars believe the Nazca Lines were created by the Nazca culture between 400 and 650 AD.[1] The hundreds of individual figures range in complexity

from simple lines to stylized hummingbirds, spiders, monkeys, fish, sharks, orcas, llamas, and lizards.

The lines are shallow designs made in the ground by removing the ubiquitous reddish pebbles and uncovering the whitish ground beneath. Hundreds are simple lines or geometric shapes; more than seventy are zoomorphic designs of animals such as birds, fish, llamas, jaguar, monkey, or human figures. Other designs include phytomorphic shapes such as trees and flowers. The largest figures are over 200 metres (660 ft) across. Scholars differ in interpreting the purpose of the designs, but in general they ascribe religious significance to them.

The geometric ones could indicate the flow of water or be connected to rituals to summon water. The spiders, birds, and plants could be fertility symbols. Other possible explanations include: irrigation schemes or giant astronomical calendars.

Due to the dry, windless, and stable climate of the plateau and its isolation, for the most part the lines have been preserved. Extremely rare changes in weather may temporarily alter the general designs.

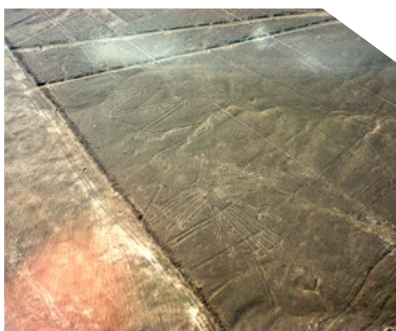
### Discovery and construction:

Contrary to the popular belief that the lines and figures can only be seen with the aid of flight, they are visible from atop the surrounding foothills. They were first discovered by the Peruvian archaeologist Toribio Mejia Xesspe, who spotted them when hiking through the foothills in 1927. He discussed them at a conference in Lima in 1939.

Paul Kosok, a historian from Long Island University, is credited as the first scholar to seriously study the Nazca Lines. In the country in 1940-41 to study ancient irrigation systems, he flew over the lines and realized that one was in the shape of a bird. Another chance helped him see how lines converged at the winter solstice in the Southern Hemisphere. He began to study how the lines might have been created, as well as to try to determine their purpose. Archeologists, historians and mathematicians have all struggled with determining the purpose of the lines.

Determining how they were made has been easier than figuring why they were made. Scholars have theorized the Nazca people could have used simple tools and surveying equipment to construct the lines. Archaeological surveys have found wooden stakes in the ground at the end of some lines, which support this theory. One such stake was carbon-dated and was the basis for establishing the





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age of the design complex. The scholar Joe Nickell of the University of Kentucky has reproduced the figures by using tools and technology available to the Nazca people. The National Geographic called his work “remarkable in its exactness” when compared to the actual lines. With careful planning and simple technologies, a small team of people could recreate even the largest figures within days, without any aerial assistance.

On the ground, most of the lines are formed by a shallow trench with a depth of between 10 cm (3.9 in) and 15 cm (5.9 in). Such trenches were made by removing the reddish-brown iron oxide-coated pebbles that cover the surface of the Nazca desert. When this gravel is removed the light-colored earth which is exposed in the bottom of the trench produces lines which contrast sharply in color and tone with the surrounding land surface. This sublayer contains high amounts of lime which, with the morning mist, hardens to form a protective layer that shields the lines from winds, thereby preventing erosion.

The Nazca “drew” several hundred simple but huge curvilinear animal and human figures by this technique. In total, the earthwork project is huge and complex: the area encompassing the lines is nearly 500 square kilometres (190 sq mi), and the largest figures can span nearly 270 metres (890 ft). The extremely dry, windless, and constant climate of the Nazca region has preserved the lines well. The Nazca desert is one of the driest on Earth and maintains a temperature around 25 °C (77 °F) all year round. The lack of wind has helped keep the lines uncovered and visible to the present day.

#### **Purpose:**

Archeologists, ethnologists, and anthropologists have studied the ancient Nazca culture and the complex to try to determine the purpose of the lines and figures. One hypothesis is that the Nazca people created them to be seen by their gods in the sky. Kosok and Reiche advanced a purpose related to astronomy and cosmology: the lines were intended to act as a kind of observatory, to point to the places on the distant horizon where the sun and other celestial bodies rose or set in the solstices. Many prehistoric indigenous cultures in the Americas and elsewhere constructed earthworks that combined such astronomical sighting with their religious cosmology, as did the later Mississippian culture at Cahokia in present-day United States. Another example is Stonehenge in England.

But, Gerald Hawkins and Anthony Aveni, experts in archaeoastronomy, concluded in 1990 that there was insufficient evidence to support such an astronomical explanation.

Reiche asserted that some or all of the figures represented constellations. By 1998, Phyllis B. Pitluga, a protégé of Reiche and senior astronomer at the Adler Planetarium in Chicago, had concluded that the animal figures were “representations of heavenly shapes. But she contends that they are not shapes of constellations but of what might be called counter constellations, the irregular-shaped dark patches within the twinkling expanse of the Milky Way.”[6] Aveni criticized her work for failing to account for all the details.

In 1985, the archaeologist Johan Reinhard published archaeological, ethnographic, and historical data demonstrating that worship of mountains and other water sources predominated in Nazca religion and economy from ancient to recent times. He theorized that the lines and figures were part of religious practices involving the worship of deities associated with the availability of water, which directly related to the success and productivity of crops. He interpreted the lines as sacred paths leading to places where these deities could be worshiped. The figures were symbols representing animals and objects meant to invoke the gods’ aid in supplying water. But, the precise meanings of many of the individual geoglyphs remain unsolved as of 2012.

Henri Stierlin, a Swiss art historian specializing in Egypt and the Middle East, published a book in 1983 linking the Nazca Lines to the production of ancient textiles that archeologists have found wrapping mummies of the Paracas culture. [7] He contended that the people may have used the lines and trapezes as giant,



primitive looms to fabricate the extremely long strings and wide pieces of textile that are typical of the area. By his theory, the figurative patterns (smaller and less common) were meant only for ritualistic purposes. This theory is not widely accepted, although scholars have noted similarities in patterns between the textiles and the Nazca Lines, which they take as sharing in a common culture.

**Alternative explanations:**

Phillis Pitluga, senior astronomer at the Adler Planetarium & Astronomy Museum and a protégé of Reiche, did computer-aided studies of star alignments. She asserted that the giant spider figure is an anamorphic diagram of the constellation Orion. She further suggested that three of the straight lines leading to the figure were used to track the changing declinations of the three stars of Orion's Belt. In a critique of her analysis, Dr. Anthony F. Aveni noted that she did not account for the other twelve lines of the figure; he commented generally on her conclusions, saying:

I really had trouble finding good evidence to back up what she contended. Pitluga never laid out the criteria for selecting the lines she chose to measure, nor did she pay much attention to the archaeological data Clarkson and Silverman had unearthed. Her case did little justice to other information about the coastal cultures, save applying, with subtle contortions, Urton's representations of constellations from the highlands. As historian Jacquetta Hawkes might ask: was she getting the pampa she desired?[8]

Some individuals propose alternative hypotheses. The Swiss author Erich von Däniken suggests the Nazca lines and other complex constructions represent higher technological knowledge than commonly believed to be existing when the glyphs were created. Von Däniken maintains that the Nazca lines in Peru are runways of an ancient airfield that was used by extraterrestrials mistaken by the natives to be their gods. His theory has not been accepted by scholars.

Jim Woodmann believes that the Nazca Lines could not have been made without some form of manned flight to see the figures properly. Based on his study of available technology, he suggests that a hot air balloon was the only possible means of flight. To test this hypothesis, Woodmann made a hot-air balloon using materials and techniques that he understood to be available to the Nazca people. The balloon flew, after a fashion. Most scholars have rejected Woodmann's thesis as ad hoc,[3] because of the lack of any evidence of such balloons.

**Environmental concerns:**

People trying to preserve the Nazca Lines are concerned about threats of pollution and erosion caused by deforestation in the region.

The Lines themselves are superficial, they are only 10 to 30 cm deep and could be washed away... Nazca has only ever received a small amount of rain. But now there are great changes to the weather all over the world. The Lines cannot resist heavy rain without being damaged.

– Viktoria Nikitzki of the Maria Reiche Centre[10]

After flooding and mudslides in the area in mid-February 2007, Mario Olaechea Aquije, archaeological resident from Peru's National Institute of Culture, and a team of specialists surveyed the area. He said, "[T]he mudslides and heavy rains did not appear to have caused any significant damage to the Nazca Lines," but the nearby Southern Pan-American Highway did suffer damage, and "the damage done to the roads should serve as a reminder to just how fragile these figures are.

*Any further information you wish to obtain such as pictures of high resolution you can contact us. Contact person for expeditions within Peru and guided tours in 4x4 expeditions please write to us under: mharbaum@mac.com / mharbaum@domiruth.com. Information on tours are available in following web sites: domiruthperutravel.com / peru4x4adventures.com*



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