

## **Incas: the history of the tyranny of nature, or the most careful attitude to it?**

Many of us know about the Incan Empire because of mysterious stories about gold hidden in the forests of the Andes mountains, or because Machu Picchu (the holy city of the Incan Empire) is one of the eight wonders of the world. But few people know that it was the Incas who invented terraces for growing plants, could predict earthquakes, worshipped animals, and that the rainforest and mountains were their most natural habitat. How did they manage to tame nature? Or did the environment force people to adapt to this way of life? Was it indeed a powerful empire, connected to technological progress and the love and care of nature? Or was this apparent success achieved at the cost of nature, which let these people into its wilds? How can we characterize this relationship?

I will not be able to give specific answers to these questions. As in any science, the solutions will be abstract. But I will try to provide a complete description of Inca life and their relationship with nature, based on literature and personal knowledge. When I started writing this essay, I had the feeling that the Incas, like any ancient empire, simply worshipped nature and were afraid of it. But in the process, I realized that their relationship with nature was much more profound and more reliable than I had imagined.

### PREREQUISITES FOR THE USE OF NATURE

#### 1) Place of habitat: heaven or hell?

Let's start with the places where the Incas lived. In truth, these are not the most ordinary places. This area was, and still is, hostile to man. It is not intended for everyday existence. Differences in altitude, the difficulty of movement, and land not suitable for agriculture make the high-altitude landscapes of the Andes almost incompatible with a healthy life. But the Incas managed not only to survive but also to modify the landscape to get maximum benefit from these areas.

Conventionally, the entire territory inhabited by the Incas can be divided into several parts. The first part is the Land of Fear. It is located in the mountains of the Andes, which stretched out in a chain, formed natural walls that protected the inhabitants of the valleys. The grandeur of the Peruvian puna will strike anyone who sees these landscapes. At the foothill of the volcanoes was located the most fertile land, which was actively used by the Incas and their predecessors. The Incas believed that the higher they lived, the closer they were to God. This is the reason why many holy cities sprung up so high up. According to legend, the first Inca were created on the top of a mountain. Then they descended into the valley and founded their capital Cuzco. That is why the Inca are also called the "Empire of the Sun".

The second part of the Inca land was the Land of Thirst. This part includes the coast of the ocean. This part was full of fish because of the warm ocean current that runs around the banks. These fish attract birds, whose excrement creates mountains of guano, which are rich in nitrogen, and can be used as an excellent fertilizer. But the ocean itself was of little interest to the Incas, although contact between South America and Polynesia has not been ruled out. There is evidence that they were able to travel quite long distances using only pre-Columbian rafts. This is another confirmation of what we will talk about in more detail later—the ancient civilization felt nature in a unique way, they could trust it, and have a chance of salvation.

The third area is called the Land of Mystery, and was comprised of virgin forest. These forests were not entirely suitable for living. The headwaters of large rivers, such as the Amazon, are too isolated, fleet, and unsuitable for communication. In general, the natural environment prevented

the creation of an Andean Empire. It is also worth noting that the soil was less fertile, and height differences affected the health of people.

As we can see, none of these three zones is a comfortable habitat for humans, and especially for agriculture and cattle breeding. If you look at the location of the communes, it will be clear that the entire area is not filled evenly with people. It includes conglomerates of people. In our opinion, this type of distribution of people is not the most convenient and effective in terms of control without proper communication methods. However, the unity of the nation in the Pacific States depends entirely on the human will. If an outsider is initially stunned by the apparent hostility of the environment, then the results of humans acting in such conditions can raise their spirits. This is how history corrects geography. In South America, a man opposed nature and in the fifteenth century was able to conquer it, creating the Inca Empire.

## 2) The worship of nature; religion

After the arrival of the Spanish conquistadors led by Francisco Pizarro, many sources were destroyed. This is because one of the reasons he crossed the ocean and landed on another continent was as a missionary. The Spanish knew that a very rich civilization lived across the ocean. For them, the Inca territory was the Golden El Dorado. With the arrival of the conquistadors, many people were forced to renounce their faith under duress, destroy all traditional religious images, and convert to Catholicism. Therefore only legends from the surviving representatives of the Inca civilization and their descendants have come down to us.

The first inhabitants of Peru lived like animals, in isolated groups, and worshipped various idols, such as mountain tops, plants, and wild animals. Fear and admiration created multiple forms of worship. The puma was prayed to for its strength, the condor for the splendour of its flight, the bat for its ability to see at night, and the owl for its fascinating eyes. No animal escaped a certain degree of exaltation. Everything that was even slightly useful became an object of worship: earth, fire, air, maize, fish, llama. The mountains also played an essential role in the life of the Inca. They revered and worshipped mountains and rocks. Here their ancestors lived, and here their souls remained after death. Sacrifices were also made at the top of the mountains. It was believed that the deified Inca founders who descended from the hills were more willing to listen to the requests of people who were closer to them.

Inca mythology was based on the ideology of three worlds: the underworld of the dead and unborn, *Uku Pacha*; this earthly world, in which the Incas lived, *Kay Pacha*; and the upper world, where the supreme gods Inti, Viracocha, Mama Quilla, Pachacamac, Mama Koch, and Illapa lived.

Celestial bodies occupied a separate stage in the religion of the Incas and subordinate peoples. As in many ancient civilizations, the main god was the god of the Sun—Pachacamac. Other stars in turn played just as important a role. The Incas were well able to navigate by the stars, which gave them the ability to foresee the future, as well as make predictions about celestial bodies in agriculture and to choose the optimal location for temples and even entire cities. So one of the most illustrative examples is the Nazca desert. In this desert, there are more than 700 different figures that are visible only from the air. Until now, there has been no exact explanation of them, but several scientists, after detailed research, have concluded that these figures are a kind of map of the starry sky, and could help the Inca and other peoples for ritual purposes, to predict crops or natural disasters. Another essential feature of these figures, besides their size, is their content. Many full-fledged pictures are dedicated to animals or birds. At the same time, the images are very detailed, even biologically accurate. Humans, on the other hand, are depicted very abstractly and not on the ground, but carved on stone and smaller. The human figure is not detailed, which may

indicate that the presence of people on the Earth is not so significant and all people are the same, in contrast to the diversity of the animal world, which significantly distinguishes the culture of these areas from others. It is also important to note that plants are not represented among these figures, which can be interpreted as indicating the superiority of the animal kingdom over plants. This is another confirmation that the Inca people were very sensitive and careful in their approach to the study of nature. Why this or that species was depicted, however, remains a mystery for scientists.

One of the characteristic features of the empire was that they preserved the religions of subordinate peoples, as evidenced by the various temples, still preserved in our time, in different parts of the country. The second characteristic feature was a sacrifice. As many of us know, among many peoples (for example in Africa) and representatives of older civilizations, a sacrifice was one of the main components of religion. Mostly animals were sacrificed, or in more severe cases, people. The primary purpose of this ritual was to appease the gods. For example, in years of drought, or when volcanoes erupted, the chief priests of the tribe sacrificed a person so that the Gods would send good weather or stop the eruption. The Incas were different. The Incas never sacrificed animals, since the animal was sacred and not allowed to be killed unnecessarily. Therefore, there were only human victims, just as in most cases, the victims were voluntary. Also, the Incas never made sacrifices to appease angry gods or for reasons related to nature (drought, harvest, and so on). They also had few reasons for sacrifice. Most of them were committed at the death of some noble Inca (for example, the king). In this case, the victims were people from his inner circle—for example, wives or servants. People made voluntary self-sacrifice and were buried with the king. Another reason for the sacrifice were critical events for the state. These included the birth of an heir during famine, illness, or war. All cases of sacrifice were related only to human disease, not the relationship between man and nature. It is also important to note that even in such situations, human life was highly valued. For several months before the ceremony, the victim was plentifully fed and encouraged. In this empire there were no strict rules enforcing the sacrifices, as there were among the Aztecs. It is also worth mentioning that all the sacrifices took place on the top of the mountain.

### 3) Political and social life.

Before proceeding to a more detailed consideration of the direct relationship between the Inca and nature, I want to focus on another critical element in the life of these people—the political and social structure of the empire.

The Incan Empire was the largest in South America before the arrival of Europeans. The speed with which this Empire was created is awe-inspiring. In the 14th century, in a few decades, they grew from a single tribe in the Andes to a powerful superstate. What is the reason for the dizzying success of the Inca? The fact is that they did not conquer other tribes, but arrived at mutually beneficial cooperation. If tribes submitted to the Incas, the Incas, in turn, would agree to organize support for the subordinate cities, in return for taxes. By the time they entered the political arena, the Incas already had a store of knowledge, including how to ensure maximum yield on infertile land, ensure delivery, construct roads, and put away supplies for the year, so that everyone had enough. The Incas' distribution of supplies involved the creation of an ideal system of warehouses and the distribution of the harvest so that there was enough for everyone.

When capturing new territories, the Inca never destroyed other tribes, but used their achievements and created new ones based on their acquired knowledge. This is evidenced by the presence of different architectural styles in cities and different dates of innovations in their infrastructure (such as water supply, terraces, a unique form of stone processing, and so on).

## INCAS AND NATURE

After this introduction, we can go to the central part of the essay. How did the Incas change nature around them? Can this be considered destruction, in the sense in which we are used to seeing it? Or could all the modifications introduced by the Incas have improved the environment?

### 1) Agriculture: the famous terrace.

Agriculture was one of the main occupations of the Incas. It was needed to create a stable power source for the stability of the empire. It would be reasonable to assume that cattle breeding could be a more natural way in a mountainous landscape. But with that more straightforward solution, more complex problems appear. For example, how meat might be stored for a long time, or how a sufficient number of livestock might be ensured. It is also important to note that before the arrival of the Spaniards the main animal that the Incas used was the llama.

The only solution for the Incas in this situation was to establish agriculture and develop a method that would allow them to grow a stable crop in mountain landscapes. The tribes of these areas understood where they lived, and based on the experience of their ancestors and the surrounding tribes they invented terraces. These were a unique invention of the Inca. These terraces were round stepped structures. Places which were terraces were called "Marime." Each level was three meters high and included several layers. The lower layer consisted of rubble, so that water would pool and feed the next layer even during a drought. The gravel also helped to prevent soil erosion. The second layer was fertile soil that the Incas brought from other regions (for example, the foothills of volcanoes or river mouths). The topmost layer consisted of loose earth. Seeds were sown in this layer. The edges of the terraces were lined with large stones. These stones absorbed heat. At night, this did not allow the soil to cool down, and during the day it prevented from overheating under the rays of the scorching sun. Thus, such fields increased the area of crops, thus developing the territories of the mountains as efficiently as possible. The second important feature of these terraces was that the temperature at different levels was different. The warmest place was at the lowest level. This allowed the Incas to experiment with growing different varieties or even species of plants at one time.

Currently, a spore-pollen analysis of the soil on these terraces is being carried out to determine what exactly was grown at that time. Research has shown that the Inca cultivated plants such as tomatoes, potatoes, tobacco, and wheat. Some species have not yet been bred by breeders. This variety of crops may indicate that the use of terraces was beneficial and had a positive impact on the landscape of the territory. We can say that this invention not only did not harm nature but on the contrary, helped to diversify the plant species in this area.

Well-organized agricultural production and a guaranteed surplus of products that were easy to store became significant factors in the Inca sociopolitical system. Storage of stocks took place in specially created warehouses. These warehouses were located throughout their territory and were connected by a developed road system. When building roads, the Inca also tried not to destroy the natural landscape.

Let's take a closer look at some specific types of plants

First, potatoes. This is one of the few plants that can grow at an altitude of up to 5000 meters above sea level. In the same way, the Inca experimented with the cultivation of frost-resistant forms of potato. In total, more than 220 potato species were selected during the existence of the empire (data obtained from spore-pollen analysis).

The second plant was maize. Under Inca rule, maize was an elite product for making chicha and for ritual, feasting dishes, but it was much more widespread and, thanks to storage facilities, available throughout the empire. The reason for the migration of some tribes was the desire to grow more maize. It was also essential to have at least one ear of maize on the plot during the land distribution process.

The third plant was coca. The priests and aristocracy used coca as an aphrodisiac, mainly in connection with religious rituals. Although its effects blunted feelings of hunger, thirst, and fatigue, the Incas restricted its use and strictly controlled the distribution of leaves. Due to the danger of growing this plant on coca plantations, mostly prisoners or the poorest representatives of the empire worked on these plantations. Members of the elite carried coca leaves in small bags. These same leaves were offered as sacrifices. The most significant distribution of this shrub was during the period of Spanish colonization, and it was at this time sold to Indians throughout the Andes.

The last plant that became widespread during the Inca period was tobacco. Like coca leaves, tobacco was used mainly for ritual purposes and by priests. But since it was less dangerous, it became more widespread throughout the Empire.

## 2) Water Pipes

The idea of water pipes was not new when the Inca began to use them for their purposes. But unlike Roman aqueducts, the Incas did not use metal for their construction. The ducts were small tunnels (half the height of a man) and lined with stone. This design was thus harmless to nature and people. These water pipes were mostly used for the supply of water to the terraces and big cities. Hydrological engineers calculated the rise or fall of the channel level so accurately that it provided a stable and fairly rapid flow of water. The Incas even managed to straighten the course of the mighty Urubamba river—they diverted it into channels, and the banks were “dressed” in stone to reduce to a minimum its flooding and contribute to the further development of agriculture.

## 3) Cattle breeding.

The breeding of the Incas was a separate sector of the economy in the Incan Empire of the Andes. The economy combined grazing herds and the cultivation of the primary root crops. In the pre-Spanish Andes, animals belonging to the family of South American camels were given a significant role in the economy. These included llamas, alpaca, vicuna, and guanacos.

Llamas and alpacas were used mainly for meat and as pack animals. The meat of the guanaco was precious because of the rarity of this animal. Vicunas were primarily used for fur. Pastoralism was quite a common occupation in the Andes at that time. During Inca rule, large herds began to be formed more actively. The shepherds kept the land that was cultivated by their relatives. If at first shepherding duties had rotated among the family, then with the arrival of the Inca this changed. Now there were professional shepherds. These people lived permanently on the pastures of the high plateau and counted on offerings from other people in the form of food, water, and so on. They did not have their herds but grazed cult or imperial herds. At the same time, the responsibility for each animal was entirely assigned to the shepherds. They had to report systematically on the health and growth of the herd. In addition to their direct duties, they also served as hunters and weavers. While the head of the family was out grazing and hunting, his wife and children had to work the wool, dye it, and weave ropes. Other tribes would use these ropes to sew clothes and weave household items. In a successful year, when the population increased, these people were rewarded with additional supplies of food and clothing. When a shepherd died only one of his sons succeeded to his position, while the rest returned to the community from which they came.

The Incas distributed grazing land in the same way they did arable land. That is, the domesticated herds of alpacas and llamas belonging to religious institutions, the emperor, and the community grazed separately. Borders were defined for each province, and different areas could not use the same pasture, even if the herds were owned by the same owner. The number of communal herds in most regions, at least outside the Kola territory, was significantly smaller than cult or imperial herds. The Emperor's animals were used as pack animals, and their meat and wool were distributed throughout the empire for domestic use and, also, for cloth. An ordinary taxpayer was allowed to have no more than ten animals; a nobleman could get more as a gift from the Emperor. These privately owned animals were never taxed. Community herds usually contained all those animals that belonged to local kinship groups and were marked with either a special mark on the ear or a brand. Individual owners retained rights to certain animals. Two strict rules had to be observed in Inca animal husbandry. Animals that caught the deadly and contagious scabies called *karachi* should be immediately killed and buried to prevent the spread of the disease. No female should be executed as a victim or for any other reason unless she has contracted *karachi*.

#### 4) Who owned the land?

Land in the empire always belonged to a relative group, but was never privately owned.

The first to receive land was the emperor and his descendants. The produce of the area was always distributed equally and only among the people who participated in the planting. Sometimes people received plots of land as a gift from the emperor, who was in charge of the land division process. The chief member of the kindred group divided the area between the men of the clan each year. If a person was not present at the sowing, then he was deprived of the right to land for one year and returned only on the condition that this person was present at the seeding in the next year. Even if there are a lot of members of the group, the Incas still did not violate the law. In this case, the land area was tiny.

Further, the land was distributed to subordinate territories. This division was no longer uniform and depended on the size of the tribe. Boundaries were measured using a particular device, and special milestones were placed on the edges of the individual area. Anyone who moved borders or entered someone else's territory was severely punished, sometimes with death.

The lands of the emperor were considered holy, and a particular set of rules was even written about the cultivation of these lands. There were also separate lands that belonged to the gods. These lands were cultivated by priests, and the size of such areas was proportional to the number of people in a particular temple. These lands were processed earlier than others, and during the sowing period, all people had to put aside their business and engage in the cultivation of cult lands. Then the imperial lands were cultivated, and only then the public lands (which were distributed among the tribes).

Water for irrigation was also treated very strictly. Any person who used more water than allowed was severely punished. After harvest, stocks were distributed in a hierarchy system. Exchanges of goods between regions were also made to redistribute these products, which the government moved to where the need arose

#### 5) Hunting and fishing.

Hunting and fishing were also subject to strict land rules. People from one tribe did not have permission to hunt on the lands of another province. To hunt it was also necessary to obtain a special permit. This license allowed a person (or community) to produce meat or wool. This permit was issued in a strictly defined season, and also imposed restrictions on the amount of yarn and

meat produced. It was also always forbidden to kill females to avoid population decline. The strictest rules applied to vicunas. Their fur was highly prized for its softness and beauty. Vicunas were never killed for meat, and the killing of vicuna was punishable by death. Also, the shearing of vicunas was very complicated, and only specially trained people were allowed to do it. Such strict measures were enforced because there was a high probability of the animal dying during fur cutting, as it would become very nervous. Vicunas are related to camels, and the inhabitants of the Andes were unable to tame them for a long time. To this day, vicuna fur is some of the most expensive in Peru.

Fishing was common only in provinces with large lakes; for example, among the tribes that lived around Lake Titicaca. Regions with abundant fisheries could pay taxes with fish, thus freeing these populations from the obligation to participate in collective crops.

#### 6) Plants in everyday life.

The use of wood for fuel was also controlled by the state. In areas with a large amount of wood, it could be stripped freely, but in areas with a small amount of forest, all the wood belonged to the emperor, and to use it one had to get a special permit. The permit was issued for individual needs. Fuel was a huge problem in the valleys. Burning grass and shrubs were not allowed, because it was used for other purposes. To solve this problem, the Incas came up with a more original approach; they began to use dried llama manure as coal.

The Andean inhabitants were very frugal in their use of wood. This is evidenced by their furnaces, which used small amounts of wood fuel. Some tribes (such as the Chicha tribes) who lived in wood-rich areas used trees as taxes.

Wild grasses and cacti were used by tribes to make dyes for fabrics, as well as to paint walls. Many Indian tribes use colours derived from plants to this day. Such stains are not only safer but can also persist on the surface for a long time.

#### WHAT CAN WE LEARN?

Based on all of the above, we can conclude that the Inca were one of the few empires in the history of humanity that understood that without respect for nature, they simply could not survive. Mountains, rivers, rocks—they exalted and revered inanimate objects as something sacred, which could not be attacked. It was an empire that made great progress, achieved precisely by the collaboration of man and the environment. Yes, they were afraid of nature. But they did not run away from it or try to destroy it, but tried to develop technologies that allowed them to exist in harmony.

The indigenous population has almost disappeared. The conquistadors brought diseases that were fatal to the indigenous people. The culture of interaction with nature began to disappear along with the Inca. The Spanish people also brought with them new species that greatly affected the fauna. Now several tribes live in the vicinity of Titicaca. Some of them still live by the traditions of their ancestors. And they continue to keep in touch with nature on a different level.

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