

Behind the Stars

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Rain washes the world away here. The darkness and the falling drops of sky make the ancient forest around me fade into blackness—like I’m looking out from a stage into an audience of trees. The spotlight beams of flashlights shine on the principal actors in the rainforest, trees that have only been touched by birds and time. The spotlights swoop down to create silver ripples on the accompaniment—a tiny river that runs across my boots, coupling with any other stream it finds, eventually rushing to join the frigid waters of the river we passed on our way into Maquipucuna reserve. A drop of sky wiggles its way inside my hood and sends a chill down my spine before being captured by my humidity frazzled hair. Startled by a sudden noise above me, I look up, receiving a dozen rain drops on my face in return for my efforts. Blinking, I peer into the trees above me, wondering how many rains they’ve seen.

Their rough trunks make indentations on my hands when I slip on the muddy incline of the mountain and must use them for balance. I may touch them with my hands, but the land here has never been “touched” in the way humans have touched and destroyed so much of the world. Which is pretty impressive, considering that Ecuador may have been inhabited as early as 10,000 B.C. The Valdivian culture emerged along the coast of Ecuador first, followed by others like the Quiucuras, Cañaris, and Quechua. In the 15th Century, the Inca moved

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into the area, conquering the other groups as they went. Much of the knowledge that survived the Spanish conquest is concerned with the Inca and their traditions, but many of these customs were shared with the tribes who originally inhabited the area. In its borders, Maquipucuna includes a pre-Inca trail that indigenous people used to get through the Andes and down to the coast. But no one has ever lived or farmed on a lot of this land—called primary forest. It is as wild and natural as the rain that rushes through it so frequently.

The rain passes eventually—as it always does—and in the clearing near our cabins I see something even more timeless than the forest appear. The stars have decided to make their entrance center-stage, and the silver dusting across the black void of the sky is remarkably beautiful from the rainforest floor. I should be sleeping, preparing myself for bird-watching early tomorrow morning. Instead, I stand still and stare at the sky. I breathe in the fresh, wet air, briefly imagining myself into a time-lapse movie where the stars and forest move rapidly around my stone quiet body. The stars here are as foreign to me as the rainforest however, with none of the familiar constellations to comfort me. If I knew where to look, I could find the constellations I recognize, since it is possible to see every constellation at some point in the year from the equator. All 88 official constellations can be seen, since the invisible line Ecuador is named for is the widest point of the earth. The closer a star-gazer gets to a pole, the more stars there are hiding below the horizon. Stars that are visible year-round are said to be in the circumpolar sky. I only know a few constellations, but some of my favorite circumpolar ones are Ursa Major (Great Bear) and Ursa Minor (Little Bear), though there are many others. Of the numerous constellations in the southern circumpolar sky I recognize only the Southern Cross, which our group was able to see on a clear night in the city of Quito, where we stayed before coming to the rainforest.

To me, these distant, tiny suns I know almost nothing about are not much more than a captivating sight. To the indigenous people who lived here, they were so much more. Astronomy was one of the main indicators for agriculture, dictating when to plant at certain altitudes. It also helped predict the monsoon, set the times for special celebrations, and even guided people in personal matters. The Inca constructed carefully placed observatories and pillars, and kept track of the year based on where the Sun and moon moved in relation to them. The observatories, like the one called “The Torreón” in Machu Picchu, could

determine the solstices, the zenith passage date (when the sun casts no shadows at noon), and delineate the individual days of certain seasons based on how the celestial bodies moved through the meticulously placed niches. When the Pleiades star cluster rose in a specific window, the Incan year began. Many observatories were in use so that the accurate time for planting could be found for any altitude. People would sacrifice to the Sun, asking him to rise in the proper place for planting. They recognized Venus, which can be either the morning or the evening star, and believed it to be a servant that always stayed close to the Sun. Cuzco, an Incan city founded around 1400, was even built in a design that mimicked the movement of the heavens, with sacred sites and dividing lines that correlated to the seasons. The freestanding pillars on these lines marked the passage of time using the sun. The rainforest has no plan like Cuzco had, but the stars still move in the same dance as they did when Cuzco was a thriving city, and the Incan observatories and pillars are still accurate.

The movement of the sky was obviously important to the Incas' everyday life and survival, but the great ceiling of the world held their religious beliefs as well. The Inca believed that many of the stars existed to protect animals, and every animal had a guardian in the stars. The animals hiding in the dark forest around me must have remarkably caring stars, to be lucky enough to live on this protected land with people who care about the environment looking out for them. Every star was important, because every star had its job, but the Pleiades grouping was particularly special. As well as marking the start of the year, it held sway over the lives of all animals and birds, and was a *huaca*—or sacred object—to which shamans would make sacrifices. It doesn't really make sense to me why a protector of animals would want an animal sacrifice, but I'm not a shaman.

A shaman is a spiritual guide that can transform into a particular type of animal through a spiritual connection. If I had been a shaman, I think I would have liked to be connected to a llama. In Incan life, the llama provided meat, wool, labor, fertilizer, and sacrifice, and is an important constellation. The Llama crosses the sky during the rainy season and sets in April, just a month before we came to Ecuador. Even if the constellation were still visible, I would not be able to see it, primarily because the Llama is made of the black wool of night, and not the stars. The indigenous people had two different types of constellations. The first is the one I'm familiar with: unmoving, made of stars, has a myth, basically just connect-the-dots pictures of gods and animals. The second set of

constellations is made of the darkness between the stars, called *yana phuyu* by the Quechua, and they interact with the world below them. These dark constellations lived in the river that was the Milky Way, named *Mayu*, and corresponded in a magical way with the animals they represented on the ground. *Mach'acuay*, the Serpent, came and went in the same cycle as the snakes around the Inca. It also rises and sets with the rainy season, the head of the serpent disappearing when the rains do. The Sun passes through the dark Fox, or *Atoq*, when baby foxes are coming into the world. The dark constellations even predicted rain, depending upon how clear or blurry they were. The Inca were one of the few cultures who found constellations in the absence of stars.

The harmony of the heavens and the earth was sacred to the Inca, and they believed that the sky was part of their world, unlike many western cultures with their distant constellations. The Incas believed that there were three levels to the world, called *Pacha*. The first, *Hanan-Pacha*, is where the gods and goddesses of the Sun, Moon, and Lightning/Fire lived. The third level is *Ukhu-Pacha*, which is a wild underworld filled with darkness, earthquakes, and malevolent deities. And the middle level is where we live. The *Kay-Pacha*, our current world, was created by the struggle between the heavens and the underworld and is the birthplace of culture and humanity. People came alive and created their best works in the balance between good and evil, between light and dark. Sacrifices were made to entities in both other worlds. So, when the Incas looked into the night sky, they looked at the darkness too. They believed both the points of light and the darkness were important. In between the level of gods and the level of demons, the Inca peered at the sky and saw gods and animals of both light and dark moving around and influencing the lives they led.

The dark Llama covers a great swath of sky when it swims down the river of stars. The two stars that are the *llamacñawin* (the eyes of the llama) appear at the beginning of the birthing season for llamas. Slowly the Llama rises in the sky until in late April - at the end of birthing season - the Llama stands proudly with her cria (a baby llama that is part of the constellation) along the north/south meridian at midnight. I stare up at the darkness, and can imagine the herders looking up to the same black sky, praying for the Llama to watch over their herd with her piercing silver eyes. Traditional Quechua communities still follow the dark constellations across the sky, praying to them for the same things as they did in the 15th century.

It is hard to remember, wrapped in the hot, wet night of the rain forest, that my culture believes the light has more power than the dark. Certainly, humans rely more on light, but darkness has its place and its power too. Wringing out my hair beneath the stars, I can see why so many cultures chose to look at the bright spots and see something there. They're pretty, and easier to focus on because they're visible. But the darkness beyond is interesting too. The world is full indeed when I count the spaces in between. The absence of one thing is the presence of another; rarely are things really empty. Albert Einstein was one of the first scientists to recognize that empty space is not nothing. The Incas may have been remarkably ahead of their time, since scientists are now looking at the darkness too, even though they aren't looking for foxes or llamas in the sky. What they are seeing is dark energy, and they're using the tiny particles they think inhabit "empty" space to explain the expansion of the universe. Scientists are also exploring the idea of dark matter, which fills all of the spaces in the universe that don't contain anything visible by available means. Maybe the ancient Inca would have had some idea. They certainly paid more attention to the darkness than Western culture ever did. They knew it was important, and now we are rediscovering that fact. When I see—or rather, acknowledge—what fills the supposed absence, there is no real beginning or end to the integration of what is around me. It is all different parts of one universe, connected and moving.

I can imagine the darkness shifting, changing, influencing the earth as it prowls past with a power the fixed stars do not seem to possess. Of course, the stars do change. They move and die all the time, but the black-not-empty space seems more intriguing as it comes alive in my mind. The stars and spaces between are the actors in a show that humans have been fascinated with ancient times. The show that the heavens are putting on is much bigger and longer than the one I see in the trees of the rainforest. On whatever scale it's viewed, universal or microscopic, the show is a good one. Long before any of my invading ancestors would have visited this place, people were here, puzzling out the mysteries of the world around them. These cultures did incredible things with astronomy, recognizing patterns and connections without even knowing the world was round and spinning. There was one harmony that the earth, the sky, the people, the animals, everything contributed to. Some humans may have forgotten about it, but here in the rainforest that harmony still rules, washing the world together one raindrop at a time.

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