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Chile: Southern Stars

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The Environmental and Cultural Impacts of Chile's relationship to the Cosmos

Chile's identity has been profoundly shaped by its relationship to the sky and cosmos. Its unique climate and low levels of light pollution have made it a global hub for astronomical research, attracting foreign-led observatories that have significantly influenced the nation's development. These observatories raise questions about their cultural and environmental impact, the challenges they pose to local scientists, and the tensions between scientific progress and the preservation of cultural and environmental heritage. In a country still reckoning with the trauma of recent history, as highlighted in the film *Nostalgia for the Light*, the study of the cosmos can feel like an escape from the unresolved social and political injustices. Chile's relationship with the sky has opened doors to scientific advancement, invited foreign influence, and revealed a fascinating link between the stars and the country's recent history.

Chile has a unique set of environmental factors that have played a role in it becoming the global hub of astronomy, and boasting 70% of the world's telescope area (Rosen 1). The combination of arid deserts with low humidity and high mountain peaks offer excellent atmospheric clarity, and an inversion layer keeps the air seen through the telescope stable and free from dust (Beaky). Despite having perfect environmental conditions for astronomical research, the Chilean government is not always supportive. Chile's government has been erratic in their support of Astronomy and it has often “subordinated science to the states interests in diplomacy, [and] growth” (Barandiarán 143). One benefit of foreign interest in Observatories in

Chile is that it provides an investment in Chile and provides jobs. The building for the Giant Magellan telescope, is estimated to put \$200-300 million towards Chilean construction and civil engineering (Rosen 3). Chile's government appears to prioritize economic growth over scientific advancement. Decisions regarding astronomy are often made in a top-down manner, excluding scientists whose expertise could offer valuable insights. The Chilean government has thus played a large role in the impacts that the sky and cosmos have had on Chile as a whole.

Chile's national identity is deeply tied to its unique landscapes, making the environmental impact of observatories a critical issue. The construction of foreign-led observatories has often taken advantage of Chile's historically lenient environmental regulations. Early projects, for example, were not required to submit environmental impact reports, enabling the creation of facilities with excessive resource consumption. The Paranal Observatory was promoted as an "oasis" in the desert, featuring a swimming pool, an indoor garden, and accommodations for 75 people—luxuries starkly at odds with the arid environment of the Atacama Desert (Barandiarán 154). Even without swimming pools, the water and energy demands of observatories remains high, a problem in a region where these resources are scarce. These environmental issues highlight a tension between scientific progress, the protection of Chile's environment, and those who rely on the scarce resources.

In addition to addressing environmental concerns, observatories must also consider their impact on indigenous communities. For example, during the construction of the ALMA observatory, negotiations were conducted with local indigenous groups to gain access to the land needed for the telescope (Aguilera and Larrain). Special care was also taken to preserve an archaeological site that lay in the path of a planned road for the observatory (Storey-Fisher). As a result, the road was rerouted to protect the site, and a museum was established to showcase its

significance. Furthermore, the Likan Antai people performed a traditional ceremony to bless the land where the telescope was built. Outreach efforts also played a key role; for instance, the Sister Cities organization connected local students with educational opportunities related to ALMA (Storey-Fisher). These initiatives highlight how observatories can contribute to the local community while respecting cultural and historical heritage.

For decades, Chilean astronomers had limited access to the telescopes located in their own country. It was only in 1997, after the renegotiation of the 1963 convention with the European Southern Observatory (ESO), that Chilean institutions were guaranteed 10% of telescope time, putting them on more equal footing with the international astronomers. While this is a step forward, some argue that it is not enough as some places have 15% to 20% reserved for locals (Barandiarán 153). In addition, half of the 10% has to go to Chileans working with another country (154). Critics argue that this dynamic perpetuates dependency on foreign technology and expertise, and takes the priority away from local research efforts. According to María Barandiarán, these arrangements replicate hierarchical relationships, keeping Latin American countries like Chile in a subordinate role within global scientific networks (142). However, the increased focus on astronomy within Chile has had positive effects on the number of students studying astronomy: “in 2005 there were 40 astronomy students (adding together postgraduate and undergraduate); ten years later, there were 645” (Silva 12).

Chile faces a tension between looking to the distant past through the stars and reckoning with its recent history. The film *Nostalgia for the Light* explores this contrast by comparing the study of the cosmos to the efforts of women searching for the remains of loved ones who "disappeared" under Pinochet's regime. The film raises the question: why focus on the origins of the universe when there is still so much to uncover about the country's social and political past?

(Barandiaran 144). One explanation is that the stars carry no heartbreak or blame—they offer a sense of distance and detachment that the painful history on the ground does not. Barandiaran talks about the comparison between astronomy and the women’s search for lost loved ones, saying that “the pursuit of scientific knowledge for its own sake, exemplified by astronomers’ interest in the deep origins of the universe, is often considered irrelevant to countries full of poverty and injustices (144).

The film also highlights how some prisoners in concentration camps found solace in looking at the stars, seeing them as symbols of freedom even in the darkest circumstances. The sky comes to represent both freedom and a connection to the distant past, while the search for human remains is tied to oppression and unresolved grief (Sachse). This is an example of the fact “that science does not exist in a separate area of society. On the contrary, it is part of a time, of an era, of a mentality” (Silva 12). Chile’s relationship with the cosmos is deeply intertwined with its political and social history.

Foreign observatories have brought prestige and resources to Chile, but they have also sparked complex debates about autonomy, equity, and sustainability. As a global leader in astronomy, Chile faces the challenge of balancing economic and scientific progress with the preservation of its natural environment and cultural heritage. These observatories have contributed invaluable knowledge to the world, but moving forward, Chile must balance its commitment to global astronomy with its responsibilities to its own land, people, and scientific community.

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Negro Matapacos and Chilean Protest Culture

Chile's protests have been a cultural constant in response to the deep-seated issues of social inequity. Street dogs, and specifically Negro Matapacos have become an unlikely but powerful emblem of these movements. Negro Matapacos, which translates to Black Cop Killer, is a famous dog who was known for walking with student protesters and even challenging the police alongside them. Negro Matapacos would bare his teeth and bark at police, which earned him his exaggerated name. Negro Matapacos has become a symbol of protest with his likeness being used in protest posters, street art, and social media. The spirit of Chilean street dog Matapacos and his embrace by the Chilean people, is representative of the strong spirit of protest and resilience in Chile, reflecting the country's ongoing struggle for social justice and equality.

Protests and rebellions have been a part of Chilean history since the very beginning, when the Mupache people rebelled against the Spanish settlers. More recently in Chile's history, student protests have been vital in order to achieve social change. In 1973, a military coup led to the dictatorship of Auguste Pinochet, who put many Chileans in concentration camps, and killed or disappeared many others. This appalling social injustice is what sparked protests and rebellions. The Pobladores organized the first mass protest against the Pinochet dictatorship in 1983 which lasted three years and eventually led to the ousting of Pinochet (Hutchison 474). A

woman who was a part of the protests, Alejandra, is quoted in the Chile Reader as saying that “Without the protests, without any resistance, I think we would have continued with Pinocho” (Pinocho or Pinocchio is a derogatory nickname for Pinochet) translated by Carolyn Watson (480). The protests in 2011 that made Negro Matapacos famous were an effort by the students of Chile to campaign for free and fair education. The most recent major protests in Chile happened in 2019 and are called Chile’s “Social Explosion.” These protests were sparked by the 30 peso price increase on subway fare; however, it wasn’t really about the price increase, but the 30 years of injustice of the military in Chile. Because of this, the slogan for the protest was “It’s not thirty pesos, it’s thirty years” (Gordon-Zolov 41). The point of the protest was to campaign “against economic and social inequities, police violence and a culture of impunity, and a lack of rights and protections for women, Indigenous peoples, and minority groups” (43). The result of this protest was that Chile got rid of its constitution that was created under Pinochet. Chile has drafted a new constitution, but it was voted against by the people in 2023 Because it was too liberal (Vereza).

During the student protests for free, public, and quality education in 2011-2013, Negro Matapacos loved joining in the protests of the students. According to his owner Señora María, “He was really desperate to go out when ‘he knew’ there were protests outside and left quickly.., practically flew to the ‘Alameda’” (Ramírez 00:00:53). He became famous as “Negro Matapaco who is always in the front row, defending the students and workers” (00:06:52). Negro Matapacos dressed in his signature red bandana, and was known because of his violent, but not lethal behavior towards police. Due to the fact that street dogs are in such a low position in the hierarchy of Chile, it becomes an even more powerful statement when they stand up to those with the greatest power (00:11:36). For the people of Chile “as a stray dog, he came to symbolize

many of the demands raised by the protestors: decent accommodation, unforgiving anger for the violence perpetrated by the special forces of the riot police, but also care and protection for the others joined in the struggle” (Kynsilehto 1592-1593). Due to his devotion to student protests, some people believe that Negro Matapaco is a reincarnated student due to how much time he spends standing up for the students (Ramírez 00:03:22).



Figure 1. “Evade” protest art drawn by Maldito Perrito for the 2019 subway fare protest.

Activism through art or “artivism” has long been a staple in Chile, with many street murals advocating for and causing social change. During Matapaco’s participation in the student protests in 2011, many pictures of him were posted on social media, and he became a famous symbol of resistance. He was a character in street art, in which he was often depicted in a frightening pose between the police and the protestors, protecting them (Ramírez 00:06:51). In addition to murals and street art, the dog's likeness was used as an icon of resistance in posters for protests, even after his death in 2017. The artist Maldito Perrito has even created an artwork depicting Matapacos jumping over a subway turnstile with the words evade (figure 1), as an artivism to protest the increase in subway fares in 2019 (Anania).

Negro Matapacos was also the inspiration for slogans and chants said during the 2019 protests, such as “*Ladra Ladrale a la Autoridad* (‘Bark Bark at Authority’)” and “*Patronos de las marchas, San Negromatapacos, cuidanos* (‘Patron of the marches, Saint Negro Matapacos, take care of us’)” (Anania). His inclusion in artivism and protest posters shows how inspiring the

activism with the iconography of *Negros Matapacos* or “The Black Cop Killer dog” can be. To the people of Chile, Negro Matapacos is the embodiment of the spirit of revolution that has shaped Chile's history.

The Chilean people have weathered many socio-political challenges, and they have always risen to the challenge with camaraderie and protests for justice. The role that protests have played in Chile's history is immense. This resistance spirit of the young people in Chile is symbolized well by Negro Matapacos. Even years after his death he continues to inspire, and strike the spirit of resistance in the hearts of young Chileans.

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