CAPE HORN ISLE | 2020

HORN

Achæoscillator_
Towards incorporeal forms of sensing listening and gaze

Research essays by:
Paula López Wood | Alfredo Prieto Iglesias | Gerd Sielfeld | Alessandra Burotto

Terra Australis Ignota Research Group (TARIG) is working on a large exhibition in collaboration with the Contemporary Art Museum, Santiago de Chile 2021. TAIRG is part of Terra Ignota (terra-ignota.net), a research platform that was born with the idea of seeking an unconventional way of reading the southernmost territory on the planet through the transdisciplinary intersection that integrates local communities, science and art.

Terra Ignota, initiated in 2015 by and for a dynamic group of Chilean and international artists, scientists, curators and producers as a recurrent nomadic lab, focusing on the austral region of Magallanes and the Antarctica peninsula as the area where to analyse the local ecosystem. Informed by archaeology, (de/colonial) history, (indigenous) practices, nature and climate of the region and is aiming to connect that to urgent global questions.

Terra Ignota is rhizomatic, it moves slowly, listens, zooms in and out, and connects; it's periodic encounters continuously (re)shape the direction and outcomes of the project, which will manifest itself in manifold collaborative manifestations such as artistic and scientific publications and presentations, and performances, interventions and installations in the context of international exhibitions.

Photo by Víctor Mazón Gardoqui

In 2018, Terra Australis Ignota Research Group traveled to Cape Horn, the southernmost continental island in the world before Antarctica.

There, the air, water and earth come together, where the line that divides the two oceans, the land and the air vanishes.

We started a journey in order to listen how the elements of the Earth dialogue there, and finally, amplify the sound of air and wind with the geological and historical narratives that have circulated among this territory.

For Ars Electronica 2020, we will translate those messages, sounds and stories we witnessed during the journey to Cape Horn, to deliver a virtual island that will connect the real with the poetic through a real-time meteorological data.

Photo by Víctor Mazón Gardoqui

CONTENTS:

Photo by Nicolás Spencer

Paula López Wood

It starts with a reversed map. Tale of an imaginary and literal sailing through the southernmost tip of America.

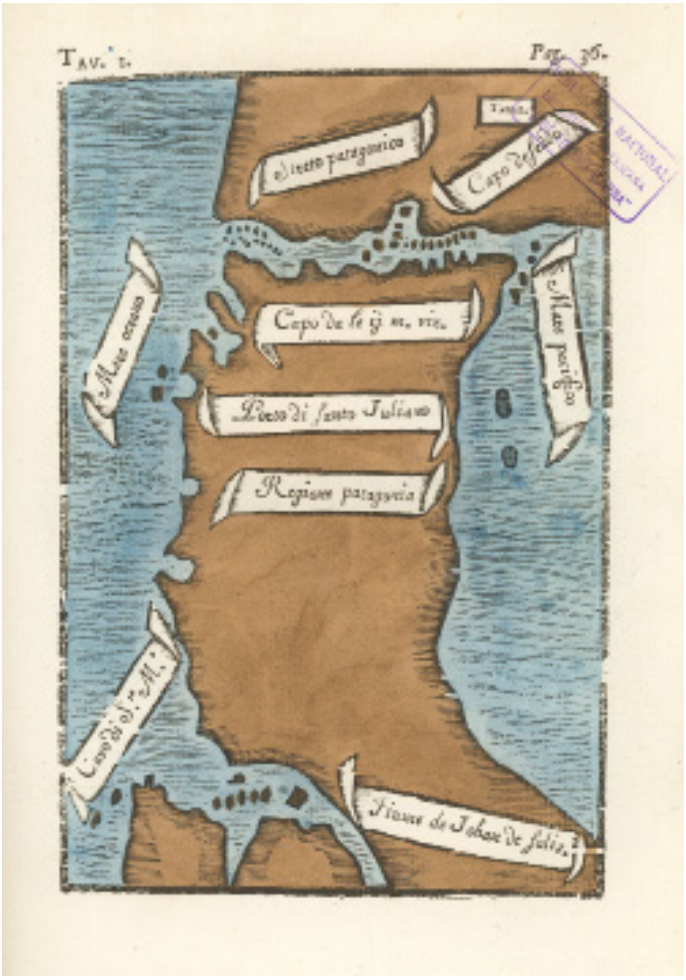
Travel Writer, Researcher and Journalist.
Currently in a PhD in Literature in Pontificia Universidad Católica de Chile.

It's January and from the boat the weather looks changeable. From a copious rain the sky has opened to give way to a clean and flat horizon, which seems very close to the earth. We have sailed from Punta Arenas at six in the afternoon, we have passed Puerto del Hambre and Fort Bulnes, and from the command bridge the sunset seems eternal, red, almost endless.

The captain, don Lalo Leal, who has been navigating the Strait of Magellan for more than forty years, dictates a kind of sentence while pointing out the labyrinth of fjords and channels present on the sailing chart shown on his iPad: "Mother Nature must have cut in two the island of Tierra del Fuego and thus this crossing would have been extremely fast", he says, in a spirit that thousands years ago the indigenous people of the canoes and also the Portuguese Hernando de Magallanes would have longed for, when he attacked in 1520 from Bahía San Julián to the Strait of Todos los Santos, which would later be baptized with its own name: Estrecho de Magallanes. A maneuver that, months later, would allow Magellan to find the expected interoceanic passage: the connection between the "North Sea" or Atlantic with the "South Sea", the Pacific Ocean.

We connect difficult passages, at times more or less navigable. It is the route that begins towards the south through a part of the Strait, then borders the large island of Tierra del Fuego through the Cockburn channel to the west, then the Whalers Channel - which connects to the east with the Beagle Channel - and finally reaches Horn Island, the end (or beginning) of our journey. Because describing these mosaic of islands and passages is equaly or more complex than navigating the route. The feat of the first humans who circulated these waters over their canoes and that of the Magellan ships with their several times mended sails becomes an even more reckless milestone when experiencing firsthand the geographical labyrinth that only a sailor with years of experience can recognize from beginning to end.

Perhaps because of the struggle between water and land that is this territory, the cartographic history of this area begins with a reversed map. Antonio Pigafetta, chronicler of the expedition of Hernando de Magallanes, was the first to draw a map of this place. And he did it the opposite of how the globe has been thought in the West: with the North Sea (Atlantic) to the east, and the South Sea (Pacific) to the west.

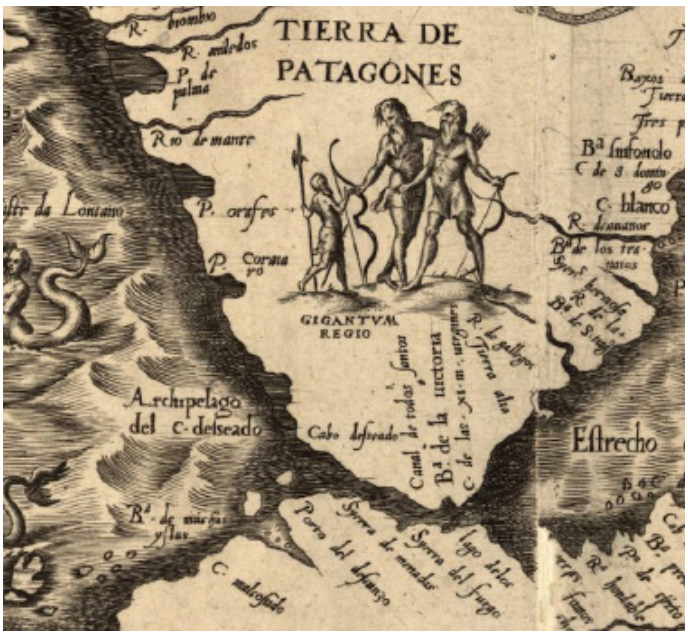


First map of the Magallanes Region, by Antonio Pigafetta, chronicler of the Hernando de Magallanes expedition carried out between 1519 and 1522. The map was drawn reversed, so that the South is in the upper part and the North in the bottom. Carlo Amorettu, an Italian priest, found the manuscript centuries after its creation and published it in 1800. Image source: National Library of Chile.

"The Pigafetta map is an allegory to the fact that Magellan region and Tierra del Fuego are born in the western imagination as an inverted space of other landscapes. A space of excess, loaded with negative values that were in opposition to the religious space of the Spanish Crown", says the poet and academic from Punta Arenas, Christian Formoso.

The history of the extreme south continued to carry that weight of negativity. There are canonical poems that enunciated the territory with adjectives associated to the difficult, the painful and the hostile, since the one who controlled all this excess was the devil.

Thus, for example, there are the gigantic dimensions with which Antonio Pigafetta described Patagonian people and which, by extension, are associated with elements such as the wind, rain, the tiring horizons of Tierra del Fuego. There is the text La Araucana from Alonso de Ercilla, where the Magellanic wind is so monstrous that it can uproot an island by itself. There are the narrations of Julio Cortázar, who puts the channels of Patagonia as a germinal image of his Instructions to cry. And there is Gabriela Mistral, who, with a problematic and refounding view of the territory, writes in Desolación: "I see immense painful sunsets die. Who can she call who has come here if only the dead were farther away than her? "



Map of 1562 by the Spanish cosmographer Diego Torres, with two giants and mermaids in Patagonia. During the times of expansionist navigations, the current region of Magellan served to foster the most diverse imaginations of monsters, giants and attributes associated with a landscape full of negativities as opposed to the religious values that the Spanish Crown represented. Image source: National Digital Library of Chile.

As we cross the northwestern arm of the Beagle Channel, with its steep mountains and hanging glaciers that fall to the sea, the euphoria of the large sky begins to close in the fog that does not allow us to see beyond the last divided land. In this imaginary of difficult fictions and geographies, Cape Horn, even further south, emerges as a true margin, an empty and now uninhabited land, with that idea of permanent anxiety associated to the landscape.
But around 13 thousand years ago, hunters and gatherers lived with guanacos and milodones and navigated the southernmost tip of Patagonia. And a couple of thousand years later, they crossed by a land bridge at the second strait. That, before the water carried away the moraine and definitively separated the island from the peninsula. Thousands of years later the spices of the East released the Magellanic sails to break the images of the sandy desert that linked the "new" continent to the Antarctic pole.
We know the coordinates of that trip almost 500 years ago, but we do not have the account of the first people who crossed the strait or walked through Tierra del Fuego or went around Cape Horn. Not one of those who saw the waters washing away the land bridge they had crossed. But that happened. It will then be necessary to imagine those stories suspended between rocks and the wind of the last vertex of Patagonia. How did these men and women experience and felt the first glimpses of these places? How did the expressions of amazement sound in the rough languages when they first spotted the cape from their ships from Horn Harbor?

Chaos and calm, swaying of endless waves, the imaginations of the southern tip of America, with its deeds and tragedies, canoes and boats, baptized or anonymous, written or oral, known or forgotten, are still in force in this territory. Walter Benjamin, in his essay The Narrator, placed the navigator and the peasant as the first storyteller. "'When you have traveled, you have things to tell', the popular voice tends to say, imagining the narrator as someone who returns from a distant journey" (Benjamin p.253). In the extreme south of the south, that knowledge anchored to a craft is related to geographical accidents and the extreme weather, but also to the experiences that emerge as the journey unfolds, since sustenance depends on the true transmission of the journey and community survival. Content of the narration and legitimate transmission of the trip literally prevented and keeps preventing the death of the group. This is confirmed by the linguist Oscar Aguilera and the

Photo by Paula López Wood

Kawésqar anthropologist José Tonko in relation to the travel accounts compiled by members of the Kawésqar ethnic group, sailors from the archipelagos of western Patagonia:

> "The narration of the trip uses a more colloquial language, it is the story that carries news and geographical knowledge [. . .] an essential knowledge for every new Kawésqar navigator: those who do not know the routes or know how to get to the resources do not survive in that territory. " (Aguilera and Tonko, 2013, p.28).

Description of the new route south of the Strait of Magellan, discovered and established in 1616 by the Dutchman Willem Schouten de Hoorn. This map of the Strait of Le Maire is from the French edition of Schouten's travel journal, Guillaume Schovten's Journal ou description du merveillevx voyage, hollandois natif de Hoorn, fait en années 1615, 1616; 1617 (Diary or description of the wonderful journey of Williem Schouten, a natural Dutchman of the city Hoorn, made in the years 1615, 1616 and 1617), which was published in Amsterdam in 1619. Image source: National Library of Chile.

At night, from the window, the tide breaks through the Fuegian channels and struggles against the island. Gusts of 45 knots, mainly auditory, shake the boat with blows. It seems that the wind is going to bring all these separated islands together at once. It is its wild bite that makes and remakes endless fjords and peninsulas, where it continues into the opening of the Drake Sea.

"It is as if the world was born here," says Captain Leal. The rocks, glaciers and blue hills keep a beauty that is as violent as impenetrable. But the madness of some is the reason of others, they say, and what for an experienced navigator arises as a call to adventure at the edge of the seas, for a passenger far from these places is a graveyard of the brave, roaring Neptune prancing .

The wind is the second element that the first navigators of these waters had to tame, and this scene has reminded it me, again. From the rock that rises at the last headland, the two oceans come to touch and yet they do not join with each other. Osmolarity, salinity and temperature is what explains this mystery of the waters. Captain Leal's voice mixes with the wind, which carries the words with him. "There is good weather, there is bad weather, there are storms. Of everything there is and of all the seas this is the most extreme of all. That is why the myth, so great, that makes sailor to come back, again and again, until they turn at Cape Horn. "

References

Aguilera, Oscar y Tonko, José. (2013) Relatos de viaje kawésqar. Nómadas canoeros de la Patagonia Occidental. Temuco, Chile: Ofqui Editores.

Benjamin, Walter. (2018) Iluminaciones. Trad. Jesús Aguirre y Roberto Blatt. Colombia: Taurus.

Formoso, Christian. (2017) Los 500 años y la metáfora del Estrecho. Punta Arenas, Chile: Consejo Regional de la Cultura y las Artes.

Gonzalez, Javier Roberto (1999) Patagonia-Patagones. Orígenes novelescos del nombre. Chubut, Argentina: Consejo Nacional de Investigaciones Científicas y Técnicas. Universidad Católica Argentina.

Quezada, Jaime. (2019) Gabriela Mistral. El libro de la Patagonia. (Homenaje a los 500 Años del Estrecho de Magallanes 1520 - 2020) Punta Arenas, Chile: Editorial de la Universidad de Magallanes.

Photo by Nicolás Spencer

Alfredo Prieto

Remain or Return:
The ancestral communities of Magellan from Isla Hornos

Archaeologist and researcher at University of Magallanes

It might be regretted that God has placed Cape Horn so far south as to be a temporary obstacle. His intention, however, is that this route be abandoned and that the navigable channels of ships be cut through the isthmus of Suez and Panama, tasks which, like so many others, terrorize civilized man but which will be child's play for the industrial armies of the spherical hierarchy.

Charles Fourier, The Four Movement Theory

Human genetic material is a fluid, slow or fast, it will always be a fluid that in one way or another seeks its outlets.

Cape Horn Island does not currently have any ancient archaeological sites of the Yaghan Indians or their ancestors. Only a modern hut shell was found on Horn Island. This was established by Dominique Legoupil in his archaeological survey of the area:
"27 sites were discovered: 1 on Horn Island, 4 on Herschel Island, 15 on the Big Island of Wollaston, 2 on Bayly Island and 5 on Grevy Island, the northernmost island, the researcher says. (Legoupil 1993)

And he draws a good map of his findings in the area to establish that the settlement of the area of the Cape Horn archipelago was quite late: its surroundings were only populated about 700 years ago. Despite not being far from sites whose age was much higher, up to 6,200 years, in the south of Navarino Island, Grandi Sine. Human occupation was recent in the vicinity of Isla Hornos, at a place called Herschel and Wollaston islands.

Why this late settlement of Cape Horn? Perhaps because it is one of the most difficult seas in the world, perhaps because of its indomitable climate, or its difficult and mysterious geography. As the "Brotherhood of the Cape Horners" points out, it is a great trial and sailing feat to be able to reach the end of the island, to go round Cape Horn [1].

A tragic, imaginary place of wreckage

Between Wollaston and Cape Horn there is less distance than between the southeast end of Tierra del Fuego Island and Isla de los Estados, where the canoeists did arrive about 2000 years ago (Chapman 1987). So one would imagine that, given their excellent technological navigation capabilities, the Yaghans did reach Isla Hornos. Perhaps the incentive to inhabit it and leave a record of it was not enough. The Yaghans did not belong to the vain brotherhood of the Cap Hornier, in spite of having more than the honors to boast of living in one of the world's stormiest seas. And I insist, live, not just pass through them. The island of the States was a real attraction, with big sea lions and penguins. A very good supermarket!

On the other hand, if we look at the whole area, south of the Beagle Channel, there are very old sites, with more than 6500 years of human occupation. These are areas of very intense occupation, which in more recent times have led some authors to speak almost of semi-sedentary settlements (Ocampo and Rivas 2004).
everything they needed to subsist and on that basis also have fun and enjoy life (Fig 1).

Figure 1.
Ethnic map of southern Tierra del Fuego (after Lothrop, 1928)

The Yagan women: best sailors in the world

But this whole existence was always about fragile canoes ruled, as far as we know, by women. The Yaghans placed great importance on two women in their mythology: the Yoalox sisters, cultural heroes who introduced several advances into human life in the far south.

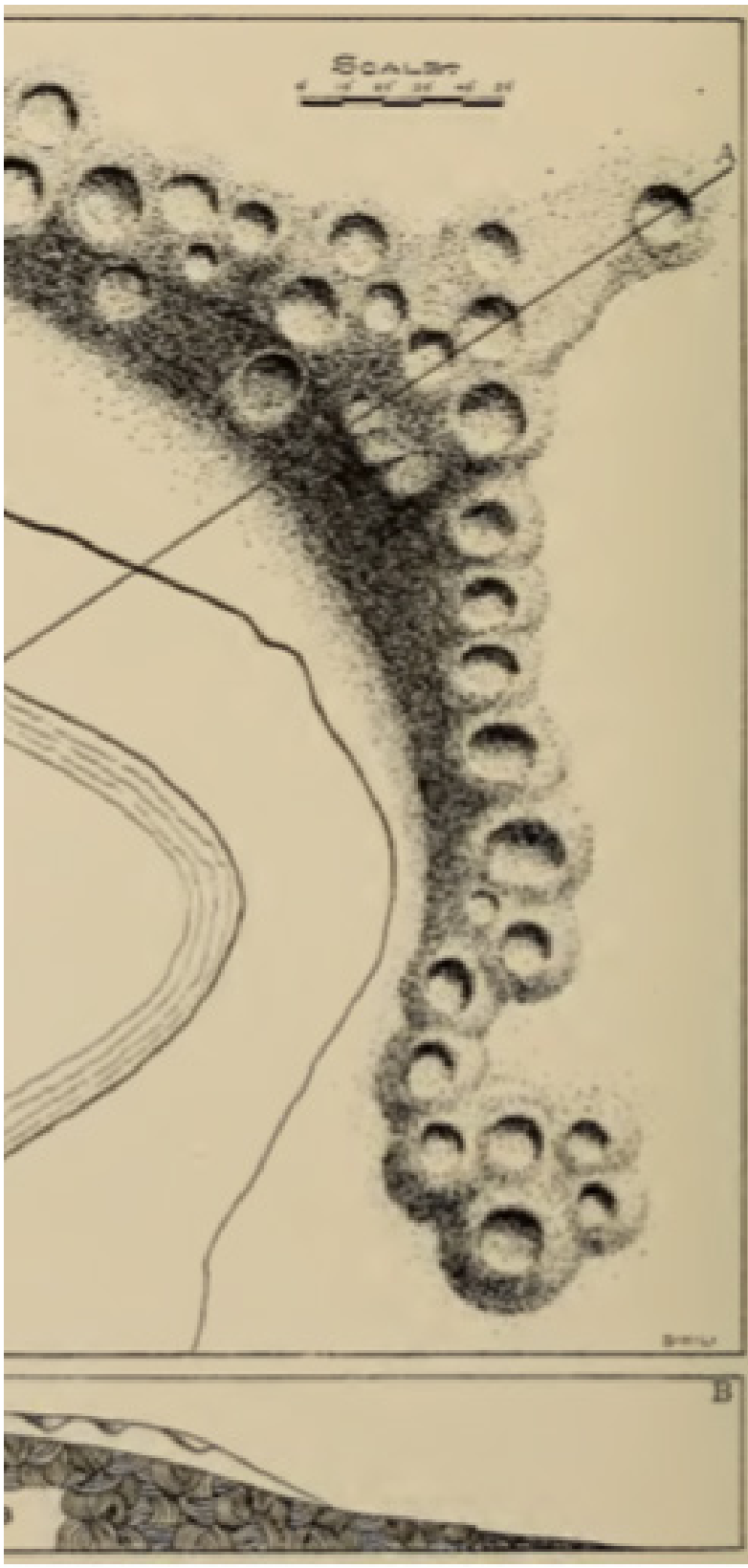
No wonder these women captains are the world's greatest navigators. In fact, they carried a barometer in their souls, because it is not a matter of fighting the unexpected at the risk of one's own life and that of one's loved ones, but of effectively predicting the everyday, controlling it. We believe that those nutshells that were their boats were as fast as they were maneuverable; they needed them to move along the coasts which was the magnificent vein that produced and exhausted their wealth.

Their diet was based mainly on the consumption of pinnipeds, birds, fish and molluscs. Their food waste left a "negative", a trace of their stay (a particular way of living that created a small human microcosm). These places were called wellhouses because they were seen as depressions surrounded by old waste piles, which eventually became building materials. (Lothrop 1928)

The Yagan of Cape Horn lived for millennia in their environment, with few technical modifications throughout that occupation. They continued to live from fishing, hunting and gathering using harpoons, hooks, baskets along with their decorations, clothing, rites and legends; just as they were known by the first navigators who were able to approach and learn about them. Later the population started to decrease, first because of the decrease of their prey that were exploited indiscriminately by wolves and whalers since the beginning of the 19th century in the area, then, because of the diseases brought by missionaries and navigators for which they had no defenses.

The population declined abruptly around 1886 (Legoupil 1995) and they were slowly conquered by the richer and more hegemonic societies that populated the southern end of the American continent and confined them to the nascent Chilean-Argentinean settlements of what was already their former territory.

This history is not only theirs, reviled like all the peoples of America, it has had a common destiny: they adapted or died. They no longer navigate the waters in their fragile canoes and the last speaker of their language only speaks to herself in a closed house, barely with a view of the old canal.



Set of "well houses" around the Beagle Channel
(Taken from Lothrop 1928)

The Yagan of Cape Horn lived for millennia in their environment, with few technical modifications throughout that occupation. They continued to live from fishing, hunting and gathering using harpoons, hooks, baskets along with their decorations, clothing, rites and legends; just as they were known by the first navigators who were able to approach and learn about them. Later the population started to decrease, first because of the decrease of their prey that were exploited indiscriminately by wolves and whalers since the beginning of the 19th century in the area, then, because of the diseases brought by missionaries and navigators for which they had no defenses.

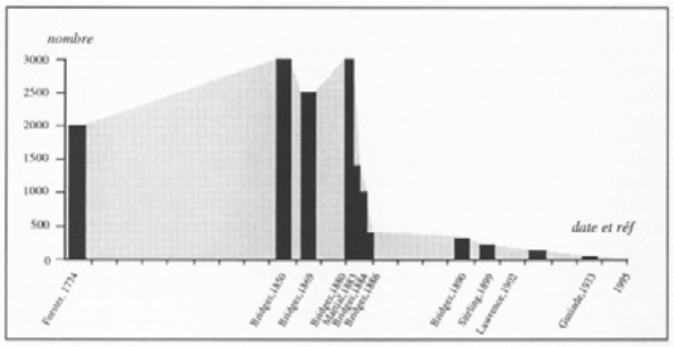


FIG. 3 — Courbe démographique des Yamana, selon les documents ethnohistoriques.

Fig. 3 Taken from Legoupil , 1993

The population declined abruptly around 1886 (Legoupil 1995) and they were slowly conquered by the richer and more hegemonic societies that populated the southern end of the American continent and confined them to the nascent Chilean-Argentinean settlements of what was already their former territory.

This history is not only theirs, reviled like all the peoples of America, it has had a common destiny: they adapted or died. They no longer navigate the waters in their fragile canoes and the last speaker of their language only speaks to herself in a closed house, barely with a view of the old canal.

The birth of a fire island

Around 1880 Thomas Bridges and two Yaghans, among them Acwalisnan, made a trip through the western channels of Patagonia, taking also a very young Lucas with him, his son. Their intention was to learn the Kawésqar language which, as he knew from the Yaghans - a language he already spoke fluently at that time - was very different from his own.

In his journey through these unknown channels, in a yawl or boat called Allen Gardiner (in reference to the martyr of the English missionaries) he picked up three young Kawesqar and was able to reach Wellington Island with them, where they found a party of Chonos. One of the Yaghans was related to a Kawesqar and both were fluent in their respective languages.

In turn, one of the Kawesqar knew some of the Chono language (a nomadic indigenous group that inhabited the islands and channels between the southern part of the Chiloé archipelago and the Taitao peninsula in southern Chile, from prehistoric times to the end of the 18th century or more recent times) and were able to communicate. On the way back, the peculiar crew stopped in Punta Arenas and then continued their journey, but on the way they passed to leave the three young Kawesqar in their lands, probably with their families. Bridges left them an invitation to visit them in Ushuaia.

The interaction of three languages

Continuing his route to the southwest, Thomas Bridges had to go around the great Clarence Island to get into Brecnock and then the Beagle. Acwalisnan urges him to go straight on through a channel unknown at that time and which now bears his name, a channel that separates and gives origin to Captain Aracena Island. He also shows him the site of a pyrite mine that was the place where Yaghan and Kawesqar extracted their firestone: It was the most famous pyrite mine in the whole south, located in the Mercury bosom.

Thus, in a single trip, Bridges observes the interaction of three indigenous languages, probably the product of mixed marriages from the south and the north, and also discovers the main prehistoric mine of the region.

A few years later, a group of Kawesqar arrive on foot to Ushuaia from the Almirantazgo Seno, using an old Indian pass that joined this seno with the Beagle Channel, in the Yendegaia and Lapataia sects. It was a logical step produced by movements and geological accidents in the conjunction of the Scotia plate with the South American plate, and a little more to the west, the union with the Antarctic plate.

Thus, the Kawesqar exchanged elements of their culture

Photo by Nicolás Spencer

Photo by Thierry Duppradou

and technology with the Selknam in the Admiralty and perhaps also used the above-mentioned pass to reach the Beagle Channel, in the same way that they did to the east of Lake Fagnano.

Bridges mentions a mixed population of Selknam and Kawesqar living around Dawson Island. This means that contacts between different indigenous communities were more fluid in that sector. There are raw materials circulating throughout the region and related people in various parts of the geography. It is not surprising that someone originating from the surroundings of Cape Horn was distantly related to a Chono, and these to the Kawesqar, them to the Patagones and these to the Selknam so that further north they could relate to the Mapuche and even further to the Changos and continue to the Atacameños. In this way, blood replicates the old American way. But we know that beyond Cape Horn there were no more humans. From there, the only option would be to stay or return.

BIBLIOGRAPHY

Chapman, Anne
1987. The Island of States In Prehistory. Editorial University of Buenos Aires (Eudeba), Buenos Aires, First Archaeological Data. Themes Collection.
2010 European Encounters with the Yamana People of Cape Horn, before and after Darwin. Cambridge University Press.
Brifges, E. Lucas.
2010, Last End of the Earth, A youth among the Fuegian Indians. Altair Magazine. Legoupil, Dominique

1993, The Cape Horn Archipelago and the South Coast of Navarino Island: Population and Economic Models. In Anales Del Instituto de La Patagonia.

1995, Des Indigenes Au Cap Horn: Conquete d'un Territoire et Modele de Peuplement Aux Confins du Continent Sud-Américain. Journal of La Société Des Américanistes. JSTOR: 9–45. Lothrop, Samuel Kirkland

1928, The Indians of Tierra Del Fuego, vol.10. Ams Press Inc. Ocampo, Carlos, and Pilar Rivas

2004, Early Settlement of the Geographical Extremes of the Patagonian Channels: Chiloé and Isla Navarino 1. Chungará (Arica) 36. University of Tarapacá. Faculty of Social and Legal Sciences…: 317–331. Orquera, Luis Abel, and Ernesto Luis Piana

1999, Archeology of the Beagle Channel Region (Tierra Del Fuego, Argentine Republic). Argentine Society of Anthropology.

2005, Adaptation to the South American Southwest Coast: What It Is and Who, When and Where They Adapted. Relations-Argentine Society of Anthropology (30). Argentine Society of Anthropology: 11–32.

Photo by Robert Carracedo

Gerd Sielfeld

Geosciences Core
Roots and inorganic forces, tectonic-climate interaction: its meaning in the evolution of the landscape and the habitability of the territory

Geologist at Prisma Austral Foundation

The tectonic vorticity and morpho-structural grain of the first order at the southern end of the South American continent reflect the long-lived interaction between the Antarctic, South American and Scotia plates (Figure 1). All of them, of diverse chemical nature, ages and thermo-mechanical properties, print a unique and complex geodynamic condition, where the sum of their forces, results in a flexure of the Andes mountain range (i.e. Patagonian Orocline).

Approximately at 53.5ºS the Andean orogenesis has experienced a flexure from an almost north-south orientation, in the continent, to almost east-west (Poblete, 2015), in Tierra del Fuego; as if the mountain range were a bent plastic filament in 120^0). These forces also define discrete tectonic domains with characteristic deformation styles. In addition, the region juxtaposes and locally superimposes typical environments of a subduction orogen, the Magellan-Fagnano Fault System (SFMF), which represents the transforming boundary between the Scotia and South American plates (Lodolo et al., 2003). The fault system, with more than 600 km in length, accommodates a large portion of the cortical deformation, moving in the direction of rocks typical of pre-arc and intra-arc environments, for tens of kilometers, since the beginning of its activity, some 20 to 6 million years (Ma) ago (Sandoval and de Pascale, 2020). On the other hand, the SFMF delimits to the south, bands of folding and compressive shifts, typical of antearctic environments (figure 2.a.), which progressively increase their amplitude from north to south (i.e. the folding and shifting strip of Tierra del Fuego).

In the vastness of the territory, the heterogeneous and conspicuous deformation, controls the geological evolution and the development of relief in a first order, however the erosive action of the last glaciations and the extreme climate, are the common factor that culminates the details and precisions in the sculpture of the landscape that we observe today. Since the last glacial maximum (14,000 years A.P.; e.g. Rabassa et al., 2005), until the present, the landscape has shown only slight changes in its form, while it has been preparing for the habitability of current ecosystems, including the integration of the sapiens species into this natural system.

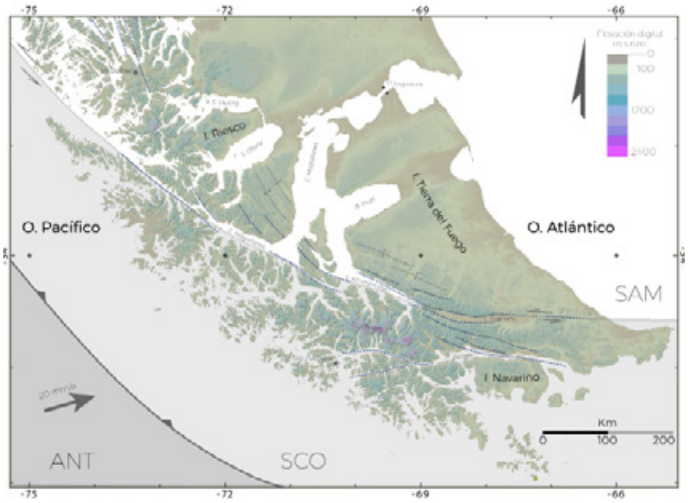


Figure 1. Geodynamic map of the southern end of the Southern Andes. Composition of shaded relief and slope images, superimposed with topographic color scale, generated from the digital elevation model of the ALOS PALSAR mission with 15 m spatial resolution. Antarctic (ANT), Scotia (SCO) and South American (SAM) plate boundaries represented by a thick gray line. Magellan-Fagnano and Beagle Channel Fault Systems represented by the set of segmented blue lines (Cunningham 1993, Betka, 2016) The deformation and sliding velocity along the Magellan-Fagnano fault is represented (Sandoval & De Pascale, 2020). White dots indicate active volcanoes. Yellow rhombus, Cape Horn on Horn Island - Wollaston. S: sine; C: channel; Co: mountain range; E: strait; Vn: volcano; I: island; B: bay; L: lake; O: ocean.

The geological evolution of the sector dates back to the Late Paleozoic, some 380 Ma ago, a period in which a primitive subduction system would have been in place. Later, during the Gondwana Rupture in the Middle to Late Jurassic, the region experienced cortical extension culminating in the opening of the marginal Green Rock basin. This one, with an extreme widening and magnitude of extension towards the south, developed partial fusion of the lithosphere producing magmatism of meso-oceanic ridges, and beginning the


A
B
C

Terrain photos documenting crustal deformation. a) Folds and vertical strata of units belonging to the Austral Basin. b) Silica echelon hydrofractures in the Magellan-Fagnano Fault zone (Tierra del Fuego). c) Erratic granite blocks in Sierra Balmaceda, Tierra del Fuego. These blocks come from Cordillera de Darwin, 200 km south of the current position of the blocks.

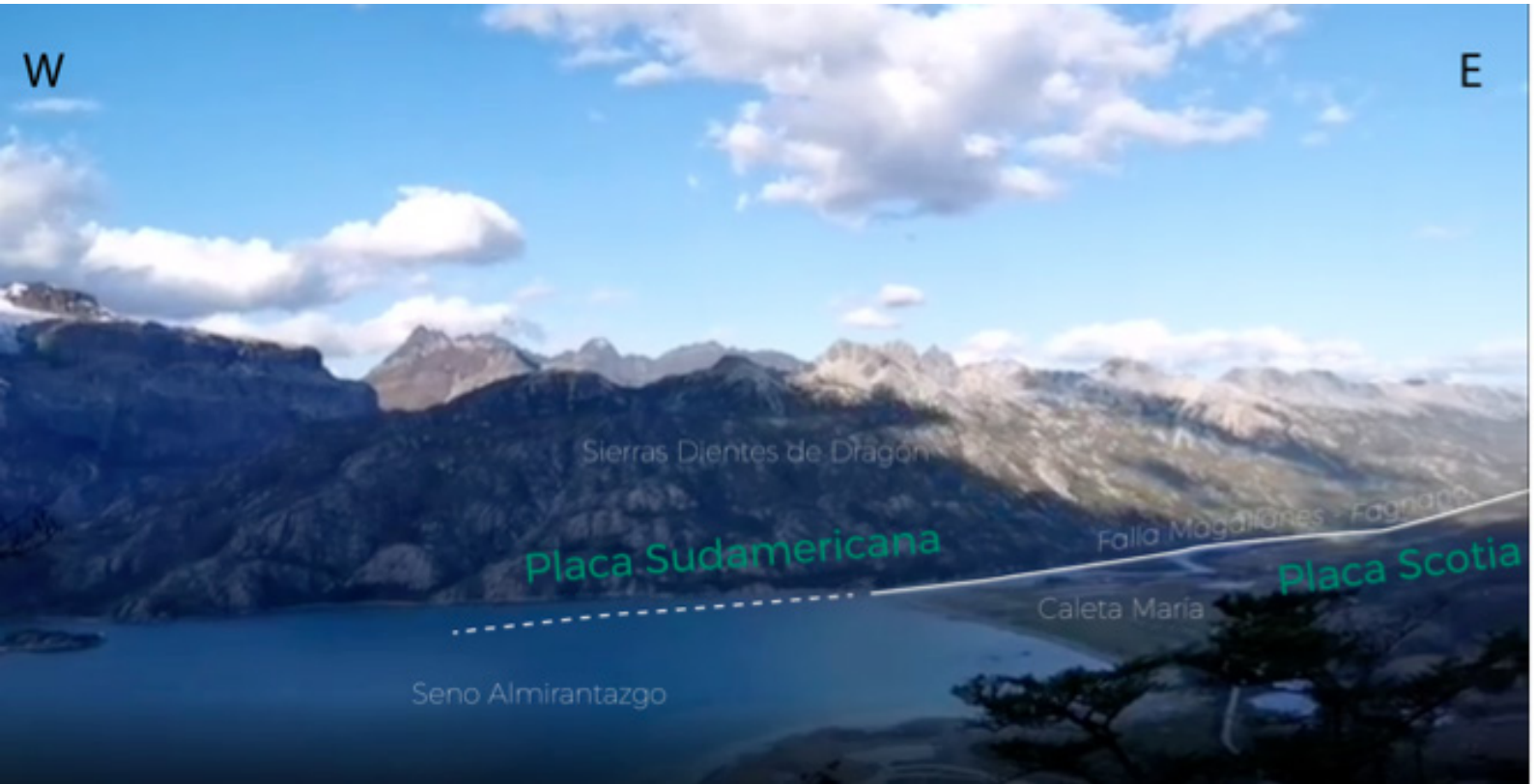
break and separation between the Antarctic peninsula and the South American continent. As a whole, these rocks would have experienced deformation and thermo-dynamic metamorphism during the beginnings of the formation of the southern orogen, as a consequence of the reactivation of the subduction system in the Middle-Late Mesozoic. During this period, particularly in the Lower Cretaceous, a chalky magmatism stage would have taken place, forming crystalline rocks that constitute the fundamental mass of the current Darwinian Mountain Range. Towards the north of the magmatic arc strip, the development of the antechamber basin, the Austral Basin, began, which simultaneously in its domain near the orogenic front, experiences ductile and fragile deformation.

The tectonic history of relative movement between South America and the Antarctic Peninsula would have been triggered in the Late Cretaceous, caused by the expansion of the ocean floor in the western Scotian Sea and the subsequent opening of the Drake Passage. Consequently, this dynamic would have implied the flexure of the Oroclino Patagónico.

From this stage, the relative movement between both continental blocks, would have prepared the conditions for the origin and development of the Scotia plate and establishment of the SFMF, as tectonic limit between the Scotia and South American plates.

Today it is possible to evaluate the finite displacement associated with the movement of this fault system, by observing horizontal separations between outcrops of Paleozoic and Jurassic metamorphic rocks, north and south of the SFMF. Up to 60 km of accumulated landslide since the beginning of the SFMF activity have been calculated, based on geological indicators of displacement. In the historical record, at least 6 earthquakes of magnitude equal to or greater than 7 (i.e. 1879 -Mw7.0, Mw7.5-; 1949 -Ms 7.8, Ms 7.5-; 1950 -Mw 7.0-; 1970-Mw 7.2-) are documented along the SFMF. Recent studies reveal, by means of deformation measured in Quaternary glacial deposits, a neotectonic activity with displacement rates of the order of 10.5 +/- 1.5 mm/year and 7.8 +/- 1.3 mm/year in the surface expression of the SFMF in Tierra del Fuego, around the Fagnano Lake (Figure 3).

Figure 3. Oblique aerial view over the mouth of the Azopardo River in Seno Almirantazgo. The Sierra Dientes de Dragón, with an east-west orientation, is built limited by two segments of the Magallanes-Fagnano fault system (image only shows trace of southern segment). This fault system is the transforming tectonic boundary between the South American (to the north) and the Scotia (to the south) plates. The combined effect between tectonics and climate is observed in the image.



Simultaneously, from the last 6 AM, the terrestrial climate has begun to cool, entering into cycles with characteristic periods of oscillation between extreme cold (glacial phase) and heat (interglacial phase).

Since the end of the last century, scientists have tried to attribute the cause of climate changes to astronomical factors, which influence the effective distance between the Sun and the Earth, thus making temperatures extreme in the seasons. Thus, today it is understood that variations in the precession movements of equinoxes, the angle of inclination of the Earth's rotation axis and the eccentricity of the Earth's orbit around the Sun are the main factors affecting the development of global climate changes. The chronology of the Patagonian glaciations in the Late Cenozoic (i.e., 6 AM to the present), reveals periods when the southern cone of the continent would have been covered by ice sheets hundreds of meters thick. The movement of the ice, generated by the force of gravity and partial melting at times by the transition to warmer periods, would have been the managers of the dual, erosive and depositional effect of the glacial masses.

The "landscape" system comprises an endogenous portion associated with the nature of the rocks that make up the geoforms and the tectonic deformation, materialized in structures. The resulting geometry designs the first order geomorphological grain in the landscape which is reworked by an exogenous fraction, associated with atmospheric and gravitational agents, erosion, weathering and sediment transport. In this way, the combination of factors exhumes and unveils the magmatic roots of the Southern Andes in the Cordillera de Darwin (erratic blocks 200 km north of Cordillera de Darwin from this unit in figure 2.c), strips of thermo-dynamic metamorphism in the archipelagos around the Beagle Channel, and inverts sedimentary strata in the Southern Basin, in Tierra del Fuego. In particular, in the abyss of the Southern Andes, before being totally submerged in the Drake Sea, the Beagle and Magellan-Fagnano fault systems have designed the thick outline of the landscape, configuring the main lines of the fjord and channel network, as well as the position of elongated breasts and lakes, limited by mountainous fault escarpments (e.g., Fagnano-Almirantazgo Sound, Sierra Dientes de Dragón; Figure 3).

Landscapes like the one in Figure 3, sculpted by the coordinated and sometimes simultaneous action between tectonics and climate, were transited, used and inhabited by flora, fauna and sapiens. An asymmetric and oscillatory dance, between tectonic and glacial forces, sculpts in pulses of unequal compasses, the three dimensions that time occupies to accommodate the biological effervescence on the surface. Dynamic and restless, only in the last 6 Ma, the territory has experienced phases of extensive volcanism, climatic cycles with glacial and hot extremes, and constant and permanent deformation along the length and width of inherited fractures. From this combination of natural processes, the landscape that we observe today is the result. During cold and dark periods, the aggressiveness of glacial erosion is undoubtedly one of the factors that leaves deep traces in the southern landscape; in contrast, during transition to warmer periods, its melting, agglomerates sediments in large volumes, either in isolated erratic blocks, creating reliefs and geoforms that are preserved under the atmosphere (FIGURE 2.c.).

Thus, the uncharted territory of the Southern Andes is an open laboratory and museum, where endogenous and exogenous processes have been actively interrelated for at least six million years, culminating in the modeling of the landscape that we perceive today, very similar to the dimension experienced by the first sapiens that collected and hunted in the territory; and very similar, too, to the final brushstroke left by the last glacial maximum, some 14,000 years ago. This implies that after the retreat of the great ice masses, the territory was densifying and diversifying its ecosystems, in the course of the development of climates increasingly prosperous for biodiversity. In this scenario, some 11,000 years ago, the territory was for the first time contemplated by sapiens' eyes, and for the first time the human habitability of the landscape was put into practice.
The territory faced with successive harsh and incisive climates, as we know it today, is drawn dismembered into archipelagos, channels and fjords that articulate fractal lines of infinitesimal coastline. Where the border is diluted in a mixture of oceans, the raw Drake's Sea, separates the last rocks emerged, from the Antarctic horizon. Behind it, from Cape Horn and the Tierra del Fuego archipelago to the South American continent, the landscape wields in a silent chorus of indefatigable geological processes, ergo, the foundations of the existence of the Earth, of the natural physical space and of the long-lived fabric of inorganic life.

Alessandra Burotto Tarky

Art, science and society from a critical museology. The open landscape behind museology

Curator, MediaMAC/Anilla coordinator
Museum of Contemporary Art - University of Chile

One of the most significant differences between modern and contemporary art is not only in the configuration of certain historical-political events that determined the most recognizable changes. While this partly explains the development of new artistic practices that we now point to as contemporary, a broader understanding of this drift has been limited by the hegemony of traditional historiographic accounts that tend to inscribe historical milestones on a chronological continuum. Understanding that, in the end, these accounts seek to validate themselves in a more or less founded way, the enthusiasm for decreeing a historical before and after conceals complex dialectic and deeper contextual frameworks, those that are not found on the surface and that involve the tectonic shifts that shape the practices and languages of the contemporary in art, leaving us at the mercy of a purist -and puritanical- reductionism that tends to obstruct the density and vigor of these practices marked by a temporary elliptical becoming, by an expansive drive, by their operations charged with resignification and by methodologies as heterodox as they are delirious.

However, it was this simplification that helped to conceive a large part of the art museums in the radius in which Western hegemony extends its arms, opening up one of the most intense and promising debates on the social function of art and its institutions since the mid-1960s.

It should be remembered that the canon and the hierarchy between what should be considered art and what should not, has its roots in the modern Europeanizing project where the collection of objects considered valuable to preserve for personal or social experience represent the heart of the museum mission. This distinction has been fundamental with respect to other spaces created for cultural circulation - self-managed, private or public - such as art centres, galleries, or exhibitions, festivals and periodic meetings, to mention the most common. Thus, the museum of contemporary art is a key piece of the art system, even in its most current version, that defined by invisible vectors such as financial speculation, new collecting as well as a litter of artists who celebrate the art market without blushing (Robert Fleck, 2014).

However, this definition of the museum institution has been widely criticized not only for its mercantile bias, but also for leaving out iconoclastic practices that are far removed from the society of the spectacle and that have their origins in phenomena that are outside the canon. Already at the end of the 1950s the Situationist International called for 'overcoming art' by proposing to confront the dilemma of the commodity through the abolition of class society (Guy Debord, 1957). With this vision, they took a position in favour of artistic actions on the edge, underground and political, which had been forged in different ways before and after the Cold War, for which the model of the museum as an entertainment machine was not only insufficient due to its inability to read the world in its vast complexity, but also because its hierarchical position went against the urgent need to construct models of participatory, multidisciplinary and situated museums. In short, a major problem that needed to be addressed from new museological perspectives.

Such have been the tensions in the international debate on the role of museums in society today, that only in 2019 and after a series of expert commissions, participatory consultation and so on, was a new definition consecrated, accepting, in part, what critical museology has been proposing for more than two decades: "Museums are democratizing, inclusive and polyphonic spaces for critical dialogue on the past and the future. Recognizing and addressing the conflicts and challenges of the present, they preserve artifacts and specimens for society, safeguard diverse memories for future generations, and ensure equal rights and equal access to heritage for all peoples. Museums are non-profit-making. They are participatory and

MAC main access in a situation of social normality.
Neatness as a republican symbol.
Photo by MAC.

transparent, and work in active collaboration with and for diverse communities to collect, preserve, research, interpret, exhibit, and expand world understandings, with the purpose of contributing to human dignity and social justice, global equality, and planetary well-being. (International Council of Museums, ICOM, 2019).

The Museo de Arte Contemporáneo de la Universidad de Chile (MAC) was born in 1946 with the determined intention of founding a new type of museum institution, capable of interacting with the new productive options and the incipient tendencies that later configured the so-called second avant-garde and that in Latin America had their own autonomous expression of powerful radicalism. This was happening in Chile barely a year after the end of the Second World War, against the backdrop of the hegemony of the fine arts museums that were promoted throughout the region at the end of the nineteenth century, and even before the conception of modern art museums, a sort of transition between the past and the present of that time. The national, public and university character of the MAC marks this primal identity that understands the function of contemporary art as "the place of imminence" and the task of the museum as a space that is dynamically constructed from multiculturalism (Néstor García Canclini, 2011), a feature that it shares with the MAC of the University of São Paulo (Brazil, 1963) and the MUAC-Universidad Nacional Autónoma de México (Mexico, 2008). Even today, it remains the only museum in the country that has promoted a curatorial unit dedicated to the crossroads between art, science, technology and society that develops exhibition programs in the field of media arts and new media.

This is precisely the natural space for Terra Australis Ignota (TAI) whose exhibition stage will take place during the first half of 2021. Its motivation, however, is not found in the intervention of the white cube by means of a finished work whose invoice is only possible under aesthetic-artistic rules; neither is it limited to the artist-genius who translates his imaginary through semiotic operations that the audience can complete or intervene. Like several art/science projects that choose the field expedition as a methodology to unleash processes of open exchange, what artists, scientists, curators and collaborators involved so eagerly seek is to create intermediate spaces in order to invoke "the suggestive problem of the limits of art and science" (Jasmine Adler, 2014).

The French author Bruno Latour uses the metaphor of vascularization to explain the relationships between science, technology and society, giving an account of a larger system where it is no longer possible to sustain purely scientific, technical or social internal components; Thus he considers the binomials of modernity as subject/object to be outdated, proposing instead the theory of the network-actor (Latour, ANT, 2005) also used to address the interactions between

The social outbreak of October 18 left its marks on the buildings of culture. The MAC rejected the government offer to paint and remove scratches, a political sanitization strategy. The graffiti remains intact.
Photo by MAC, 2020

art, science, technology and society, or political theory, anthropology, among other disciplines that can be thought of as fields open to hybridization in a rather ontological approach.
In TAI we can distinguish the configuration of a network given by the working group itself as well as by the actors, or performers, human or non-human, organisms or things, that relate to each other as part of the Southern Andes system, a large material and immaterial territory in which the expedition takes place.

The exploration, then, can no longer be understood only as the recognition of a territory in which the traces of the past, its marks or boundaries are identified. Through collective field research, we seek to put ourselves in a situation of risk, at the very frontiers of knowledge, in order to question and disturb the dominant narratives. In this sense, contemporary art, like discord, opens the floodgates of the ponds of canonical knowledge to let new constellations and new blood flow. In this way, the experience and the possibility of new meta-narratives emerge both from a deep time and from the imminence of the present, as well as from the wind, the rocks, the polymorphic landscapes, the living memories and even bastard fictions.

In this sense, the MAC, far from operating as an exhibition space, is understood from a critical, situated and belligerent museology, an actor that can either operate as a relational device, or as a moment within a larger dialectic, especially when the process and the pieces that constitute the installation, as well as the critical exercises of the public can return and reconfigure themselves in the territory of origin through dissident and decolonial practices that put even more tension on the razing that is sought to be revealed in its tectonic, symbolic and memorial layers.

Photo by Jorge Brantmayer, ACAB. 2019

Alessandra Burotto (CL)
Alessandra Burotto, is curator of the Museum of Contemporary Art of the University of Chile, where she coordinates the MediaMAC/Anilla Unit area dedicated to putting value in artistic practices and languages that use technologies, helping to promote the field of media arts at the crossroads between art and science, technology, nature and society.
Journalist and graduated in Cultural Criticism from the University of Chile, for 10 years she has led the Ibero-American Network Anilla Cultural Latin America-Europe for the MAC, an international instance dedicated to the development of new museum formats and methodologies for contemporary cultural action through the intensive use of new information and communication technologies.

Paula López Wood (CL)
Writer and travel Journalist, Paula López (1987) graduated from Film and Aesthetics from Universidad Católica de Chile. She also has an MFA in Creative Writing in New York University and is currently doing a PhD in Literature at Universidad Católica de Chile.
Her stories have been published in several printed and digital media such as Diario El Mercurio (Chile), Ladera Sur (Chile), Revista Escalando (Chile), Revista Endemico (Chile), Revista Desnivel (Spain), The Explorers Journal (United States), among others.
She has also written several scripts for documentaries about science, climate change and natural history (Wood Productions).
In 2019 she published her first book, Animales extintos (Editorial Cuarto Propio), a group of short stories based in Patagonia. Her narrative has focused on sharing with deep knowledge and passion the territories of the extreme south of America.

Alfredo Prieto (CL)
Archaeologist, professor at Universidad de Magallanes (UMAG), Professor of Philosophy at the UdeC, MSc. in Archeology at the University of Cambridge, Diploma in Advanced Studies in Prehistoric Archeology at the Universidad Autónoma de Barcelona, PhD in prehistoric archeology at the Universidad de Barcelona and Visiting scholar in 2013 at Harvard University.
He has focused his research work in the field of prehistoric archeology and the Fuego-Patagónica ethnography. He currently works at the Centro de Investigación GAIA Antártica (UMAG).

Gerd Sielfeld (CL)
Gerd Sielfeld (Ph.D.) seismotectonics in active volcanic chains and structural geology of fossil hydrothermal systems.
Structural geologist consultant.
Structural mapping and analysis of brittle strain related to uid ow. Currently mapping at the El Indio-Pascual metallogenic belt (Au).

Nicolas Spencer (CL/AT)
His work focuses on ways of understanding nature in all the depth and complexity. His installations mix the massiveness of its components (rocks, metals, gravity, wind, etc.) with the fragility and immateriality of sound.
Spencer's artistic practice is contaminating (and contaminated by) other areas of knowledge as a way of generating alternative epistemological and aesthetic perspectives.
http://nicolasspencer.cl

Víctor Mazón Gardoqui (ES/DE)
Mazon Gardoqui´s work exposes the unheard and unseen, addressing the inaccessible and experiencing vulnerability and awareness on the viewer. Perception and altered states are key concepts on his performances through the use of sound or light. His work materializes in three main fields: actions or site-specific performances through experimental processes, exhibitions as consequences of previous actions and collaborative works through seminars to form a communal dialogue.
His practice explores amplification, electromagnetic phenomena and images of invisible fields by using locative audio and custom electronics.
His work has been performed or exhibited in museums, biennials, galleries, billboards, urban screens and TV/radio stations in Africa, Russia, Nepal, North America, Canada, Mexico, Bolivia, Colombia, Argentina, Uruguay, Antarctica and numerous locations across Europe.
https://victormazon.com

ARS ELECTRONICA CAPE HORN ISLE

Achæoscillator_Towards incorporeal forms of sensing listening and gaze
https://tairg.org

Nicolás Spencer
Artist and Director of
Terra Australis Ignota project
Co-author Ars electronica Cape Horn Isle

Víctor Mazón Gardoqui
Researcher/Artist
Co-author Ars electronica Cape Horn Isle
Layout and design

AUTHORS

Gerd Sielfeld
Geologist at Prisma Austral Foundation

Alfredo Prieto Iglesias
Archaeologist and researcher
at University of Magallanes

Paula López Wood
Writer and travel Journalist

Alessandra Burotto
Curator at the Museum of Contemporary Art

PRODUCER
Catalina Montero
Terra Australis Ignota

Project developed by Terra Australis Ignota Research Group on August 2020:
Alessandra Burotto, Paula López Wood, Víctor Mazón Gardoqui, Valentina Montero, Alfredo Prieto, Gerd Sielfeld, Nicolás Spencer.

This project is a cooperation between:
Ministerio de las Culturas, las Artes y el Patrimonio
Ministerio de Relaciones Exteriores
Gobierno de Chile
Ars Electronica

Dr. Alfredo Prieto is sponsored by Universidad de Magallanes
The Research Trip to Cape Horn 2018 was supported by the Ministerio de las Culturas, las Artes y el Patrimonio, BKA (Bundeskanzleramt der Republik Österreich), Austrian Embassy in Chile, SKE, Conaf, Weltmuseum Vienna, Transbordadora Austral Broom and Aerovías DAP.

Front and back cover photos by Víctor Mazón Gardoqui