

# Yendegaia Rockshelter, the First Rock Art Site on Tierra del Fuego Island and Social Interaction in Southern Patagonia (South America)

Francisco Gallardo , Gloria Cabello, Marcela Sepúlveda , Benjamín Ballester, Danae Fiore, and Alfredo Prieto

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*Through our research at Bahía Yendegaia on the Beagle Channel in southernmost Patagonia—the ancestral territory of the Yagán people—we discovered the first rock art site on Tierra del Fuego Island. The geometric visual images found at Yendegaia Rockshelter present motifs and compositions analogous to those recorded at other sites on the southern archipelago associated with the marine hunter-gatherer tradition. They also show graphic similarities to the rock art paintings attributed to terrestrial hunter-gatherer populations from the Pali Aike volcanic field, located on the north side of the Strait of Magellan in mainland Patagonia. Both, however, display quantitative differences, which suggest that they emerged from different visual traditions but from the same field of graphic solutions. Navigational technology enabled the canoe-faring Fuegian people to have long-distance mobility and to maintain a flow of social information mediated via visual imagery expressed in material forms, such as rock art and expressions of portable art. Ethnohistoric reports suggest a cooperative social interaction more than a competitive one. This cooperative social dynamic would have been necessary for the survival of marine societies in the harsh environmental conditions characteristic of the southern part of south Patagonia.*

**Keywords:** rock painting, Fuegian Archipelago, southern Patagonia, social interaction, information flows

*Durante nuestras investigaciones en Bahía Yendegaia, ubicada en el Canal Beagle, al extremo sur del continente americano y en territorio ancestral Yagán, hemos descubierto el primer sitio con pinturas rupestres de la Isla Grande de Tierra del Fuego. Allí, las imágenes de diseño geométrico presentan formas y composición análogas a aquellas registradas en otros sitios del archipiélago austral. No ocurre lo mismo con las pinturas del campo volcánico continental de Pali Aike al norte del Estrecho de Magallanes, universo rupestre cuyas diferencias cuantitativas sugieren otra tradición visual, aunque dentro de un mismo campo de soluciones gráficas. La tecnología de navegación de los pueblos del extremo sur de América favoreció la movilidad a gran distancia de los canoeros fueguinos, quienes habrían mantenido abierto un flujo de información social mediado por imaginarios visuales como el arte rupestre. Esta interacción social, documentada etnohistóricamente, indica que tenía un carácter de cooperación más que de competencia; dinámica social necesaria, en el contexto de las rigurosas exigencias ambientales del archipiélago fueguino y del sur de Patagonia Meridional.*

**Palabras clave:** pintura rupestre, archipiélago fueguino, extremo sur de Patagonia, interacción social, flujos de información

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**Francisco Gallardo** ■ Centro de Estudios Interculturales e Indígenas, Escuela de Antropología, Pontificia Universidad Católica de Chile, Santiago, Chile ([fgallardo.ibanez@gmail.com](mailto:fgallardo.ibanez@gmail.com), corresponding author)

**Gloria Cabello** ■ Centro de Estudios Interculturales e Indígenas, Pontificia Universidad Católica de Chile, Santiago; and Museo Chileno de Arte Precolombino, Santiago, Chile ([glcabello@gmail.com](mailto:glcabello@gmail.com))

**Marcela Sepúlveda** ■ Escuela de Antropología, Pontificia Universidad Católica de Chile, Santiago, Chile; and CNRS-Paris 1, Paris, France ([msepulver@uc.cl](mailto:msepulver@uc.cl))

**Benjamín Ballester** ■ Universidad de Tarapacá, Santiago, Chile ([benjaminballesterr@gmail.com](mailto:benjaminballesterr@gmail.com))

**Danae Fiore** ■ CONICET–Universidad de Buenos Aires, Asociación de Investigaciones Antropológicas, Buenos Aires, Argentina ([danae\\_fiore@yahoo.es](mailto:danae_fiore@yahoo.es))

**Alfredo Prieto** ■ Centro de Estudios del Hombre Austral, Instituto de la Patagonia, Universidad de Magallanes, Punta Arenas, Chile ([alfredo.prieto@umag.cl](mailto:alfredo.prieto@umag.cl))

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For many years, archaeological research in the southern Patagonia archipelago did not discover any rock art sites, but this has been gradually changing. Today, such sites have been reported across an extensive zone stretching from Madre de Dios Island to Cape Horn (González et al. 2014; Jaillet et al. 2010; Legoupil and Prieto 1991; Muñoz et al. 2016). Curiously, no rock art site had been reported to date on the largest island of the archipelago, the Isla Grande of Tierra del Fuego, which also has the longest recorded occupational history (e.g., Oría and Tivoli 2014; Orquera and Piana 1999a). During our investigations at Yendegaia Bay, on the north shore of the Beagle Channel (the southern coast of this big island) and in the ancestral territory of the Yagán people, we discovered the first site containing rock paintings (Figure 1). Archaeological and ethnographic evidence suggest that the mobility of these canoe-faring people who navigated around the Tierra del Fuego archipelago, from the Gulf of Penas to Cape Horn, enabled regular contact with populations with different cultural traditions. These included what have come to be called marine hunter-gatherers, the Kawashkar in the Magellan Strait archipelago; the land-based hunter-gatherers known as the Selk'nam, who inhabited the Isla Grande; and their mainland neighbors in continental Patagonia, the Aonikenk. We propose that the motifs documented at Yendegaia Rockshelter provide new evidence of these interregional interactions: they bear graphic resemblances that suggest they formed part of a shared system of information circulation, albeit with local specificities.

Many studies focusing on social interactions among hunter-gatherer groups have argued that they maintained social alliances to reduce socio-environmental pressures and to favor social reproduction (Borrero et al. 2011; Gallardo 2009a; Gallardo et al. 2012; Gamble 1982; Jochim 1983; Webb 1974; Whallon 2006, 2011; Wobst 1977). These authors have shown that in desert, semidesert, and periglacial environments, such as the Fuego-Patagonia region, the circulation of shared motif types, whether on fixed supports (rock art) or portable ones (mobile art, body art), contributed to the flow of information, the construction of social networks, and the formation of alliances among distant groups.

The visual scenes found in such harsh environments are comparable to those recorded for hunter-gatherer rock art sites located in the southernmost part of the American continent. Given these similarities, researchers working in localities of northern, central, and south-central Patagonia have argued that the motifs captured in rock art and in portable art would have fostered interaction among the populations of the whole region (e.g., Acevedo 2015; Acevedo and Fiore 2020; Carden and Borges 2017; Carden et al. 2018; Cassiodoro et al. 2019; Fiore 2006, 2020; Guichon 2018; Muñoz 2020; Muñoz et al. 2021; Re and Guichon 2014). Long-distance relations among the different marine- and land-based human groups of the Fuego-Patagonia archipelago were also active in historic times and are described in ethnographic sources (e.g., Borrero et al. 2011; Bridges 1952; Chapman 1977; Empeaire 2002; Fitz Roy 1839; Gusinde 1986; Orquera and Piana 1999b).

Interactive social networks between groups with navigation technology are evident in the region, which would also encourage the circulation of decorated motifs found in mobile art, especially on the islands of the Strait of Magellan-Tierra del Fuego-Canal Beagle (the southern part of Isla Grande del Tierra del Fuego), the northern part of Isla Grande del Tierra del Fuego, Otway Sound (Riesco and Englefield Islands), and the southern tip of the mainland on the Brunswick Peninsula and the southeast zone of southern Patagonia (Fiore 2006).

In this article, we propose that the rock art of Yendegaia would have been part of that flow of social information and the expression of a strategy in which cooperation coexisted with competition (Muñoz 2020). To this end, we present this new discovery along with an analysis of the corresponding historic and archaeological contexts. We then examine the distribution of rock art in the region from a quantitative perspective and finally explore the visual practices and social interactions among different localities of the Tierra del Fuego archipelago and southern Patagonian shore of the Magellan Strait.

### **Yendegaia Bay: Historic and Archaeological Background**

The oldest evidence of human occupation in the channels of southern Tierra del Fuego dates to

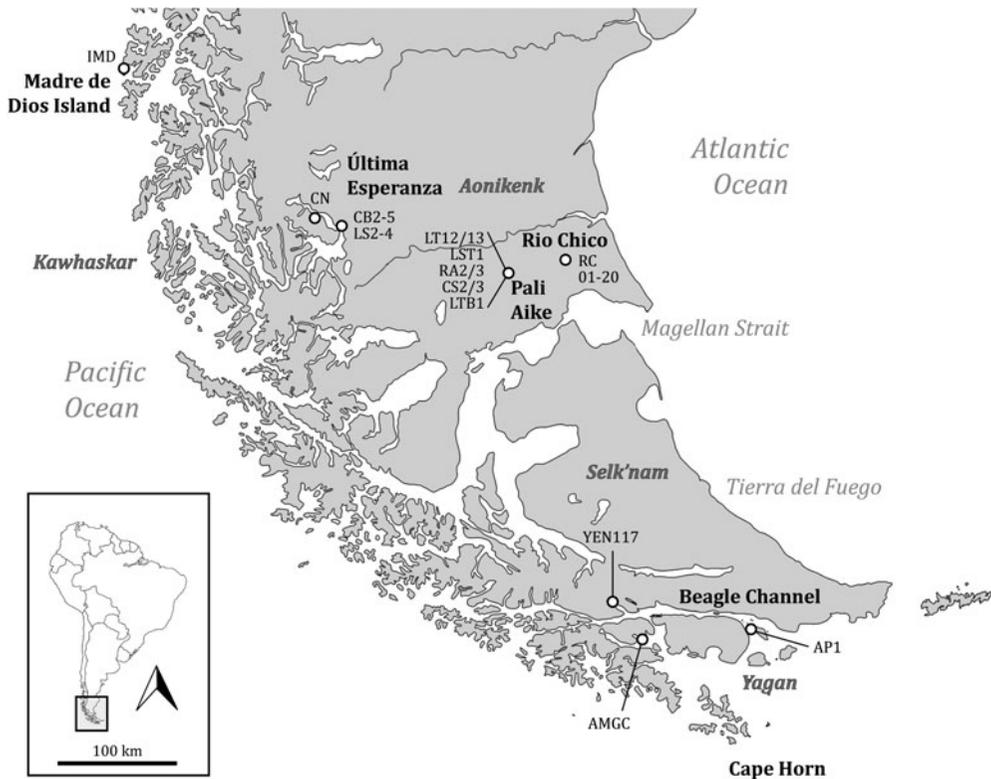


Figure 1. Distribution of the localities and archaeological sites mentioned in the article.

7800 cal BP, when a long tradition of coastal fishing and hunter-gatherer activity emerged (e.g., Morello et al. 2012; Orquera and Piana 1999a; Orquera et al. 2011). Most archaeological sites are concentrated along the two shores of the Beagle Channel in what is today Chilean and Argentinean territory (Bird 1938a, 1946; Ocampo and Rivas 2002). These sites feature extensive and dense shell middens made up of multiple residential occupations (Bird 1938b; Lothrop 1928); their excavation has yielded a lengthy stratigraphic sequence of numerous sporadic, residential occupation events resulting from the reuse of certain spaces and the existence of defined mobility patterns (e.g., Orquera and Piana 1999a; Orquera et al. 1977). In those localities where systematic surveys were conducted in the forests upland from the coastline, archaeological sites were associated with productive tasks and social functions, including hunting camps and funerary sites at rockshelters (Ocampo and Rivas 2002; Piana and Vázquez 2009; Piana

et al. 2006). Based on these findings, it is evident that the food consumed at these sites came mainly from hunting pinnipeds, guanacos, and birds; fishing; gathering mollusks; and the occasional consumption of beached whales (Orquera and Piana 1999a; Zangrando and Tivoli 2015).

The Yagán people, the modern-day descendants of these early populations, inhabited the Beagle Channel, Cape Horn, and the adjacent fiords at the time of European contact (Bridges 2001; Chapman 2012; Orquera and Piana 1999b). Generally, immediate families used bark canoes as their main mode of transportation when moving from one residential camp to another. These smaller family groups sometimes temporarily joined up with other social units for certain seasonal activities. They usually journeyed along the coast, although they also made expeditions to other islands, ventured into their interiors, and even visited the mainland occasionally for specific purposes (Bridges 1884; Gusinde 1986; Martial 1888).

Yendegaia Bay is situated in Yagán territory, on the northern shore of the Beagle Channel (southern coast of the Isla Grande of Tierra del Fuego; Figure 2a). Giacomo Bove (1882, 1883), who commanded the Argentinean Southern Expedition, published a map of the bay showing Yagán settlements, where he calculated that 40 Indigenous inhabitants lived. He was treated very well by them, he reported: they took him on three excursions where he collected skeletons that he then transported to Europe (Tafari et al. 2017). The year after Bove's voyage, in January 1883, the ship *La Romanche* dropped anchor at Yendegaia. It was part of the French scientific expedition commanded by Captain Louis-Ferdinand Martial (1888). In his writings, the captain described a half-dozen huts inhabited by local Indigenous people, some of whom approached the ship, came up on deck, and agreed to be photographed (Fiore and Varela 2009). Several years later, Bove's hunch that there was a passage from Almirantazgo Sound to Yendegaia was proven correct when Swiss explorer Carl Skottsberg (1911) reported it as an ancient "Indian" route (Figure 1). US painter Rockwell Kent (1924) followed this route in December 1922 and along the way encountered the remains of an Indigenous dwelling, corroborating its use as a "traditional passage" (Prieto et al. 2000).

Junius Bird (1938b) conducted the first systematic archaeological studies on the bay. On the northeast shore, near Caleta 2 de Mayo village, he excavated a rockshelter with a dense shell midden almost 2.7 m deep; using the methods and criteria of that time, he identified a continuous occupational sequence. Bird (1938a) also identified two cultural moments: an older one in the lower strata that he attributed to the "Shell-Knife Culture" and one in the upper strata, which he called the "Pit-House Culture" and linked to the Yagán culture.

In recent decades, the archaeological record of the bay has grown as a result of the construction of a wharf and a new route connecting the village with the island's interior (Bustos 2007; Constantinescu 2006; Reyes and San Román 2008). Our own investigations, conducted in 2016–2017, entailed systematic surveys along the northeast shore of the bay, from the

Yendegaia River to the Beagle Channel (Figure 2b). This work identified 117 archaeological sites: 62 remains of semi-subterranean dwellings, 4 mounds, 46 middens, and 5 rockshelters. In one of these shelters (YEN117), we found a panel with rock paintings whose location and designs are significant to the archaeology of the region.

### Yendegaia Rockshelter and Its Paintings

The rock wall with paintings is situated on the eastern side of the bay, some 3.5 km from the present-day shoreline. It is one face of a boulder that forms a shelter with a small rest area (12 × 4 × 1 m), located on the first terrace 23 m asl and above an extensive bogland found on the riverbank (Figure 3). No cultural material was observed on the surface of the archaeological site YEN117. The rock paintings are very visible and are placed on different planes of the rock wall in a variety of orientations, ranging from 1 m to 2.5 m above the current ground level. We recorded the paintings at the motif and panel level using our standard methodology (Gallardo 2009b; Gallardo et al. 2012). Even though the paintings were very weathered, D-Stretch software enabled us to identify several motifs painted in red, some of which were in sequence or were successive repetitions (Figure 4). There are motifs based on dots—three pairs, one case with four units, and another with 20 dots (Figure 4a)—and motifs based on strokes framed by parallel vertical lines: two pairs and four elements in one case (Figure 4b). There are also 10 stains (Figure 4b) concentrated lower down on the panel (Table 1). All the motifs at the site are geometric, with minimal elements or units of dots (2–3 cm in diameter) or long linear strokes (ca. 12 cm in length) that are replicated by horizontal translation (Washburn 1983). In other words, the motifs are produced by a discontinuous stroke, which makes this graphic solution very characteristic of the site—and culturally related to other designs of the region.

It is interesting to note that the placement of some motifs shows interaction with the surface of the support: thus, we see that a series of dots forms a continuous winding line that cuts

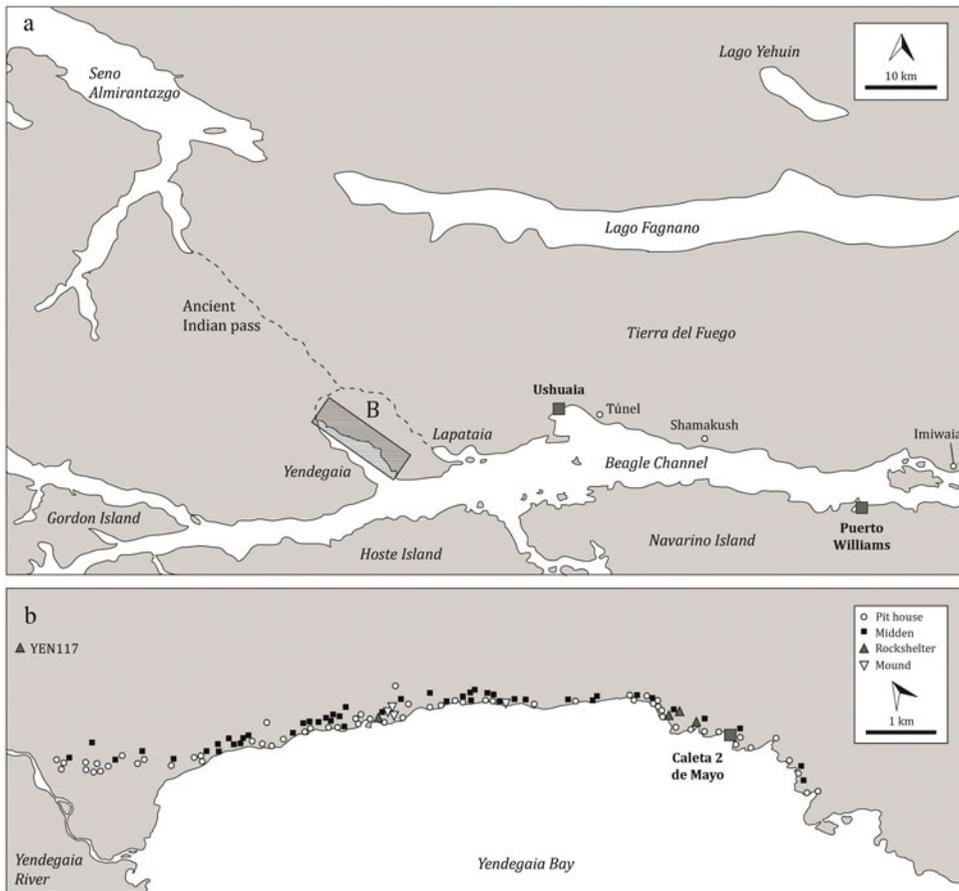


Figure 2. Location of (a) Yendegaia Bay and (b) archaeological sites identified at the bay.

precisely over one of the natural horizontal wavy lines formed by the layers of the rock (Figure 4a). In contrast, a series of parallel vertical lines is placed on a very flat portion of the support, emphasizing the straightness of those strokes (Figure 4b).

### The Rock Art of Tierra del Fuego-Patagonia at the Southern Tip of the Americas

Since the first rock art studies were conducted in the 1970s, the sites identified in Tierra del Fuego-Patagonia have increased in number and distribution (Bate 1970, 1971; González et al. 2014; Jaillet et al. 2010; Legoupil and Prieto 1991; Massone 1982, 1985; Muñoz et al. 2016; Sepúlveda 2011). At numerous sites in Última

Esperanza and Pali Aike, Massone and colleagues carried out the first systematized study of motif types and their quantitative distribution. Given the importance and scope of this investigation, we use his definitions and findings for rock art sites and units. His typology is comprehensive and enables the comparative regional approach proposed here. Massone (1982) identified (1) geometric motifs based on dots (a single dot, an unorganized group of dots, a series of dots in a line); (2) geometric motifs based on strokes (one alone, two parallel lines, a series of parallel strokes, divergent lines, irregular strokes); (3) linear figures (classified as closed, complex, or both by the author, including circular and quadrangular motifs, linear ones with appendices, reticulated ones, and irregular linear figures); and (4) stains of paint (paint added



**Figure 3.** The rock wall where the rock paintings were found. (Color online)

intentionally to a panel with no defined shape; [Figure 5](#)). We also distinguish “figurative” motifs as either human or animal representations, including negative and positive handprints (only the latter corresponded to a fifth category of Massone; [Figures 5 and 6](#)).

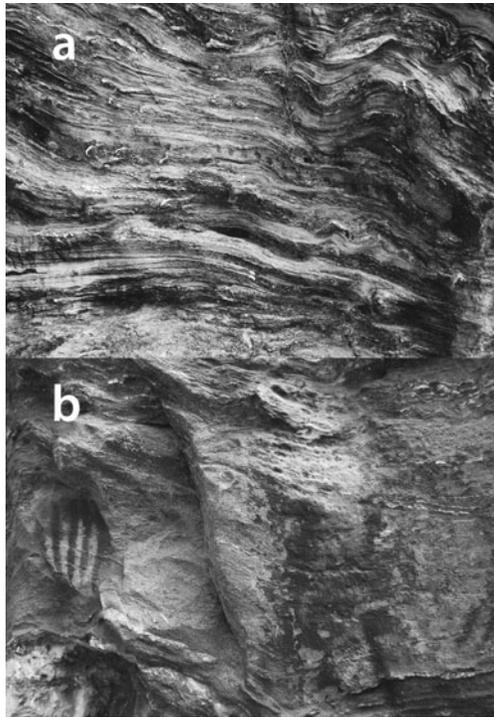
This comparative study includes rock art localities in the Tierra del Fuego archipelago-Beagle Channel and Cape Horn (territory traditionally occupied by the Yagán people), Madre de Dios Island (territory traditionally occupied by the Kawashkar people), and localities on the mainland (the southern tip of Patagonia); Última Esperanza; and the volcanic field of Pali Aike, where the canoe-faring people and the Aonikenk lived in historic times.

#### *Beagle Channel and Cape Horn: Picton 1 and Martín González Calderón Shelter*

At the Picton 1 shelter site (AP1), which is located on the southwestern coast of the island with the same name ([Figure 1](#)), Muñoz and collaborators (2016) recorded three motifs in red paint. In their illustrations, at least two stains of

paint can also be observed ([Table 1](#)). The motifs are exclusively linear figures organized along a main line. In one case, the main line is horizontal, and there are five parallel vertical strokes emanating from it (or in horizontal transition). In the lower segment, the authors indicate the possible presence of an orange-hued stencil. In the other two motifs, the axis is a straight vertical line with shorter, oblique lines on either side, which in one case are replicated at opposing angles—forming a diamond shape; in the other, the lines are replicated at the same angle, forming a somewhat anthropomorphic shape. The authors interpret both cases as human representations, in comparison to other motifs painted at sites in the Tierra del Fuego region.

At the Martín González Calderón rockshelter (AMGC) located at Šapinij (Shapine) Island in Ponsonby Sound ([Figure 1](#)), González and colleagues (2014) note the presence of anthropomorphic and zoomorphic paintings, a variety of separate linear strokes of varying thicknesses (linear figures), and areas covered in red paint (stains; [Table 1](#)). According to these authors,



**Figure 4.** Rock paintings at YEN117: (a) motifs based on dots; (b) motifs based on strokes (left) and stains (right).

red is the principal color of paint used, although they also mention some motifs in white, including linear strokes that form a quadrangular figure and a possible anthropomorph (closed or open linear motifs). In both cases, most of the motifs have been created through continuous graphic solutions in which the stroke extends uninterruptedly to form the figure.

#### *Madre de Dios Island: Cueva del Pacífico*

Jaillet and coworkers (2010), during their speleological exploration of a large limestone cavern on Madre de Dios Island (IMD), discovered some rock paintings. In the “Cueva del Pacífico,” so named by its discoverers, 45 motifs were recorded: 26 were in red paint, occupying the upper part of the walls (from 4 m to 50 cm), whereas the 19 remaining motifs were black and were located lower down (no higher than 70 cm above the floor). The authors confirm the preponderance of anthropomorphic representations ( $N = 11$ ), with “fewer” geometric shapes (no numbers provided), such as “sun wheels” or “nets,” and two zoomorphic motifs identified

as marine mammals and some dates and letters, which would be consistent with the site’s continuous occupation for some 4,000 years. Based on these descriptions, closed and open linear figures seemed to recur most frequently. However, our records of the site show that motifs based on strokes and stains of paint are almost equally prevalent (Table 1). Paintings in red pigment are most notable in this repertoire, particularly in their design and execution that follow the norms seen at other sites. A significant number of images in black wood charcoal suggest later interventions within a different cultural framework than that of the oldest images; therefore, they are not considered in our analysis.

Whereas a vast variety of forms are displayed in these representations, it is possible to identify at least two modes of deploying strokes that produce different graphic solutions: continuous (the stroke extends without interruption to form the motif) and discontinuous (the figure is formed from intermittent strokes). These solutions of continuous/discontinuous strokes are independent of the type of motif being produced: either solution can be used to represent any type of motif.

#### *Última Esperanza: Cerro Benítez, Lago Sofía, and Cueva de los Niños*

The works of Laming-Empeaire (1959), Bate (1970, 1971), and Massone (1982, 1985) provide descriptions of rock art painted in the locality of Última Esperanza, where red is the predominant pigment color used. The Lago Sofía modality is worth noting, because it offers motifs based on simple dots or dots in more complex groupings; strokes and linear motifs; and, in lesser quantities, thickly traced schematic zoomorphic figures and “ostrich tracks.” Massone (1985) also notes the existence of another modality, Cerro Benítez, characterized by various types of strokes and linear forms that occasionally form complex motifs, as well as some anthropomorphic and zoomorphic figures that are more schematic. A date of  $2870 \pm 65$  BP (uncalibrated) was obtained from a stratum containing remains of the rock face of the CB2 site with traces of red colorant (Massone 1982:87).

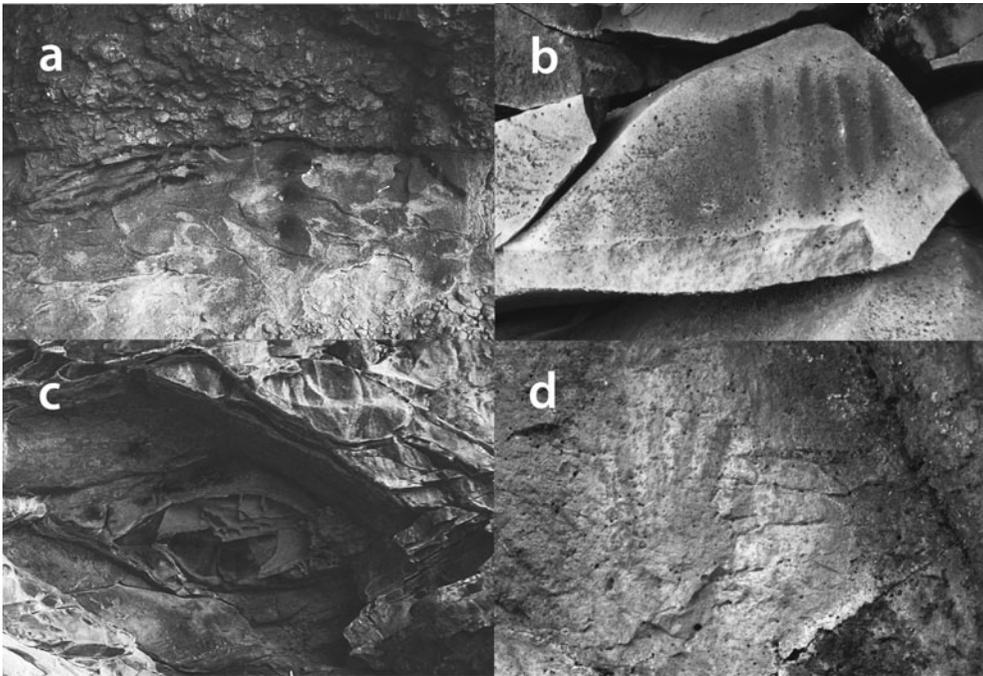
On the western shore of Última Esperanza Sound, there is a small rockshelter called

Table 1. Types of Motifs Presents in Each Locality by Archaeological Site.

Rock Art Locality	Archaeological Site	Types					Total
		Geometric Motif Using Dots	Geometric Motif Using Lines	Linear Figure	Stain	Figurative	
Beagle Channel and Cape Horn	YEN117	5	3	0	10	0	18
	AP1	0	0	2	2	1	5
	AMGC	1	0	3	4	2	10
Madre de Dios Island	IMD	3	16	16	10	2	47
Última Esperanza	CB2	2	14	1	3	0	20
	CB3	1	1	0	1	0	3
	CB4	7	0	1	0	0	8
	CB5	10	5	3	7	0	25
	LS2	11	6	0	18	0	35
	LS3	5	0	0	2	0	7
	LS4	2	0	0	2	0	4
Pali Aike	CN	0	3	1	10	0	14
	LTI2	0	6	2	3	0	11
	LTI3	0	1	0	0	0	1
	LST1	2	37	14	12	0	65
	RA2	0	2	0	0	0	2
	RA3	0	16	1	2	1	20
	CS2	0	7	3	2	0	12
CS3	1	6	0	3	0	10	
Río Chico	LTB1	3	4	0	8	0	15
	RC01	0	8	0	2	0	10
	RC02	0	21	1	34	0	56
	RC03	0	4	0	2	0	6
	RC04	0	6	2	4	0	12
	RC05	0	21	6	20	0	47
	RC06	0	3	1	0	0	4
	RC07	0	1	2	0	0	3
	RC08	1	5	6	5	2	19
	RC09	0	0	1	0	0	1
	RC10	0	7	0	2	0	9
	RC11	1	6	0	7	0	14
	RC12	1	8	0	18	0	27
	RC13	8	43	14	28	2	95
	RC14	0	1	2	1	0	4
	RC15	0	0	1	1	0	2
	RC16	2	2	9	2	0	15
	RC17	0	0	0	4	1	5
	RC18	0	1	1	0	0	2
	RC19	1	3	0	0	0	4
RC20	0	0	0	1	0	1	

Cueva de los Niños (“cave of the children”; CN), named for the remains of two infants found there. The grave goods include shell bead necklaces, fragments of sinews, feathers, painted leather, wood, and the remains of pigment (Legoupil and Prieto 1991; Legoupil et al. 2004; Sellier 1999). These colorants were also used on the

wall of the shelter, where extensive stains of paint can be observed; some of those stains were made up of “small droplets of paint” that were created using a blowing technique (Legoupil and Prieto 1991:135). Although the morphology of the motifs was not categorized, digital processing of the photographs to enhance



**Figure 5.** Examples of the categories used for the analysis: (a) lineal figure (top) and geometric motif using dots (bottom; CB5, Última Esperanza); (b) geometric motif using lines (RC08, Río Chico); (c) paint stains (CN, Última Esperanza); and (d) figurative motifs (RC17, Río Chico).

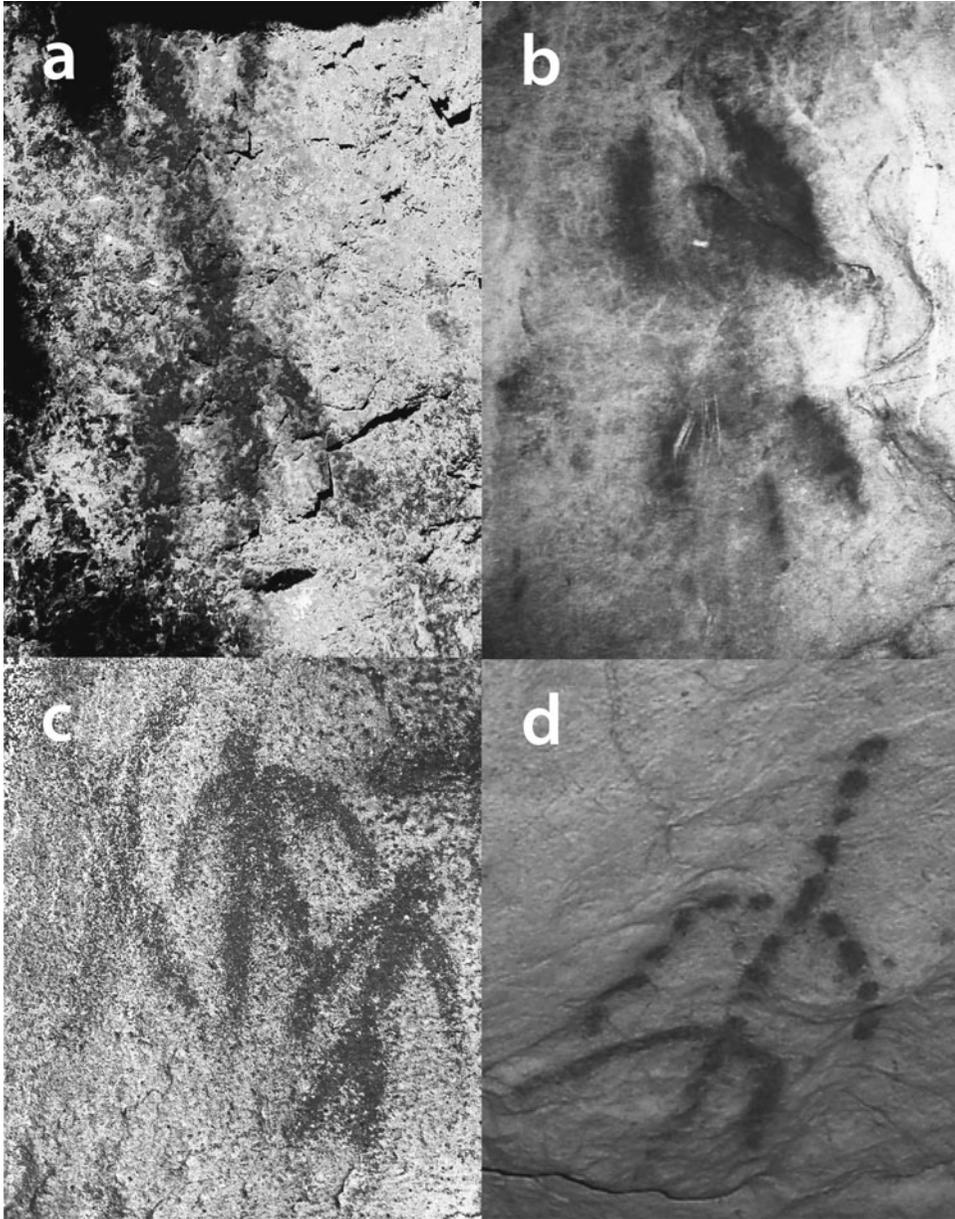
contrast revealed some dots and lines that could have comprised discrete forms, now deteriorated. This funerary context was dated to  $250 \pm 50$  BP (Legoupil et al. 2004:226). Our analysis considers information from the four sites of Cerro Benítez (CB) and three at Lago Sofía (LS) published by Massone (1982), along with evidence from Cueva de los Niños (Table 1). In summary, in the Última Esperanza sector, the most prevalent motifs are those based on dots, strokes, and other linear figures that are composed without the use of symmetry (Gallardo 2009b).

#### *Pali Aike Volcanic Field: Pali Aike and Río Chico*

Pali Aike was studied by Massone (1981, 1982, 1985) and collaborators. The sites there are located primarily in rockshelters that served as resting places: there are two sites at Laguna Timone (LTI), one in Laguna Sota (LST), two from Rose Aike (RA), two from Cañadón Seco (CS), and one in Laguna Los Tábanos (LTB; Table 1). Paintings are always red and rarely combined with yellow. The motifs are mainly

parallel traces in different sequences or that form geometric figures. Finally, intentional stains are frequent.

Massone (1982) relates this rock art to the Río Chico modality defined by Bate (1970, 1971) based on the archaeological sites of Ush Aike (or Oosin Aike), Cueva Fell and Río Chico 1, 2, 5, 0, and Cañadón Seco 1 in this area—as well as Morro Chico and Cañadón La Leona found between the localities of Río Chico and Última Esperanza. Red is also the most used paint color, but combinations of black and white also can be found (Sepúlveda 2011). This style modality is principally defined by series of lines varying in number and length, drawn in parallel or intersected by perpendicular lines, as well as some circles or squares with varied appendixes. There are also exceptional cases of schematic anthropomorphic or zoomorphic figures and negative handprints. In short, these are simple geometric motifs with both regular and irregular shapes, with a predominance of motifs composed through the combination of simple elements based on short and long



**Figure 6.** Examples of anthropomorphic figures: (a) AMGC, Beagle Channel, and Cape Horn (González et al. 2014: Figure 4); (b) Madre de Dios Island; (c) RC08, Río Chico; and (d) Madre de Dios Island.

strokes. These elements were arranged symmetrically, with movements that include reflection, one-dimensional translation, and two-dimensional rotation, with the last type of movement being most common (Gallardo 2009b).

For this analysis we consider our own records (Gallardo 2009b; Sepúlveda 2011) from 20 rock art sites in and around Río Chico (RC01-20),

including Fell Cave (RC11), and the data published by Massone (1982) for the Chilean side of the Pali Aike Volcanic Field mentioned earlier (Table 1). A reconnaissance conducted by Bate (1971:35) in one of the shelters with cave paintings in Río Chico (RC08 in our nomenclature) found a deposit that included stone instruments, characteristic of Period IV (Bird 1946); guanaco

bones; and a piece of red pigment associated with a stove that was dated to  $2080 \pm 80$  years BP. A date that may represent the beginning of the rock art chronology, given the continuity of the settlement pattern, should for now be extended to at least Period V or the early historic period.

### Yendegaia: Rock Art and Social Interaction in Tierra del Fuego-Patagonia

Handprints, guanacos, hunting scenes, footprints, and geometric figures are all frequent rock art motifs in central and south-central Patagonia (e.g., Acevedo and Fiore 2020; Gradin 1988; Guichon and Re 2020; Muñoz et al. 2021). However, these designs decline in variety and frequency as one moves across Patagonia and toward the Strait of Magellan. The southernmost records are found around Última Esperanza, near Torres del Paine, and in the Pali Aike Volcanic Field (Bate 1970, 1971; Charlin 2014; Gómez 1993; Hernández et al. 1999; Manzi and Carballo 2012; Massone 1982, 1985; Muñoz 2020). These rock art sites, which are distributed from the southern tip of the continent to Cape Horn in the south and Madre de Dios Island in the west, display a spatial distribution that reveals differences between the territories of canoe-faring and land-based hunter-gatherers.

A simple numerical and percentage examination of the motifs in these Patagonian territories indicates the presence of a narrow corpus of shared visual solutions, with differing frequencies that distinguish one locality from another (Table 2). These differences are evident in the percentage distribution of motif types, especially dots in the archipelago and strokes on the mainland; yet the procedures used to create structural symmetry such as translation, which gives rise to sequences of motifs, are the same across all localities (see Gallardo 2009b). Another trend is the preferential use of red compared to other colors. In rock art expressions, the relative scarcity of figurative motifs (those with an identifiable point of reference) is another common feature. It is also noteworthy that designs with human attributes display tremendous formal similarity among sites from the Beagle Channel to Madre de Dios Island (Figure 6). The spreading of paint-forming stains covering large areas of the rocky walls, as observed at Cueva de

Los Niños (Legoupil and Prieto 1991), is also common. This practice may have had more than a visual purpose: although all rock art operates on the visual plane, it also operates in relation to the place where the art is situated, so that the creator engages in a dialogue with both the paint and the rock support. These large stains of paint, and the exceptional expenditure they represent, could be classed broadly as acts of offering, like the practices of painting the bodies of the dead and their tombs (e.g., Prieto et al. 2020).

Given the quantitative similarities and differences observed (Tables 1 and 2), we applied a comparative analysis among the localities studied. We analyzed cluster groups (using Euclidean distances) to measure the geometric distance between cases in a multidimensional space (single linkage). However, because each locality displayed singularities influenced by the distribution of rock art at each site, we grouped them in relation to territories associated with the Indigenous peoples of Patagonia-Tierra del Fuego: Magallanes archipelago (Madre de Dios Island and Última Esperanza), the ancestral territory of the Kawashkar people; the Pali Aike volcanic field (Río Chico and Pali Aike), the ancestral territory of the Aonikenk people; and the Beagle Channel-Cape Horn, the traditional territory of the Yagán people (Table 3; Figures 1 and 7).

Despite their broad geographic range, our results reinforce trends observed previously, suggesting that there are differences between the rock art associated with marine hunter-gatherers and that associated with land-based hunter-gatherers (Charlin and Borrero 2012; Massone 1982, 1985; Muñoz 2020). Even though previous efforts did not include information on the rock art of the Tierra del Fuego archipelago, it is now evident that the rock art imagery of the territories belonging to the canoe-faring people (home to both the Kawashkar and Yagán peoples) also exhibits differences from both types of hunter-gatherers. Certainly, it is likely that the distance between the Magallanes Archipelago and the Beagle Channel-Cape Horn areas would have led to distinctions between the two traditions (Muñoz 2020:173).

Despite the quantitative differences, the similarities in motifs, their graphic solutions, limited variety, and the predominant use of the color red

Table 2. Frequency of Motif Types for Each Locality Analyzed.

Rock Art Locality	Geometric Motif	Geometric Motif	Linear Figure	Stain	Figurative	Total
	Using Dots <i>N</i> (%)	Using Lines <i>N</i> (%)				
Beagle Channel and Cape Horn ( <i>N</i> = 3)	6 (18.18)	3 (9.09)	5 (15.15)	16 (48.48)	3 (9.09)	33 (100)
Madre de Dios Island ( <i>N</i> = 1)	3 (4.76)	16 (30.16)	16 (41.27)	10 (20.63)	2 (3.17)	47 (100)
Última Esperanza ( <i>N</i> = 8)	37 (31.90)	29 (25.009)	7 (6.02)	43 (37.07)	0 (0.00)	116 (100)
Pali Aike ( <i>N</i> = 8)	6 (4.17)	79 (41.67)	20 (13.69)	30 (38.99)	1 (1.49)	136 (100)
Río Chico ( <i>N</i> = 20)	14 (4.41)	140 (58.09)	46 (14.71)	131 (22.02)	5 (0.74)	336 (100)

reveal flows of visual information in a vast spatial scale, which is consistent with the widespread use of seagoing vessels among all the agents and the regular circulation of goods, ideas, and people over long distances. The results of this analysis also suggest that the rock art produced in the territory of the land-based hunter-gatherers of Pali Aike would not have been implicated in the same interactions established between canoe-faring peoples.

### Visual Practices and Pigment Uses in Tierra del Fuego-Patagonia

The production and circulation of visual material culture by the Indigenous peoples of Tierra del Fuego go back to early times, as evidenced by portable bone art dated to at least as early as 6400 BP (e.g., the Túnel I and Imiwaia I sites in the Beagle Channel region; Fiore 2011). The corpus of decorative designs on portable bone art is strictly geometric and reveals the use of one or more basic elements, sometimes in specific combinations: straight or curved lines, curved and straight-lined figures, and series of dots and dashes arranged in a line or in groups (Fiore 2011). By combining these basic elements, their creators crafted numerous designs that display a wide variability and were used in the decoration of instrumental

artifacts, such as harpoon points or staffs, as well as unworked bone pieces. In contrast, the decoration on ornamental beads focused on the use of parallel dashes in series and on parallel straight lines in series that encircled the perimeter of the pieces to form highly standardized designs. In contrast to the harpoon designs that were mostly produced from 6400 BP to approximately 4000 BP, these bead designs were produced throughout the archaeological sequence associated with the fishing-hunting-gathering peoples of the Beagle Channel (6400 BP to the nineteenth century), as well as on the neighboring island and mainland regions (Fiore 2006, 2020). This catalog of decorative designs is virtually the same as the rock art repertoire reported in this work.

Documentary evidence also exists on the production and use of body paint among the Kawashkar people from the sixteenth century onward, among the Selk'nam from the sixteenth century onward, and among the Yagán from the seventeenth century onward (Fiore 2002, 2004, 2005). In the case of the Yagán, whose traditional territory includes the zone of Yendegaia, these painted designs used one or more types of decorative elements, including dashes, dots, lines, bands, "patches" of color (irregular shapes), rows of consecutive dashes, rows of

Table 3. Types of Rock Art Motifs, Grouped by Traditional Cultural Territories.

Territory	Traditional Culture	Geometric Motif	Geometric Motif	Linear Figure	Stain	Figurative
		Using Dots	Using Lines			
Magellan Archipelago	Kawashkar	42	45	22	53	2
Pali Aike Volcanic Field	Aonikenk	20	219	66	161	6
Beagle Channel and Cape Horn	Yagán	6	3	5	16	3

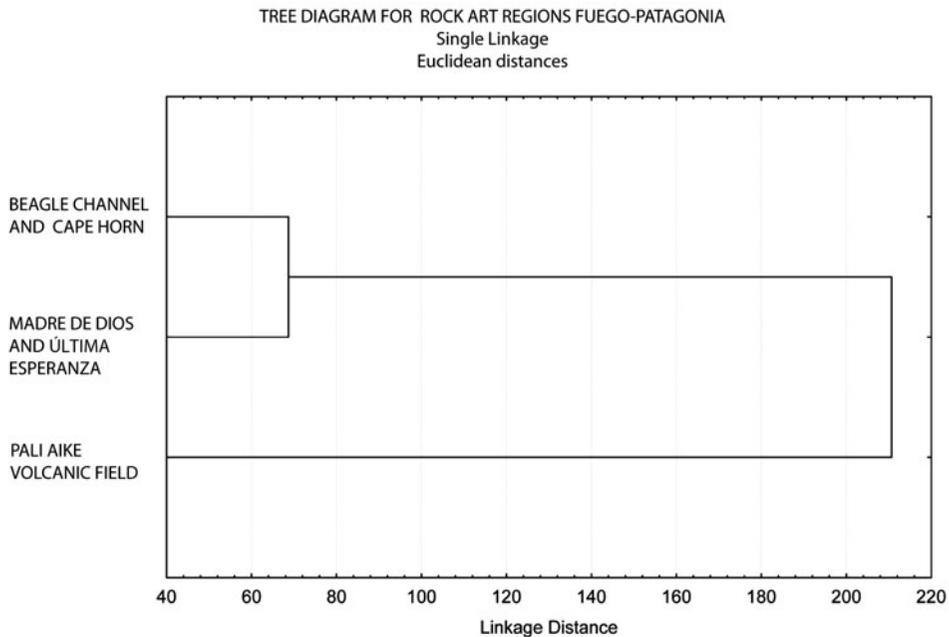


Figure 7. Cluster analysis on rock art paintings and groups from the Tierra del Fuego-Patagonia region.

parallel lines, and rows of dots (Fiore 2005). Members of Yagán society used body paint in a variety of contexts: in everyday situations (e.g., as expressions of mood, for visitors, for crossing channels, for collecting eggs, for recovering from illness, etc.); in special situations

(e.g., at menarche, weddings, for mourning, by shamans, etc.); and in initiation ceremonies (*chiéjaus*, a male and female initiation ceremony, and *kina*, the male initiation ceremony; Fiore 2005, 2020; Figure 8a). Pigments were also applied to harpoons, grinding stones, paddles,

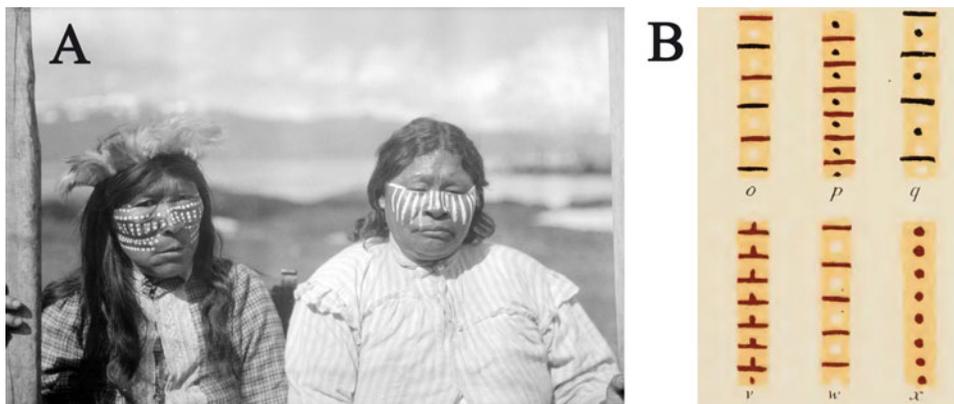


Figure 8. Examples of Yagán decoration: (a) two Yagan women, Clara (left) and Anita (right), wearing facial paintings designed with parallel rows of dots and straight lines (identification of their names provided by the team of Museo Antropológico Martín Gusinde and Comunidad Yagán de Bahía Mejillones [Chile]; photo by M. Gusinde, 1922; copy held at the ARC-FOT-AIA [Archivo Fotográfico de Imágenes Etnográficas de Fuego-Patagonia, Asociación de Investigaciones Antropológicas, Buenos Aires, Argentina]); (b) selection of patterns of painted designs taken from the frame of a ceremonial lodge (from Lothrop 1928:Plate IX). Note the similarity of the decorative elements used with those used in the rock art designs found at Yendegaia. (Color online)

hunting bows, and even formed designs in ceremonial lodges (Hyades and Deniker 1891; Lothrop 1928; Figure 8b).

This evidence leads us to suggest that, in the production of these varied types of art, there were at least two visual codes operating at different times in the history of these fisher-hunter-gatherers of southern Tierra del Fuego. Although these visual codes were deployed in very different media—artifacts and human bodies—it is essential to note that in both media the designs were structured around combinations of simple geometric elements: dashes, lines, dots, and simple figures—with the first three of these coinciding with design elements also observed in the rock paintings found at Yendegaia.

Furthermore, archaeology in the region also offers information about how different hues of red pigment—along with yellow and black in different contexts—were produced from similar raw materials. An *in situ* analysis of rock paintings on Madre de Dios Island indicates the use of iron oxide and charcoal (Jaillet et al. 2010; Maire et al. 2009). Similar pigments have also been discovered from early dates at the Tunel I, Shamakush I, and Imiwaia I sites in Tierra del Fuego and at the Offing 2 site on Dawson Island in the Strait of Magellan. These come from layers dated between 6200 and 154 BP, demonstrating that the Indigenous inhabitants of this area had a long tradition of managing mineral colorants and organic binders in producing paints (Fiore et al. 2008; Sepúlveda et al. 2022). In this sense, the information confirms the existence of paint production techniques that serve as additional evidence for the presence of painted rock art production technology. They show that knowledge and practices for managing color were available early in the region and were shared in different contexts by these canoe-faring groups.

### Conclusion

The new discovery of rock art in the south of Isla Grande in Tierra del Fuego and its links with rock art from the Beagle Channel–Cape Horn region enabled us to undertake this comparative exploration of these visual expressions of southernmost Patagonia. Although the chronology of rock art at the southern tip of the Americas is

still a work in progress (Brook et al. 2018; Muñoz 2020; Sepúlveda 2011), the close similarities established in this limited graphic corpus suggest that information was flowing primarily among the canoe-faring peoples, who probably left their rock testimonials after what Bird (1946) has named Period IV, between approximately 4500 and 900 BP (Massone 1981). Furthermore, the numerous rock art sites that postdate 2000 BP in the Pali Aike Volcanic Field and the corresponding stylistic similarities with sites found elsewhere in the region point to the relative contemporaneity of the rock art localities included in this study (e.g., Bate 1978–1979; Gallardo 2009b; Laming-Emperaire 1959; Massone 1981). Although it is not possible to specify the chronology of the paintings we presented in this article, the available information indicates that they were being produced until the eighteenth century: a time when paint thrown on the rocky support may have been more common than the production of motifs, as in Cueva de los Niños. It is premature to associate stylistic patterns with temporal value, however; given the few iconographic variations and cave practices in Fuego-Patagonia, we suggest that these flows of visual information were of importance until the early historic period.

The flows of rock art information revealed here are also consistent with the visual information recorded on other supports, such as bone artifacts, ceremonial lodges, and body painting. Social interactions among the peoples of southern Patagonia were mediated by a diverse series of visual cultural strategies. For example, a brief record left by Duplessis (2003), written in the late seventeenth century, describes an incursion into the Jerónimo Channel (between Riesco Island and the Brunswick Peninsula), during which a group of naval officers were amazed to see a rocky wall painted entirely in white, near a hut made of fine skins, which contained a deceased child. This action at the level of the visible and the social was likely an expression of mourning that paid homage to an untimely death.

Social interactions were not foreign to those who inhabited Tierra del Fuego Island and the surrounding archipelago; indeed, historic and ethnographic sources confirm their normal and regular occurrences (e.g., Cooper 1917). This

environment of social interaction would have involved intercultural relations that would also have fostered the circulation of technologies and goods, such as green obsidian, iron pyrite for fire starting, and marine and terrestrial resources (e.g., Borrero et al. 2011; Fiore 2006; Gallardo et al. 2018; Morello et al. 2015). There is little doubt that the rock art of the southern Patagonia Archipelago and the nearby mainland, with their rugged, windswept lands lashed by rain and snow, encouraged the forging of intercultural social bonds that—based on the evidence of contact between territories—allow us to infer an aspiration for cooperation rather than competition. Creating a network of social complementarity in which social information flowed probably made it possible to reduce survival risks associated with low-population density groups that were separated by long distances.

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## References Cited

- Acevedo, Agustín  
2015 Hachas grabadas, placas grabadas y comunicación visual suprarregional entre grupos cazadores-recolectores del Holoceno tardío. *Relaciones* 40:589–620.
- Acevedo, Agustín, and Danae Fiore  
2020 Imágenes, códigos y comunicación: un análisis del arte rupestre en el Extremo Sur del Macizo del Deseado (Patagonia, Argentina). *Arqueología* 26(2):127–155.
- Bate, Luis Felipe  
1970 Primeras investigaciones sobre el arte rupestre de la Patagonia chilena. *Anales del Instituto de la Patagonia* 1:15–25.  
1971 Primeras investigaciones sobre el arte rupestre de la Patagonia chilena (segundo informe). *Anales del Instituto de la Patagonia* 2:33–41.
- 1978–1979 Las investigaciones sobre los cazadores tempranos en Chile Austral. *Trapananda* 2:14–23.
- Bird, Junius  
1938a Antiquity and Migrations of the Early Inhabitants of Patagonia. *Geographical Review* 28:250–275.  
1938b *Yendegaia Bay*. Archive of the American Museum of Natural History, New York.  
1946 The Archaeology of Patagonia. *Bulletin of the Bureau of American Ethnology* 143:17–24.
- Borrero, Luis Alberto, Fabiana Martín, and Ramiro Barberena  
2011 Visits, “Fuegians,” and Information Networks. In *Information and Its Role in Hunter-Gatherer Bands*, edited by Robert Whallon, William Lovis, and Robert Hitchcock, pp. 249–296. Leyba Associates, Santa Fe, New Mexico.
- Bove, Giacomo  
1882 La spedizione antártica. *Bollettino della Società Geografica Italiana* 20(7):5–147.  
1883 *Expedición austral argentina*. Imprenta del Departamento Nacional de Agricultura, Buenos Aires.
- Bridges, Lucas  
1952 *El último confín de la tierra*. Emecé, Buenos Aires.
- Bridges, Thomas  
1884 Census of Tribes. *South American Missionary Magazine* 1:223–224.  
2001 *Los indios del último confín*. Zagier and Urruty Publicaciones, Ushuaia, Argentina.
- Brook, George, Nora Franco, Alexander Cherkinsky, Agustín Acevedo, Danae Fiore, Timothy Pope, Rachel Weimar, Gregory Neher, Hayden Evans, and Tina Salguero  
2018 Pigments, Binders, and Ages of Rock Art at Viuda Quenzana, Santa Cruz, Patagonia Argentina. *Journal of Archaeological Science: Reports* 21:47–63.
- Bustos, Víctor  
2007 Estudio de impacto ambiental construcción camino estancia Vicuña-Yendegaia. Provincia de Tierra del Fuego. Final report phase 3.3.d informe de impacto ambiental completo, ABACO Ingenieros, Concepción. Report on file at the Servicio de Evaluación Ambiental, Gobierno de Chile.
- Carden, Natalia, and Erika Borges  
2017 El arte mobiliario. In *Arqueología de cazadores-recolectores del curso inferior del río Colorado (Provincia de Buenos Aires, Argentina): Aportes al conocimiento de las ocupaciones humanas Pampeano-Patagónicas*, edited by Gustavo Martínez, pp. 211–229. INCUAPA-CONICET, UNICEN, Buenos Aires.
- Carden, Natalia, Laura Miotti, and Rocío Blanco  
2018 Nuevos datos sobre las pinturas rupestres de Los Toldos (Santa Cruz, Argentina): Bases para un enfoque comparativo en Patagonia Meridional. *Latin American Antiquity* 29:293–310.
- Cassiodoro, Gisela, Francisco Guichón, and Anahi Re  
2019 Diseños sobre soportes móviles y comunicación en el centro-oeste de Santa Cruz durante el Holoceno Tardío. In *Arqueología de Patagonia: El pasado en las arenas*, edited by Julieta Gómez, Ariadna Svoboda, and Anahí Banegas, pp. 29–40. IDEAUS- CONICET, Buenos Aires.
- Chapman, Anne  
1977 Economía de los Selk’nam de Tierra del Fuego. *Journal de la Société des Américanistes* 64:135–148.  
2012 *Yaganes del Cabo de Hornos: Encuentros con los europeos antes y después de Darwin*. Pehuén Editores, Santiago.

- Charlin, Judith  
2014 Nuevos sitios con representaciones rupestres en la localidad Potrok Aike (Santa Cruz, Argentina). *Magallania* 42:185–198.
- Charlin, Judith, and Luis Alberto Borrero  
2012 Rock Art, Inherited Landscapes and Human Populations in Southern Patagonia. In *A Companion to Rock Art*, edited by Jo McDonald and Peter Veth, pp. 381–398. Blackwell, Chichester, UK.
- Constantinescu, Florence  
2006 *Proyecto camino Lago Fagnano-Yendegaia: Tramo de acceso a rampa Yendegaia-KM 137.000*. Report on file at the Servicio de Evaluación Ambiental, Gobierno de Chile.
- Cooper, John M.  
1917 Analytical and Critical Bibliography of the Tribes of Tierra del Fuego and Adjacent Territory. *Bureau of American Ethnology Bulletin* 63:1–233.
- Duplessis, Jacques  
2003 *Périphe de beauchesne à la Terre de Feu (1698–1701): Une expédition mandatée par Louis XIV*. Transboréal, Paris.
- Empereire, Joseph  
2002 *Los nómades del mar*. Ediciones LOM, Santiago.
- Fiore, Danae  
2002 Body Painting in Tierra del Fuego: The Power of Images in the Uttermost Part of the World. PhD dissertation, Institute of Archaeology, University College London, London.  
2004 Pielas rojas en el confín del mundo: la valoración de las pinturas corporales en los registros histórico-etnográficos sobre aborígenes de Tierra del Fuego. *Magallania* 32:29–52.  
2005 Pinturas corporales en el fin del mundo: Una introducción al arte visual selk'nam y yamana. *Chungara* 37:109–127.  
2006 Puentes de agua para el arte mobiliario: La distribución espacio-temporal de artefactos óseos decorados en Patagonia meridional y Tierra del Fuego: Cazadores-recolectores del Cono Sur. *Revista de Arqueología* 1:137–147.  
2011 Art in Time: Diachronic Rates of Change in the Decoration of Bone Artefacts from the Beagle Channel Region (Tierra del Fuego, Southern South America). *Journal of Anthropological Archaeology* 30:484–501.  
2020 The Art of Making Images: Technological Affordance, Design Variability, and Labour Organization in the Production of Engraved Artefacts and Body Paintings in Tierra del Fuego (Southern South America). *Journal of Archaeological Method and Theory* 27:481–510.
- Fiore, Danae, Marta Maier, Sara Daniela Parera, Luis Orquera, and Ernesto Piana  
2008 Chemical Analysis of the Earliest Pigments Residues from the Uttermost Part of the Planet (Beagle Channel Region, Tierra del Fuego, Southern South America). *Journal of Archaeological Science* 35:3047–3056.
- Fiore, Danae, and María Lydia Varela  
2009 *Memorias de papel: Una arqueología visual de las fotografías de pueblos originarios fueguinos*. Dunken, Buenos Aires.
- Fitz Roy, Robert  
1839 *Narrative of the Surveying Voyages of His Majesty's Ships Adventure and Beagle between the years 1826 and 1836, Describing Their Examination of the Southern Shores of South America, and the Beagle's Circumnavigation of the Globe*. Henry Colburn, London.
- Gallardo, Francisco  
2009a Social Interaction and Early Rock Art Styles in the Atacama Desert (Northern Chile). *Antiquity* 83: 619–633.  
2009b Sobre la composición y la disposición en el arte rupestre en Chile: consideraciones metodológicas. *Magallania* 37:85–98.
- Gallardo, Francisco, Benjamín Ballester, Alfredo Prieto, Marcela Sepúlveda, Jorge Gibbons, Sebastián Gutiérrez, and José Cárcamo  
2018 Fuegian Firestone Quarry: Iron Pyrite in Capitán Aracena Island (Magallanes Archipelago, Southern Chile). *Current Anthropology* 59:455–461.
- Gallardo, Francisco, Gloria Cabello, Gonzalo Pimentel, Marcela Sepúlveda, and Luis Cornejo  
2012 Flujos de información visual, interacción social y pinturas rupestres en el desierto de Atacama (norte de Chile). *Estudios Atacameños* 43:35–52.
- Gamble, Clive  
1982 Interaction and Alliance in Palaeolithic Society. *Man* 1:92–107.
- Gómez Otero, Julieta  
1993 The Function of Small Rockshelters in the Magallanes IV Phase Settlement System (South Patagonia). *Latin American Antiquity* 4:325–345.
- González, Martín, Melisa Gañán, and Alberto Serrano  
2014 Primer registro de arte rupestre en Tierra del Fuego. *Magallania* 42:175–181.
- Gradin, Carlos  
1988 Caracterización de las tendencias estilísticas del arte rupestre de la Patagonia: Nuevos estudios del arte rupestre argentino: Contribuciones al estudio del arte sudamericano. *Boletín SIARB* 2:54–67.
- Guichon, Francisco  
2018 Redes de información durante el Holoceno medio y tardío en Patagonia meridional: Estudio de las representaciones rupestres en la Cuenca del Lago Cardiel y sur de la Meseta del Strobel. PhD dissertation, Facultad de Filosofía y Letras, Universidad de Buenos Aires, Buenos Aires.
- Guichon, Francisco, and Anahi Re  
2020 Hunter-Gatherer Land Use Strategies and Hand Stencils in Southern Patagonia: A Comparative Analysis of the Strobel Plateau and Cardiel Lake (Argentina). *Cuadernos de Arte Prehistórico*, Special issue, 1:121–152.
- Gusinde, Martin  
1986 *Los indios de Tierra del Fuego: Los Yamanas*. Consejo Nacional de Investigaciones Científicas, Buenos Aires.
- Hyades, Paul, and Joseph Deniker  
1891 *Anthropologie et ethnographie: Mission scientifique du Cap Horn, 1882–1883* VII. Gauthiers-Villars, Paris.
- Jaillet, Stéphane, Luc-Henry Fage, Richard Maire, and Bernard Tourte  
2010 The Pacific Cave (Chile): First Decorated Cave in the Patagonian Archipelago. *International Newsletter on Rock Art* 58:1–8.
- Jochim, Michael  
1983 Palaeolithic Cave Art in Ecological Perspective. In *Hunter-Gatherer Economy in Prehistory*, edited by Geoff Bailey, pp. 212–219. Cambridge University Press, Cambridge.

- Kent, Rockwell  
1924 *Voyaging Southward from the Straits of Magellan*. Halcyon House, New York.
- Laming-Emperaire, Annette  
1959 *Diario de excavación del alero Oosin aike*. Archivo Centro de Estudios del Hombre Austral, Punta Arenas, Chile.
- Legoupil, Dominique, and Alfredo Prieto  
1991 Una sepultura de niños en un abrigo pintado del seno Última Esperanza. *Anales del Instituto de la Patagonia* 20:133–138.
- Legoupil, Dominique, Alfredo Prieto, and Pascal Sellier  
2004 La Cueva de los Niños (seno Última Esperanza): Nuevos hallazgos. *Magallania* 32:225–227.
- Hernández Llosas, María Isabel, Hugo Nami, and María Cuadrado Woroszylo  
1999 Arqueología en la localidad arqueológica de Pali Aike, cuenca del río Chico. II: Resultados preliminares sobre las representaciones rupestres. *Præhistoria* 3:202–217.
- Lothrop, Samuel Kirkland  
1928 *The Indians of Tierra del Fuego*. Museum of the American Indian, Heye Foundation, New York.
- Maire, Richard, Bernard Tourte, Stephane Jaillet, Joel Despaigne, Benjamin Leans, Franck Brehier, Luc-Henri Fage, et al.  
2009 Geomorphic and Archeological Features of Coastal Caves in Madre de Dios Archipelago (Patagonia, Chile). In *Proceedings: 15th International Congress of Speleology, Kerrville, Texas, United States of America, July 19–26, 2009*, edited by William B. White, pp. 516–521. National Speleological Society, Huntsville, Alabama.
- Manzi, Liliana, and Flavia Carballo Marina  
2012 Manifestaciones rupestres en el campo volcánico Pali Aike (cuenca del río Gallegos, Santa Cruz, Argentina). *Magallania* 40:283–302.
- Martial, Louis F.  
1888 *Mission Scientifique du Cap Horn. 1882–1883*. Vol. 1. Gauthier-Villars, Paris.
- Massone, Mauricio  
1981 Arqueología de la región volcánica de Pali Aike (Patagonia meridional chilena). *Anales del Instituto de la Patagonia* 12:95–124.  
1982 Nuevas investigaciones sobre el arte rupestre de Patagonia meridional. *Anales del Instituto de la Patagonia* 23:73–94.  
1985 Estudio comparativo de nuevos sitios con pinturas rupestres aborígenes de Magallanes. In *Estudios de arte rupestre*, edited by Carlos Aldunate, José Berenguer, and Victoria Castro, pp. 205–223. Museo Chileno de Arte Precolombino, Santiago.
- Morello, Flavia, Luis Alberto Borrero, Mauricio Massone, Charles Stern, Arleen García-Herbst, Robert McCulloch, Manuel Arroyo-Kalin, et al.  
2012 Hunter-Gatherers, Biogeographic Barriers and the Development of Human Settlement in Tierra del Fuego. *Antiquity* 86:71–87.
- Morello, Flavia, Charles Stern, and Manuel San Román  
2015 Hunter-Gatherers in Tierra del Fuego y Patagonia: Caracterización, distribución y problemáticas culturales a lo largo del Holoceno. *Intersecciones en Antropología* 16:139–153.
- Muñoz, Camila  
2020 Nuevas aproximaciones al arte rupestre de Fuego-Patagonia, Chile: Caracterización y comparación de los sitios del continente y de los canales del extremo sur. *Magallania* 48:161–181.
- Muñoz, Camila, Rosario Cordero, and Diego Artigas  
2016 El sitio Alero Picton 1: Nuevo registro de arte rupestre para los canales fueguinos. *Magallania* 44:225–231.
- Muñoz, Camila, Anahí Re, Rosario Cordero, Francisco Guichón, and Diego Artigas  
2021 Comunicaciones a grandes distancias? Desafíos metodológicos de la comparación de pinturas rupestres del bosque y estepa de Patagonia centro-meridional. *Cuadernos del Instituto Nacional de Antropología y Pensamiento Latinoamericano—Series Especiales* 9(1):372–392.
- Ocampo, Carlos, and Pilar Rivas  
2002 Arqueología del canal del Beagle: Secuencias y procesos culturales en ambientes de Altas Latitudes. *Boletín de la Sociedad Chilena de Arqueología* 33/34:98–102.
- Oría, Jimena, and Angélica Tivoli  
2014 *Cazadores de mar y tierra: Estudios recientes en arqueología fueguina*. Editora Cultural Tierra del Fuego, Ushuaia, Argentina.
- Orquera, Luis Abel, Dominique Legoupil, and Ernesto Luis Piana  
2011 Littoral Adaptation at the Southern End of South America. *Quaternary International* 239:61–69.
- Orquera, Luis Abel, and Ernesto Luis Piana  
1999a *Arqueología de la región del canal Beagle (Tierra del Fuego, República Argentina)*. Publicaciones de la Sociedad Argentina de Antropología, Buenos Aires.  
1999b *La vida material y social de los yámanas*. EUDEBA, Buenos Aires.
- Orquera, Luis Abel, Arturo Sala, Ernesto Luis Piana, and Alicia Tapia  
1977 *Lancha Packewaia: Arqueología de los canales fueguinos*. Huemul, Buenos Aires.
- Piana, Ernesto Luis, Augusto Tessone, and Atilio Francisco Zangrando  
2006 Contextos mortuorios en la región del Canal Beagle . . . Del hallazgo fortuito a la búsqueda sistemática. *Magallania* 34:103–117.
- Piana, Ernesto Luis, and Martín Vásquez  
2009 Arqueología de rescate en el Canal Beagle. In *Arqueología de la Patagonia—una mirada desde el último confín*, edited by Mónica Salemme, Fernando Santiago, Myrian Álvarez, Ernesto Luis Piana, Martín Vásquez, and María Estela Mansur, pp. 469–482. Editorial Utopías, Ushuaia, Argentina.
- Prieto, Alfredo, Denis Chevally, and David Ovando  
2000 Los pasos de indios en Patagonia austral. In *Desde el país de los gigantes: Perspectivas arqueológicas en Patagonia*, pp. 87–91. Universidad Nacional de la Patagonia Austral, Río Gallegos, Argentina.
- Prieto, Alfredo, Susana Morano, Pedro Cárdenas, Victor Sierpe, Elisa Calas, Marianne Christensen, Christine Lefevre, et al.  
2020 A Novel Child Burial from Tierra del Fuego: A Preliminary Report. *Journal of Island and Coastal Archaeology* 15:436–454.
- Re, Anahi, and Francisco Guichon  
2014 Un lugar muy particular: Caza, convergencia de poblaciones y circulación de información en la meseta del Strobel. In *Arqueología de las cuencas de los lagos Cardiel y Strobel: Poblamiento humano y paleoambientes en Patagonia*, edited by Rafael Goñi,

- Juan Bautista Belardi, Gisela Cassiodoro, and Anahi Re, pp. 155–186. Aspha Ediciones, Buenos Aires.
- Reyes, Omar, and Manuel San Román  
2008 *Construcción camino de penetración Vicuña-Yendegaia, provincias de Tierra del Fuego y Antártica Chilena*. Informe de línea de base arqueológica, CEEA limitada. Report on file at the Servicio de Evaluación Ambiental, Gobierno de Chile.
- Sellier, Pascal  
1999 Los restos óseos de los dos niños de la sepultura de Última Esperanza (Magallanes, Chile): Un feto anencefálico y uno nacido muerto. *Anales del Instituto de la Patagonia* 27:99–122.
- Sepúlveda, Marcela  
2011 Pinturas rupestres y tecnología del color en el extremo sur de Chile. *Magallania* 39:195–212.
- Sepúlveda, Marcela, Sebastián Gutiérrez, and José Cárcamo  
2022 Pigmentos y bloques de color del sitio Offing 2, Estrecho de Magallanes: Aproximación a su composición elemental y mineralógica. In *Entre Patagonia y Tierra del Fuego: Los nómadas del mar del islote Offing (I. Dawson- Estrecho de Magallanes)*, edited by Dominique Legoupil. Ediciones Universidad de Magallanes, Punta Arenas, Chile, in press.
- Skottsberg, Carl  
1911 *The Wilds of Patagonia*. Macmillan, New York.
- Tafari, Mary Anne, Atilio Francisco Zangrando, Augusto Tessone, Sayuri Kochi, Jacopo Maggi, Fabio di Vincenzo, Antonio Profico, and Giorgio Manzi  
2017 Dietary Resilience among Hunter-Gatherers of Tierra del Fuego: Isotopic Evidence in a Diachronic Perspective. *PLoS ONE* 12(4):e0175594.
- Washburn, Dorothy  
1983 Symmetry Analysis of Ceramic Design: Two Test of Method on Neolithic Material from Greece and the Aegean. In *Structure and Cognition in Art*, edited by Dorothy K. Washburn, pp. 138–164. Cambridge University Press, Cambridge.
- Webb, Malcolm  
1974 Exchange Networks: Prehistory. *Annual Review of Anthropology* 3:357–383.
- Whallon, Robert  
2006 Social Networks and Information: Non-“Utilitarian” Mobility among Hunter-Gatherers. *Journal of Anthropological Archaeology* 25:259–270.  
2011 An Introduction to Information and Its Role in Hunter-Gatherer Bands. In *Information and Its Role in Hunter-Gatherer Bands*, edited by Robert Whallon, William Lovis, and Robert Hitchcock, pp. 1–27. Leyba Associates, Santa Fe, New Mexico.
- Wobst, Martin  
1977 Stylistic Behavior and Information Exchange. In *For the Director: Research Essays in Honor of James B. Griffin*, edited by Charles Edward Cleland, pp. 317–342. Museum of Anthropology, University of Michigan, Ann Arbor.
- Zangrando, Atilio Francisco, and Angelica Tivoli.  
2015 Human Use of Birds and Fish in Marine Settings of Southern Patagonia and Tierra del Fuego in the Holocene: A First Macro-Regional Approach. *Quaternary International* 373:82–95.

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