South Chile – Extreme Architecture

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Abstract. Typhoons, earthquakes, volcanic eruptions on the one hand, and the lack of roads due to the inaccessibility of mountain areas and the extended coastline, combined with the harsh climate of both hot and polar, on the other, make designing and building in Chile an extreme task. It is and always was also hard to design and build in Chile due to the isolation of this country from the rest of the South American continent thanks to the difficulty to overcome the barrier formed by the Andes. Can these unique conditions be used to create a unique architecture that brings new qualities to global heritage? Perhaps all these "threats" are also a significant potential for creation, using beautiful landscapes and pure nature. In the beginning, there was the Word. Architectural culture requires faith and extreme sacrifice. For this reason, the presentation begins with a project to which its architects devoted their lives and decided to become men of the cloth. Buildings devoted to religious worship often exceed the utilitarian dimension of architecture, becoming the determinants of directions that architecture will follow. An example of this heroic expression of architecture is the construction of the Benedictine Church in Les Condes, a suburb of Santiago, in 1962-1964. Can Theatre be a cure allowing people to overcome trauma? The programme of reconstruction of the city of Concepción in Chile after the destruction wrought in 2010 by the tsunami, included not only the restoration of previously existing housing and infrastructural functions, but also the introduction of new cultural function. In 2011, an architectural competition for the design of the Regional Theatre was announced, which was won by three Chilean architects Smiljan Radić, Eduardo Castillo and Gabriela Medrano. The building was put into use in 2018 and is not only a monument of the past, but also a sign of a new beginning (Figure 1). One of Chile's greatest natural resources is its diverse landscape. Difficult accessibility of many areas, low population density and unfavourable climate are the main factors that have caused large areas of land to remain in their natural state. Along with the development of society and the popularisation of tourism, a need arose to build the right background for exploring these natural values. The history tourism in extreme conditions is not long. In Poland, for example, it dates to 1850, when the first winter expedition to the Valley of Five Ponds in the Tatra Mountains took place. In Chile, the first tourist expedition to Patagonia took place in 1879 and was described in the book by its organiser and participant, Lady Lorance Dixie (Dixie, 1880). These extremely hard natural conditions have created a unique opportunity to create modern architecture in interaction with the natural landscape. We will examine this problem on the example of 5 hotels and 5 ways of interacting with the landscape and study these architectural ideas.
1. Introduction
On the morning of the 27th of February 2010, a Tsunami wave levelled a significant portion of the Chilean city of Concepción. 87 people died and thousands of others were left displaced, without a roof over their heads and places to work at. Such furious natural disasters are not an exception in Chile. They have happened before and, unfortunately, will happen again in the future.

Typhoons, earthquakes, volcano eruptions, on the one hand, and the lack of roads as a result of the inaccessibility of mountainous areas, a complicated coastline in combination with severe climate that ranges from the hot to the polar, on the other, cause design and construction in Chile to be an extreme activity. This is also compounded by the country's isolation from the remainder of the South American continent, thanks to the Andes which form a barrier that is difficult to traverse.

Can these negative considerations be used to create unique architecture in extreme environmental conditions? One that introduces new qualities to global heritage? Are these "threats" also not a result of geographic potential, beautiful landscapes and pure nature?

![Figure 1. Concepción, Chile, Tsunami Memorial-Memorial del 27F](image)

2. Benedictine Church, Santiago de Chile (Monasterio Benedictino de la Santísima Trinidad de Las Condes)
In the beginning, there was the Word. Spirituality, man's ages-old need to search for a meaning, is realized through religion. Buildings devoted to religious worship often transcend the utilitarian dimension of architecture, in addition to pointing towards the directions that architecture will follow. One example of this is the completion of the Benedictine Church in Les Condes in the years 1962-1964, in the suburbs of Santiago. The idea behind the building is extremely simple in its spatial layout and has been extraordinarily consistently and coherently designed. The primary "material" from which the church is built is light. For light to be able to appropriately highlight architectural form, surfaces of austere decorative concrete were used. This concrete, cast in formwork from raw timber planks, has been painted white. This texture softens reflected and scattered light off the imperfections of the formwork even more, thanks to which a painterly and abstract effect has been obtained. Its spatial scheme is based on the intersection of two cubes, with a base 14 x 14 m and of a different height (10 m and 14 m), at their diagonals [1]. The functional layout harmonises with this idea. The centrally-placed altar is located at the intersection of the main masses of the church—the previously mentioned
cubes. However, the altar is not in a place that is as obvious as it would seem from this description. Although the altar delineates the taller space, in order to see it after entering, we must make a 180 degree turn. This radical change of direction has a symbolic dimension as faith can produce a fundamental change in our life. Such a breakthrough is signalled in this spatial solution, in which a ramp is located parallel to the main axis of the church and ascends, leading us in a different direction, away from the altar, only to suddenly funnel us directly towards it. This resembles a principle of navigation, discovered by Portuguese sailors, called "Volta do Mar". A turn towards the open sea, instead of back in the direction from which we sail, made it possible to return home thanks to the knowledge of currents and winds. The path to one's destination is thus not straight and linear and reaching it requires imagination and knowledge. A similar principle can be found in the architecture of the Far East. It is associated with the belief that only evil follows a straight path, hence the entrance to a building is protected by a winding pathway. The answer to extreme environmental conditions can come in extreme architectural and social conceptual proposals. The church fascinates us with the precision of its solutions and the extraordinary character of the implementation of simple ideas. Its construction is an example of the radical dedication of its creators to their work. This offering of one's life for architecture is rare in a period in which the world has been ruled by commercialism and hedonism in recent decades. Brother Martin Correa Prietto and Father Gabriel Guarda Geywitz abandoned their architectural studies and devoted themselves to a spiritual life, entering the Order of St. Dominic. Their life's work, the Benedictine Church in Les Condes, was built thanks to this – the first and last building they designed, for the glory of God (Figure 2).
3. The Bio Bio Theatre, Concepción, Chile 2018, authors: Smiljan Radić, Eduardo Castillo and Gabriela Medrano - Art as a remedy for tragedy

Concepción is a city located an hour's flight to the south of Santiago and is the second-largest city in Chile. This city is strongly tied with Chile's history. It was here that the War of Independence began in 1818. From the moment of its founding in the sixteenth century, it was destroyed by earthquakes and tsunamis many times. In 2010 Concepción was destroyed by a Tsunami but can be considered completely rebuilt at present. The reconstruction programme covered not only the restoration of previously existing residential, service and infrastructural functions, but also the introduction of new, previously non-existing urban functions. In 2011, a year after the tragedy, an architectural competition was organised for a design of the Regional Theatre (Figure 3), which was won by a trio of architects including Smiljan Radić, Eduardo Castillo and Gabriela Medrano. The building was placed on a boulevard of the Biobío River, which flows through the city [2].

![Figure 3. Bio Bio Theatre, Chile 2018, access way to the back rooms of the stage](image)

The ideological conceptual proposal for the design was inspired by Tadeusz Kantor's ideas: "My packagings were an attempt to 'portend' the nature of the object. By hiding it, enveloping it." The building's structure and material explore the concepts of packaging as a design concept. The theatre, packaged in a membrane, makes it possible for the audience to climb the modular cubic structure of the interior. This structure can be described as dense, because the cubic module has a dimension of 3.9 m. The spaces of the Foyer and its associated circulation are illuminated with light entering through the semi-transparent membrane. Thanks to this, we are introduced into a mood of play and experimentation already at the Theatre's entrance. This scaffolding of sorts also supports halls that are suspended in the air, which, in contrast to the illuminated circulation spaces and the foyer, are dark. Typically, the stage scaffolding that is built in an ad hoc fashion is hidden. Here it is highlighted and becomes the main element of the design. This idea "works" not only in the interior, but also in the exterior, creating a changing play of shadows on the building's facades both during the day and during the night. The varied compositions created in this manner signalise, tease and provoke us. They are, therefore, an extension of the theatrical function of the building in the urban space. The building, as if a light shining in the dark, invites us to interact with it. The free and open space of the boulevards highlights the sculptural character of the building and the innovatively used materials give it a lightness and dematerialize it. The logically designed internal function corresponds with the design of the exterior, placing parking spaces and deliveries at the side of the back of the stage, while the
main entry square was placed at the side of the Foyer. The only cultural element, which the theatre is contrasted with, is the concrete structure that encloses the entrance square. This sculpture reminds us of the tragic events associated with the Tsunami of 2010 and, similarly to the Theatre, it uses the changing play of light and shadow of the austere concrete elements that rise unto the sky.

4. Landscape

One of the greatest elements of Chile's natural wealth is its varied landscape. The difficulty of accessing many areas, a low population density and an unfavourable climate are fundamental factors that have influenced the leaving of immense areas of land in their natural state. Along with the development of society and the popularisation of tourism, a need to construct the appropriate infrastructure to explore these natural assets has arisen. The history of extreme tourism is not long. In Poland, for instance, it dates to the year 1850, when an expedition to the Valley of the Five Lakes in the Tatra Mountains was organised for the first time. In Chile, this history is shorter because of the greater difficulties in exploring the Andes, which are almost twice as tall as the Carpathian Mountains. The first tourist expedition to Patagonia took place in 1879 and was described in a book by its organiser and participant, Lady Lorance Dixie [3]. These conditions have created the unique possibility of the construction of unique architecture in an interaction with the natural landscape. Let us study this concept on the example of 5 hotels and 5 approaches to the interaction with the landscape. The studied hotels are in Patagonia, near the southern, coldest part of Chile called Zona Sur. Close to the Strait of Magellan, which is the southern border of Patagonia, near the city of Puerto Monte, the Andes, which reach a height of 4000 m here, separate Chile from Argentina and the Pacific from the Atlantic. This geographic barrier which separates Chile from the old world, which stretches beyond the Atlantic, is not present only in this area. As it appears, these are the geographic conditions that have made Patagonia more open to European influence than the remaining parts of Chile. The fact that since the construction of the Panama Canal, the entire trade traffic between the new and the old world crossed the Magellan Strait is not without significance. The trade goods were followed by ideas and people, which provided suitable conditions for the development of new forms of construction.

5. Hotel Simple Patagonia – an outline of the landscape. Architect: Maria Jesus Aravena

The hotel is in an open area near the locality of Puerto Natales and Puerto Bories in Patagonia (Figure 4). The building is located on the edge of an escarpment and is currently being expanded to include another residential block located at its base, near a road that leads to the bay. The surroundings of the building feature a ford (100 m) surrounded by grassy alpine meadows, with the peaks of the Torres del Paine National Park in the background. The alpine meadows feature grasses that go down to the bay, with the structure and direction in which they grow resulting in a highly distinct and uniform pattern. The hotel, which is described as a "boutique hotel", offers only 11 two-person rooms [4]. These rooms, with a floor area of 26 to 40 m2, thanks to their long windows, make it possible to explore the landscape that is both on the near and far-away plane. Its spatial conceptual proposal has been based on the intersection of two massing’s: a taller and a shorter one, both covered with gable roofs - The lower, longer section houses a block of rooms, while the taller one houses the reception desk and gastronomic section. Both the rooms and the reception space offer a panoramic view of the bay and the mountains in the background. The hotel is a family-owned project and has a cameral character. The author of the design is the architect Maria Jesus Aravena. Timber was used in the interior, facades and roofs of the design. This results in a unique climate of homeliness and cosiness. The facades and roofs are covered with narrow planks laid out at a distance from the structural elements, in a vertical position. They are a reference to the surrounding alpine meadows and the pattern formed by their grasses. In addition, the natural grey colour of the seasoned timber harmonises with the landscape and with nature.

6. Hotel Altiplanico—superficies solo cedit. Architect: Orlando Gatica
The Altiplanico Hotel in Puerto Natales in Chile was designed by Orlando Gatica and built in 2005 (Figure 5). 22 double rooms have been placed on the three levels of this terrace-like building that is partially submerged in the ground. The reception space and the dining hall are located on the uppermost storey. The structure of the building is made from reinforced concrete and it is the main material—not only in structural terms, but also as an interior finish. Meanwhile, the outer facades are made from turf. On the one hand, this provides thermal insulation, but on the other, it makes the building an immanent part of Mother Earth. The use of turf to shield the outer walls is also a reference to Patagonia's traditional construction methods. It is these philosophical as well as practical and historical considerations that give rise to the necessity of constantly caring for the maintenance of its facades—in the form of a "cultivation" of sorts. A gardener constantly repairs fragments of this building—cultivating it similarly as we cultivate land so that it can provide us with crops. A maximum connection with nature and blending with the ground characterise this structure, standing in opposition to many contemporary tendencies in the construction of the hotel buildings that stand out through their form. Here, the form of the hotel is the natural landscape, although the term “natural” should be taken with a grain of salt. This landscape is cultural through and through, carefully designed by man, both in terms of form and material. The landscape—form is also an answer to the quality of the surroundings, highlighting the beauty of the mountains and fords while simultaneously correcting (masking) the buildings located in its vicinity and not all of them being of high quality.

**Figure 4.** Simple Hotel, Architect: Maria Jesus Aravena

**Figure 5.** The "cultivation" of the Altiplanico Hotel, Puerto Natales, Chile 2005, Architect: Orlando Gatica
7. Hotel Singular Patagonia - A factory of rest, Puerto Bories, Chile 2012 (Author: Pedro Kovacic)

The ultra-modern boutique hotel called Singular Patagonia was built as a result of an adaptation of an industrial building (Figure 6). This transformation is an indicator of tendencies in the development of contemporary Patagonia. The twentieth-century food processing industry has been in a process of being pushed out by the tourism industry, since the 1990's, this new economic sector brings increasing profits to the Chilean economy. The „Sociedad Expoltadora de Tierra del Fuego” [5] was established by British emigrants at the beginning of the twentieth century. In 1915, this company built cold storage facilities in Puerto Bories near Last Hope Bay. The cold storage facilities were a part of a canning plant, tannery and sheep wool distribution plant. The factory became the driver and symbol of the civilizational development of Chilean Patagonia over the years. During its peak, the plant employed 400 workers and processed 250 000 sheep per year. The city of Puerto Natales was built largely thanks to this factory and was mainly inhabited by the workers employed there. Located on the shore of a ford, the factory was several kilometres away from Puerto Natales and related to the city by a railway line that was used to transport the workers. The factory also featured a power plant that supplied both the city and itself with power. The locality in which the factory was located was called Puerto Bories. The railway line connected it not only with Puerto Natales, but also with the vast expanse of both Chilean and Argentine Patagonia. Thanks to this line, sheep were delivered to the factory and their products were shipped back. The factory also featured a jetty from which ships ferrying meat, skins and cans travelled to the old world. The significance of the factory and the scale of its production is attested by visitors who want to see the site, in which the food that allowed the British to survive the Second World War was produced, to this day. In the 1970's the factory started struggling and was put on Patagonia's heritage sites list in the 1990's, with an intention of establishing a museum of industry there. Thanks to the descendants of the company's founders, an opportunity appeared and an adaptation of the abandoned post-factory buildings into a luxury hotel was performed. The renovation of the factory's assets made it possible to create a building that is unique on the global scale, one that preserves the memory of the place and creates a new form and function for tourism-related purposes. The accessway to the hotel, with a minimalist composition of its front yard and an exposure of the landscape, demonstrates the design's primary conceptual assumption. Architecture plays a secondary role in relation to the landscape here, which is only delicately highlighted with minimalist artefacts of the post-industrial landscape. The factory is located on two levels, separated by an escarpment, and a similar layout applies to the hotel. At the upper level, there is an accessway with a reception space located in a glass box hidden in the former factory halls which today fulfil the role of a roof over the entrance to the reception space. This roof is four times larger than the reception space itself. However, this made it possible to achieve a high-quality space. Underneath the roof, apart from the reception space, is a roofed parking facility for semi-trucks that are used to carry hotel guests, as well as a parking space for mountain bikes. The reception space, along with the remaining parts of the hotel that are located at the foot of the escarpment at the level of the Señoret Channel ford, relates to an overland railway line and external stairs that run along the incline of the escarpment. Operational circulation is separated from guest circulation and is provided using an external corridor that is perpendicular to the escarpment. At the level of the ford, in the old adapted factory spaces with preserved elements of historical factory equipment, there are common spaces for hotel guests. They house restaurants, along with a kitchen and a bar, a spa and a conference hall for 100 people. A three-storey wing with rooms that has been "inserted" between historical firewalls of the former "weighing buildings" constitutes a new element. The rooms face towards the south, in the direction of the Ultima Esperanza ford (Last Hope) and the surrounding mountains, while the corridor to the northern side, hidden underneath a structure from natural light-filtering lathes, is located from the side of the escarpment. Heavily glazed along their entire length and height, the hotel rooms from the north are shielded from the sun by perforated parapets from irregularly-spaced used boards. The preservation of the balance between the past and contemporaneity is the characteristic quality of this design. It is expressed in the organic combination of the natural and cultural landscape. One of the hotel guests
wrote the following in its commemorative book: "Without a doubt, my favourite activity in the Singular Patagonia hotel was to do nothing and lay in my bed, watching the magical interregnum between the night and the light dawn" [6].

Figure 6. Singular Patagonia Hotel. A view of the residential section from the side of the bay

8. Remota Hotel–Puerto Natales, –the lack of perfection as an element of a dialogue of cultures. Architect: German del Sol, 2005

The Remota Hotel has been placed half-way between Puerto Natales and Puerto Bories. The design by German Del Sol, with its black forms, boldly cuts into a slope and behaves akin to natural terrain that meets the form, boldly and multiplanar cutting the surface of the water (Figure 7). Clearly separating itself from the space of the earth, it simultaneously correctly expresses the essence of the morphology of the terrain upon which it has been built. This is possible thanks to the complicated shape of the massing, which is highlighted with the contrasting black colour and the appropriate selection of the directions of the individual elements of the composition. This composition is focused around an internal courtyard that is surrounded on three sides by the hotel's massing and—from the fourth side—"enclosed" by the landscape of Patagonia. The courtyard itself was left in its natural state, similarly to Patagonia's meadows. These meadows are present on all the building's roofs. The tallest and uppermost element of the hotel houses the reception space and restaurants, as well as all the common spaces. The structure of this part of the hotel has an open character and is located at multiple levels that are connected by ramps. In its two wings that descend towards the bay, there are 72 rooms [7]. From these rooms, there is a view of the landscape and the circulation sections are open towards the courtyard. The facades, coloured black, whose detail "surprises" us with its atypical material, as they are made from bituminous waterproofing sheets, are of great significance to its reception. There are more surprises in the hotel, as the common external material is contrasted with the interior made from raw concrete and timber. In this manner, we fluidly pass from cold to warmth, from the alien to the homely. Furthermore, this external imperfection of belts of black bituminous waterproofing, laid on top of each other and slightly corrugated, as well as the internal imperfect traces of concrete on the walls and columns and the partially unfinished timber boards give this building its own character. This character is decidedly different from that which most of contemporary architecture—oriented towards technological perfection—offers us. Thanks to this imperfection, the building enters a creative dialogue with the landscape and local culture. Simultaneously, in the interiors, the building gives us a sense of safety, which achieves the original goal of architecture. The primitivism that characterises this
design, understood as a reference to local indigenous cultures, is one of its significant values. The interiors, decorated based on originally designed and handcrafted furniture, use characteristic elements of local culture, such as open fireplaces and lamps hanging from the roof surface, which harmonizes with the entirety of the assumption adopted by the architect.

**Figure 7.** Remota Hotel–Puerto Natales, architect: German del Sol, view from the side of the lake

**9. Lago Grey Hotel—a chameleon building**

The main tourist attraction of the Torres del Paine National Park is the Grey Glacier. It is for the purpose of its tourism-related exploration that appropriate infrastructure has been put in place, whose heart is a hotel of the same name as the glacier (Figure 8, 9). The hotel is located near the bay that leads to the glacier, on whose waters we can see its splinters in the form of icebergs. In the view from the side of the bay, the hotel is practically invisible and blends into the landscape like a chameleon. The central internal space of the hotel connects its restaurant with the main lobby into a single space oriented towards the glacier and its surrounding mountains. The interior of the hall and the restaurant is finished with natural materials, with a predominance of timber. The hotel includes 30 rooms with a view of the glacier and the surrounding mountains. The glacier itself can be reached via cutter that sails between the icebergs that have separated themselves from the glacier. The ship's pier is located near the hotel, at around 45 minutes walking distance via marked trail. The start of the trail to the glacier is marked by a reception building with a restaurant. The interior is maintained in a modern high-end architectural style with an element referencing traditional solutions in the form of lamps hanging from the ceiling. The facade of the building is built out of vertical raw planks. This solution is an attempt at interpreting the local culture of building temporary shelters from a naturally occurring and generally available material-timber.
10. Conclusions

Extreme environmental conditions can be an opportunity to create formally original architecture of high quality that serves people. Spiritual, artistic and sightseeing needs have found their place in the presented buildings. Each of these designs is characterized by an original approach to their respective design problem and drawing on the cultural heritage of the past. References to the past, however, do
not have the character of formal citations, but are a result of an analysis of the essence of cultural heritage. The distinct characteristic of all these buildings is a lack of relations with other buildings or complexes. These buildings are freestanding and as such enter a dialogue with the landscape. In a few cases, materials that had previously been meant for other users were used in an outstandingly creative manner in their design and construction, an example of which is the membrane facade of the Bio Bio Theatre in Concepción, or the bituminous waterproofing-covered facade of the Remota Hotel in Puerto Bories. Timber has also been used numerous times on facades, yet in a manner that is different from the previously adopted one, as it has been separated from the main structure of the building. This distance, needed due to moisture protection, has also created an opportunity for new experiences that had previously been unknown in the architecture of this region. In the Singular Patagonia and Simple Patagonia hotels and the reception building of the Grey Glacier hotel, a multi-planarity of facades was built, filtering light coming into the buildings' interiors. Finally, some of the presented buildings utilize decorative concrete in its most brutalist form, cast in a raw timber formwork, and sometimes linked with the raw timber planks themselves. Thanks to these planned imperfections, it formed an extraordinarily sensual and "coarse" architecture as a support for natural light. This sensuality can be experienced in a tactile manner in the Chapel of the Dominicans in Les Condes, but particularly so in the interiors of the Remota Hotel. The scale of the presented buildings is the quality that sets them apart. The exception to this rule is the Bio Bio Theatre, which has a monumental character. Meanwhile, the remaining buildings are small in scale both in terms of their form and function. The largest of the presented hotels – Remota - has only 72 rooms. The tendency to divide the massing’s of structures in order to integrate them with the landscape is clearly visible here and applies to all the structures that have been presented. In its extreme form, the hotel becomes a complex of free-standing buildings that are only connected through organizational means. The Awasi Patagonia 2014 Hotel by Felipe Assadi is an example of this scheme [8]. Life in harmony with nature and undisrupted use of its resources is the tendency adopted by the authors of all the presented works. The structures shown here are a return to the primal nature of architecture expressed in the Roman principle of superficies solo cedit, which they read anew.

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