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Moved by Water.
The Architecture of a Minga in Southern Chile

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Abstract

The action of moving an existing building by water is part of an antique tradition of collective work from artisan fishing villages in Southern Chile. Behind the view of a house towed away by boats -known by the word minga after the combined effort that it implies-, there is an extensive preparation which includes, amongst other tasks, performing a series of sailing adaptations on the building architecture prior to its journey through the channels. Although these adaptations appear as critical steps to undertake when turning a house into a floatable structure first -and into an actual vessel afterwards-, their technical details remain largely unknown to most professionals. The specific case study of a minga in Huichas Islands is revised in order to show how traditional wood carpentry can sometimes influence conventional views on architectural principles when adjusting buildings to both changing environments and demands. A comparison with other minga schemes from locations in a broader area is also established with the aim of finding either similarities or particularities that help shaping the basic architecture of this traditional method for moving a house. Furthermore, the scope of this report is set on the integration of all planning, construction, and sailing skills that have been developed for the purpose of taking an entire building from one place to another without damaging it. Also, learning outcomes from craftsmen duties in a minga may become a useful contribution in subjects such as both portable dwellings and prefabrication.

Keywords: Architecture, water, minga

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Introduction

> *"We found here a party of five men, who had most adventurously crossed in their miserable boat-canoe, for the purpose of fishing, the open space of sea which separates Chonos from Chiloé. These islands will, in all probability, in a short time become peopled like those adjoining the coast of Chiloé"* (Darwin, C., 1839, as cited in Yudilevich, D., 2004).

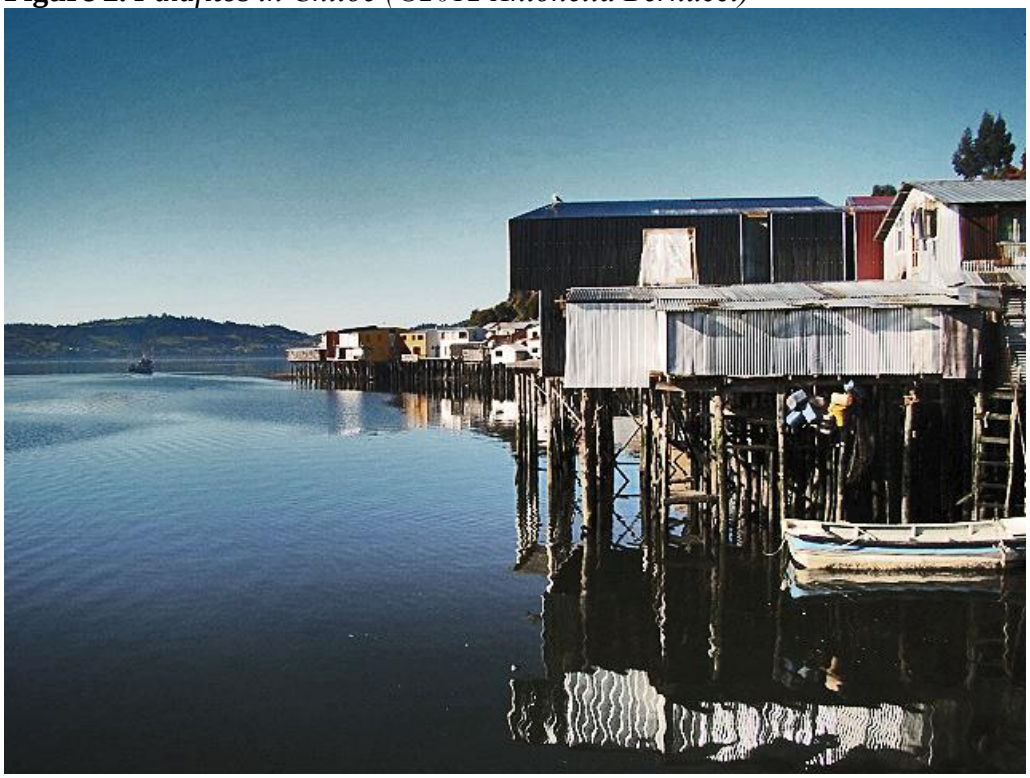
Southern Chile is a vast territory located between latitudes 39° and 56° S, and it is also known as either Western or Chilean Patagonia. Historian Jaime Said (2012) eloquently describes its southernmost shoreline alongside Pacific Ocean as highly fragmented, with many fjords, archipelagos and islands, as shown in Figure 1. Greater insular areas, such as both the Chiloé and Chonos archipelago, ended up holding most human settlements related to water, after centuries of internal migrations but also foreign colonisation, usually in search of fish, seafood, and other natural resources (e.g., wood), just as naturalist Charles Darwin (2004) predicted.

Figure 1. *Map of Patagonia ©2011 Editorial Patagonia Media*

When characterising the inhabitants of the above settlements, writer Bruce Chatwin (1997) referred to their population as a mixture of aborigines and European sailors, but also as gifted woodcarvers. In fact, it is possible to find clear signs of a wood carpentry tradition here, as architect Jorge Lobos (2006) states on certain knowledge that lets locals make use of the finest wood species that are available in the context, such as larch (cladding), cinnamon and cypress (foundations). Such knowledge on woodcarving also extends to the work of craftsmen in local shipyards.

Apart from materiality, Lobos (2006) refers to wood tradition -on architecture, specifically- as one in permanent change, where buildings can be extended or even recycled according to their dwellers' will or the fanciful ideas of a carpenter. Also, both buildings and their occupants seem to have a close relationship with water, in terms of living, working (fishing), and travelling. In that sense, housing on pole foundations -or *palafitos*- appears to be the most preferred solution to deal with the insular lifestyle, as architect Gabriela Manzi (1994) suggests when talking about such building typology in the Chiloé archipelago, for instance. The use of *palafito* typologies helps dwellings to be raised under difficult soil conditions, such as the ones found in uneven sloped grounds, waterfronts, or on water itself, as it can be seen in Figure 2. It also helps facing the effects of moisture in buildings, given the gap left between the structure and the natural surface below.

Figure 2. *Palafitos in Chiloé (©2012 Antonella Bernucci)*



Nevertheless, there is another strong tradition followed by inhabitants of the archipelagos in Southern Chile, and that is *la minga*. The word *minga* summarises the action of dragging a house over a body of water, literally. Such description would perhaps come from a disturbed mind rather than from a witness of the above, as anthropologist Loreto López (2005) suggests when explaining cultural heritage in Chile and its close relationship with the water.

But this custom of turning existing houses into portable dwellings -when moved to a new location particularly- implies more than taking a building from one place to another. It involves the voluntary collaboration of many people – up to an entire village- to be accomplished. Basically, a family group usually calls for a *minga* when moving out, and then neighbours come, give a hand, and even share their own experience on adapting houses to sail. It all ends up with a feast in return for the labour.

Some authors tend to refer only to the cultural significance of this tradition -especially in the Chiloé region-, but there seems to be few available sources to cite when trying to address *la minga* from an architectural point of view, as most of its technical issues remain unexplored. Those issues have mainly to do with three basic aspects that may lead to a better understanding of such a traditional event: how to turn a house into a vessel, how a *minga* is organised, and how specific elements from the context define its nature.

The Elements of a *Minga*

> *"The Chonos inhabited the southern region of the main Chiloé Island, as far as the Archipelago of the Guaitecas. Being nomads, they moved throughout the Patagonian territory with great skill"* (Said, J., 2012).

When studying the background of fishing villages in Southern Chile, as seen in the Venn diagram from Figure 3, the *minga* appears to be built upon the interaction of three key elements: inhabitants, architecture and water; which in turn, interact with each other and establish certain particularities that help visualise the nature of this custom. First, the relationship between people and their natural environment is given by the practice of working -and also travelling- on water, which allows locals gaining highly developed sailing abilities. Second, applying traditional wood carpentry techniques appears to be the way inhabitants approach to architecture in terms of dwelling construction. And last, the direct link between water and the built environment seems to be represented by the extended use of the *palafito* housing typology.

According to historian Dr Rodolfo Urbina (1994), these waterfront settlements are always coherent with the surrounding geography, as houses usually face the sea in almost every village, for instance. Such background elements seem to remain the same along the west coast, despite the distance -four hundred kilometres- between both the Chiloé and Chonos archipelagos. It is possible to find evidence on the above when analysing the case study of a

minga from Huichas Islands (45°15'S, 73°53'W), which is a minor fishing settlement -1,500 inhabitants- in the middle of the Moraleda channel, right between the Patagonian mainland and the broader Chonos archipelago. Inhabitants here are mostly descendants of Chiloé people who came in search of food and wood in the early twentieth century, although the Chonos themselves also inhabited the region in a previous era, as Said (2012) mentioned in reference to the nomadic lifestyle of these aborigines. Hence, it is possible to say that moving small settlements from one place to another within the insular territory of Southern Chile has been an established practice for at least a couple of centuries.

Figure 3. *The background of a minga (source: the author)*

The *Minga* Stages

A closer look at the case study from Huichas helps understanding how the combination of key elements such as inhabitants, architecture and water also determines the way a *minga* is organised in terms of basic stages that need to be accomplished. Furthermore, each of these stages appears to apply to one of these specific elements. It all begins with a call for *minga* that comes from a family or group within the community. The next stage is the on-site preparation where a series of adaptations are performed on the existing house before launch onto the water. And finally, the sailing itself completes the moving process.

Call for Minga

> *"Just take the whole house with you"* (Burchard, C. & F. Flesche, 2005).

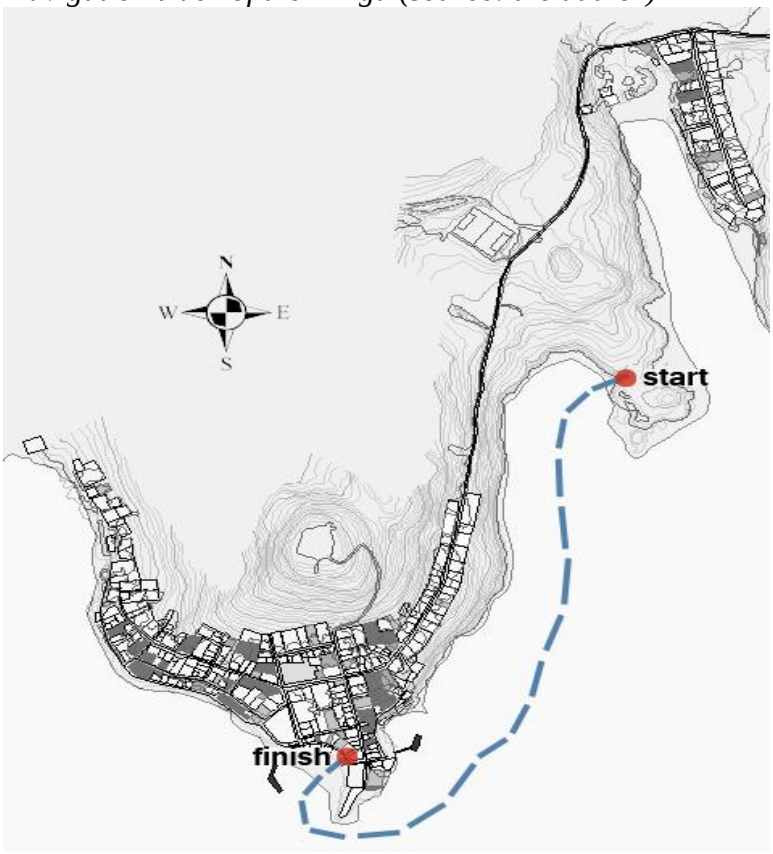
In the insular lands of Patagonia, when a family group moves out, they usually carry as many of their possessions as possible and that may include the house itself. Such scenario certainly requires an extra effort that a single family is not able to perform, hence a call for *minga* is required.

As stated before, designer Christian Burchard (2005) supports the chance of reusing an entire structure by taking it to a new location rather than dismounting it, given the complications that it can imply.

For the case study of the *minga* in Huichas Islands, the call was made by the community radio staff. It happened that the radio station needed a whole new space for its activities, and an old single-storey house -as shown in Figure 4- was donated for such purpose by another local organization. The wooden building, which also belongs to the *palafito* construction type, was six metres wide by ten metres long, and was initially located 1.6 nautical miles –and around two and a half kilometres on foot- away from the actual radio station site, on a short peninsula in the southeast side of the biggest island within the complex. The task was then to move the house -by water- from its original location to a new one on the south side, as seen in Figure 5. Fortunately, the great majority of neighbours granted voluntary time to work for the success of this call. Some of them would help with the on-site works, some others would drive the boats towing the house, and the rest was to prepare a celebration event. After all, it seemed like a challenging task to undertake for artisan fishermen. Nevertheless, there is one last step to accomplish before the call for *minga* ends and that is the appointment of a highly skilled carpenter, who is to lead all technical procedures in the next stage.

Figure 4. *Existing house at its original location (source: the author)*

Figure 5. *Navigation track of the minga (source: the author)*



On-site Preparation

> *"The end of craftsmanship has been predicted many times in the last two centuries. To achieve excellence in architecture, it has to be re-invented"* (Stacey, M., 2001).

As mentioned before, this stage comprises all adaptations performed on the building prior to sailing, and can be completed within the range of a week or a few hours before the sailing itself begins. Similar to what Lobos (2006) stated on traditional *minga* schemes, an expert craftsman has to be appointed for guiding all technical duties. Architect Michael Stacey (2001) seems to suggest above that craftsmanship needs to be refreshed to survive, but it is perhaps architecture that is now in search of new learning outcomes from previously underestimated sources. Answers to such queries lead back directly to the key role of the *minga* expert or "architect": designing and supervising the entire procedure until completion. The position also involves commanding a staff of ten to fifteen men who will work directly on the existing building. In the case of Huichas, a middle-aged artisan fisher, who was also a reputed carpenter, became engaged for the above purposes.

The relationship between the *minga* callers and the appointed lead craftsman may be similar to the one established between a client and an architect discussing on a given commission, as both parties share their views and agree on the best solutions along the process.

The first task was to make sure the house structure would properly respond to all kinds of loads when being displaced. Such structure basically consisted of studs mounted between a top and a bottom plate, all with bracing, same as architect Bjørn Berge (2012) describes such a traditional wood construction method. That is why the *minga* architect started by ordering his men to tie the external walls around with shipping ropes at specific spots: one right below the soffit level and another one below the window sills. Moreover, floor joists were also tied in the longitudinal sense, one next to each external wall and one by the very centre. It is important to stress that all ceiling, flooring, internal cladding, and both door and windows panes were removed prior to the above operation. Only the external cladding was left in place. On the opposite, in *minga* schemes from Chiloé, glass panes are kept on windows as the structure, on its turn, is reinforced with wooden outriggers on each corner (Lobos, 2006).

Then, before separating the building from its pole foundations, two relevant features were added to the house at floor level. One was a keel-like shape carved on each of the main floor beams at their front end, whilst the other was a side-to-side opening on the lower rear, where the external cladding was removed. Both changes were expected to become improvements in the displacing capabilities of the building, which was to be proved in the next stage.

Following instructions from their leader, the staff installed a raft ramp, which is a layer of logs laid directly onto the ground, as Berge (2012) describes similar construction techniques from several civilizations around the world. After separating from its foundations, the house was first mounted on the ramp, and then displaced down –by human power- to approach the water, as shown in Figure 6. Other *minga* schemes may comprise the help from a team of oxen when accomplishing the above task.

Figure 6. *On-site preparation stage (source: the author)*

The next task, once the structure reached the seashore, was to make sure the building would float. The architect made a rough sketch on a piece of paper in order to show his team how to place six flotation devices and tie them to the structure inside. Floating properties would exclusively rely on these devices of one cubic metre, as the entire flooring had been previously removed. Each of the six units were recycled from waste materials provided by the salmon farming plants nearby and there were actually two types of them: some were expanded polystyrene blocks whilst others were PVC bins, all of similar size. Flotation devices are often replaced by wooden barrels in *mingas* from Chiloé. By the time the above floating system was completed, the on-site preparation stage came to an end and the house was then ready to be thrown into the sea.

Sailing

"The water villa is a natural progression of houseboat living" (Chan, Y., 2008).

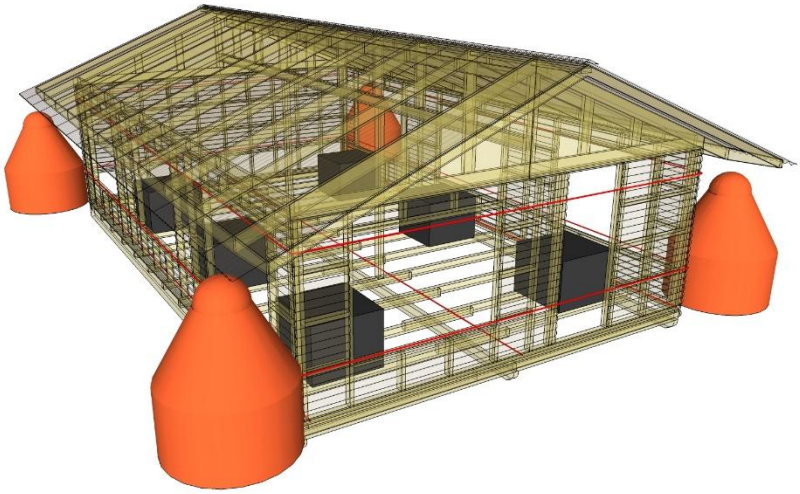
In every *minga*, this stage normally begins by putting the building in the water. For the case of Huichas Island, the architect decided his staff -including himself- to proceed pulling the house along the raft ramp towards the sea, after checking both the tide level (at its highest) and the prevailing weather conditions (light wind with no rain). Simultaneously, five designated boats began approaching the shore, waiting to tow the structure across the channel, as it was the right time to sail.

Nevertheless, despite all the previous on-site preparation enhancements on the existing building, when the house began to be pulled by human power, cracking sounds start coming out from the structure as if its parts were breaking. The *minga* expert ordered to stop, as he initiated a revision of all critical spots that may have been damaged. After confirming that all enhancements on the architecture were working well, he encouraged everyone to carry on pulling, and the alarming noises soon faded away. Before the building entered the water, additional flotation devices were tied to each of its corners, first to the front façade -right after reaching the actual shore- and then to the rear, as seen in Figure 7. The last-minute addition of these four devices had no further impact on the floating properties of the house, but -as it will be seen- apparently helped stabilising the navigation afterwards. And then, following a final pulling effort from the team, the structure -far better than expected- begins to float evenly over the sea. So far, the *minga* in Huichas succeeded in turning a building into an actual houseboat, as stated by architect Yenna Chan (2008), when referring to some special features in architecture that relate to maritime typologies.

The next step was to complete the navigation track up to the final location where the house will be placed. As mentioned before, five boats and their crews were assigned with the mission of towing the building across the channel. The architect had again prepared a schematic plan showing the position of each of the above ships during the dragging procedure: the biggest one (eighteen metres long by three and a half metres wide) in the middle front,

and two smaller ones (nine metres long by one and a half metre wide) on each corner.

Figure 7. *Floatation devices (source: the author)*



Mingas from other latitudes may only engage a single boat for pulling a structure, depending on the size of both the building and the towing vessel.

The traditional skills of artisan fishermen here were put to test as practical knowledge on different sailing knots was required to secure the house with ropes for the navigation. Then, as the ships began to pull the structure towards the south side, the entire procedure started being carefully monitored by the *minga* expert from another boat that went orbiting the formation at all times, as shown in Figure 8.

Figure 8. *Sailing (source: the author)*

Some of the features added to the architecture during the on-site preparation stage, such as the rear opening, for instance, proved to be good design decisions within the scheme, as they allowed water to fluently pass through the structure at floor level, making the building go faster than it would if it was performing as a fully waterproofed box. Neither the action of water when passing through the structure, nor the towing loads itself seemed to have caused damage to the building. Part of the explanation for such a result is that the floating line kept hardly above the floor joists -right where the inside

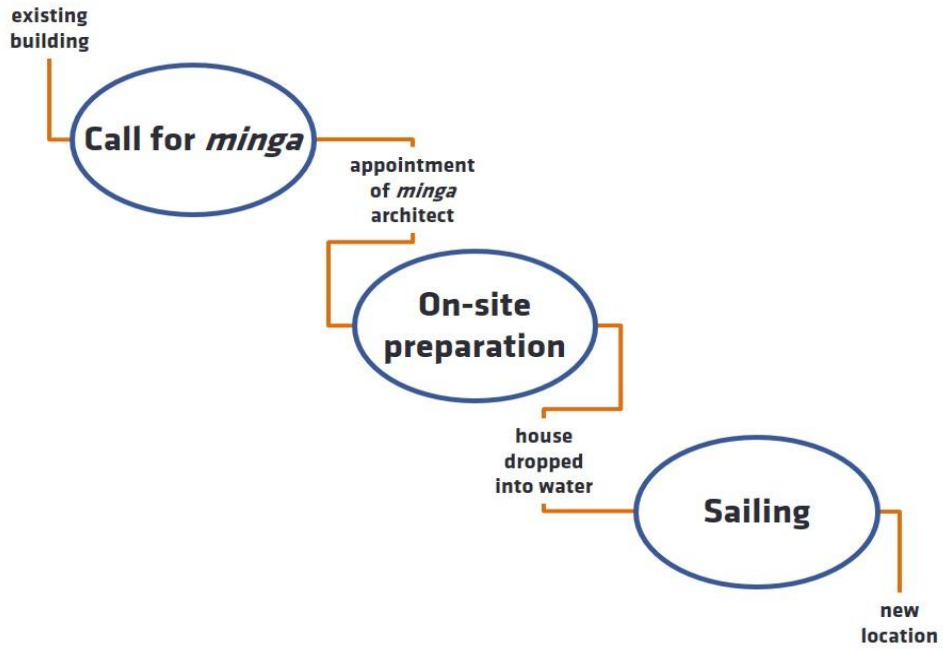
floatation devices were placed- hence water did not impact on most of the wooden structure above. On the other hand, the external flotation bins –added afterwards- contributed on both keeping the building straight over the water and on avoiding sudden lateral leanings that could have affected the navigation. In other *minga* schemes, houses may even be left half sunken when being towed, but again it all depends on the structural reinforcement (e.g., wooden outriggers) made inside the building (Lobos, 2006). For the case from Huichas Island, the house was completely tight with the aid of ropes around its external walls, but it performed as a flexible box rather than as a rigid reinforced structure when being moved by either land or water.

Finally, after a six-hour journey through the channel (precisely during the high tide), the sailing finished when the house reached the shore on the south side. Then another raft ramp had to be built there for the purpose of pulling the building -by human power again- towards its definite location. And the whole *minga* process was successfully completed.

Conclusions

As it can be seen, the action of moving a house by water in Southern Chile involves several steps before being executed. In turn, such steps can be gathered in three different stages that directly relate to each of the elements configuring the *minga* background: inhabitants, architecture and water, as shown in the diagram from Figure 9.

Figure 9. *The stages of a minga (source: the author)*



The first stage relies directly on people from the insular fishing villages and can be labelled as the "call for *minga*". The call is made by a family or a specific group within the community, and begins right after identifying the task at hand, (e.g., the need to move an existing building from one location to another), as if it was part or an architectural commission. Tasks such as organising some of the logistical aspects of the process, looking for available resources in town, and assigning roles to each of the volunteers, are certainly included in this initial stage.

The link between the above and the on-site preparation stage that follows, seems to be the appointment of an experienced craftsman who will both design and lead the entire *minga* scheme in terms of its technical approach, as if it was an architect in charge of a project. Steps from on-site procedure involves securing the existing house with ropes, placing the building on a raft ramp, and performing a series of changes on the structure. These last task may be seen as directly related to architecture, as it shows how buildings can adapt to different demands from its occupants, including their use as both vessels and portable dwellings. Perhaps these changes are feasible given the extended use of the *palafito* housing typology in the zone.

Then, the action of dropping the house into water sets the end of all on-site enhancements, and leads to the sailing stage. The main task of this stage is the towing procedure, which involves the help of boats that drag the house by the channels of insular Patagonia. Practical knowledge from artisan fishing here become a learning outcome when using ropes to tie an existing structure and moving it by water without damaging it.

As it was an architectural commission, the completion is accomplished when the house is both placed on its new location and ready to be occupied again.

Finally, the process of turning an existing wood structure into a portable building and then taking it to a distant site, may be matched with the concept of prefabrication that engineer Alistair Gibb (1999) describes, where most of the works -at different scales- are completed remote from the definite site. In that sense, and given the tracks of a nomadic behaviour from people inhabiting the insular areas of Southern Chile (Said, 2012), it is possible to think of this wood *palafito* housing typology as one with a temporary location, and also one initially designed and built with the flexibility for being both adapted and moved to other places on demand. Hence the next step is to focus on architectural details and on wood construction techniques that may allow the above adaptation on existing buildings to happen.

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