Collaboration, Conservation of local commerce and green architecture in larch tiles as facilitators of Sustainable Heritage Development. The case of the Centennial axis of Chonchi, Chiloé Chile.

Pareti1,5, D Flores2,6, L Rudolph3,7, V Valdebenito4,8
1 Universidad Andrés Bello
Fernández Concha 700 Las Condes, Santiago, Chile
2 Pontificia Universidad Católica de Chile
El Comendador 1916, Santiago, Chile
3, 4 Universidad Técnica Federico Santa María
Avda. España 1680, Valparaíso, Chile
5 s.paretiiuandresbello.edu
6 daflores2@uc.cl
7 loreto.rudolph@sansano.usm.cl
8 vicente.valdebenito@sansano.usm.cl

Abstract. The present study aims to explore how collaboration, the conservation of local trade and green architecture in larch tiles can facilitate Sustainable Heritage Development. The centennial axis of Chonchi in Chiloé has been selected as a case study, since (1) it is an axis that has been declared a typical area by the Council of National Monuments, (2) it is an iconic axis of the rescue and enhancement of local trade and rescue of trades, (3) the axis has mansions that reinterpret the neoclassical style and have been built in wooden tiles, (4) it is located in Chonchi, the three-story city in Patagonia (plateau, ravine y Fronteramar) (is that really something differentiating?), (4) in the center of Centenario Street, is the Museum of Chonchinás Traditions, managed by the neighborhood group by the Center for Development and Progress of Chonchi to maintain neighborhood seal and collaboration between local actors. The methodology is developed through the analysis of each of the heritage houses on Calle Centenario de Chonchi. Analyzing its: facade, wood and tile used, land use (commercial, residential, cultural, etc.), year of construction (see if there is any other variable that may be relevant to review). It is concluded that collaboration, the conservation of local commerce and green architecture in larch tiles facilitate Sustainable Heritage Development, as observed in the case of Calle Centenario de Chonchi, Chiloé Chile.

Keywords: SGD 11, SGD 8, collaboration and networks, local commerce, wooden architecture, green architecture.

1. Introduction
The purpose of this study is the centennial axis of Chonchi in Chiloé, an island located in the south of Chile. It is considered an interesting locality in terms of a sustainable city, mainly due to the high presence of native wood construction, specifically larch as cladding.

Chonchi is located on the eastern coast, it is a characteristic commune due to the fact that the emplacement forces are plateau, ravine and bordering the sea, which is why it is called a three-story city: first, there is the port, then a large part of the old houses on Centennial Street, and finally the square and the church (Mancilla, 2008).
Centenario Street constitutes a founding axis of Chonchi, it has structured the city since its origin as a town of Indians in the mid-seventeenth century (Cebrero, Mainier, Inostroza, Pineda, 2015), and was declared a national monument of Chile in the category of "typical zone", contains large wooden houses that were built at the beginning of the 20th century during the exploitation of the wood from Ciprés de las Guaitecas. The entrepreneurs of the business in this way began with the construction of their homes on Centenario Street, which in the following years caused the city to grow according to this axis, then giving way to other neoclassical constructions built in native wood such as cypress, coigue or luma (Consejo de Monumentos Nacionales de Chile, nd), mostly consist of two or three levels generally used as housing on upper floors and as shops on the first level.

The objective of this research is the enhancement of the centennial axis of Chonchi, as a particular urban structure in the Chilote context, highlighting the patrimonial and historical value of the wooden mansions that are in the axis, with a touristic-commerce use, adapted to the current circumstances. It is here that they seek to lay the foundations for a symbiotic relationship between tourism and tradition, exploring the conservation of identity and culture, by protecting it from the effects of mass tourism that can cause the loss of identity to make way for the commodification of heritage. (Sputnik, 2017)

2. Theoretical Framework
Make cities and human settlements inclusive, safe, resilient and sustainable; and promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all are part of the objectives of the United Nations Department of Economic and Social Affairs.

Human settlements appropriate land in different ways, they evolve, transform, adapt, innovate and change according to new demands, this is closely related to factors such as physical and social changes. Compact cities have been shown to use land more efficiently and are better located to provide public goods and basic services at a lower cost (UN-Habitat, 2019).

For objective 11, a series of indicators are used, distinguished from point 11.3.2, Proportion of cities that have a structure of direct participation of civil society in urban planning and management and that function regularly and democratically.

For objective 8, the modernization of the public sector is sought in the search for inclusive and fair wage policies for workers for the evolution of economic growth. And it stands out in achieving higher levels of economic productivity through diversification, technological modernization and innovation, among other things focusing attention on sectors with greater added value and intensive use of labor (UN-Habitat, 2019).
Chonchi Centennial Street, shows that a human settlement on a street scale evolves and adapts to the change of time and social demands, being able to configure a space of economic and cultural growth that promotes the development of the city on a macro scale. Centenario Street is an inclusive element in Chonchi because it relates the esplanade of the church and the Embarcadero by its length. In this axis the main buildings of the commune were congregated and its size increased over the years. The buildings on the street are characterized by the reinterpretation of a neoclassical style that was a trend in many ports around the world. This trend was adopted by carpenters and craftsmen due to a kind of cultural syncretism with Europeans living in the area, which led to a unique wooden architecture within the city that is currently recognized as cultural heritage (Cebrero, Mainier, Inostroza, Pineda, 2015), similar is the case that occurred in the port of Talcahuano, Bío Bío Region, Chile (Cerda G, 1998) where there was also a cultural mix between European settlers and tenants, reflected in the marked colonial neoclassical influence in its constructions, and that like the houses in Chiloé, they were built in wood and also registered as architectural heritage of the city, motivated by the deterioration of the constructions and by the need to recognize their architectural value.

In Chiloé, the boom in wood production undoubtedly motivated the construction of houses in this material, a renewable resource that, from the perspective of wood materials, has significant environmental significance, it is one of the first construction materials, if it has a correct maintenance and is of a kind durable, they can be functional in terms of structural and termination by long time periods (Milner, 2016). The larch appears in most of the Chiloé houses as an exterior cladding due to the properties it has (Pastor E, 2018): it protects against rain and humidity, both determining factors in the generation of a habitat for the Chiloe culture. The use of larch is considered a factor that allows the houses on Centenario Street to be categorized as sustainable heritage because: first, the wood is of local origin; secondly, it is treated by local carpenters and lastly its durability is considerable, so the renovation of them is carried out after long periods of time.

Local commerce in Chonchi is directly related to the street axis and gives life to a collaborative community system and the formation of commercial support networks from the beginning of the town. From the "King of the Cypress", the businessman who worked with cypress wood in the economic boom, to other tenants who manufacture cigarettes, clay dishes, shoes, and warehouses. The number of houses was small and in them there were small businesses. Support networks were generated that promoted the progress of the town, it began without vehicles, without a dock and without a waterfront, it lacked drinking water so the community had to go and fetch water from the well, and also electricity, there was only carbide light to illuminate the town with paraffin lanterns. Between Centenario Street and Pedro Montt there were ten houses (Municipality of Chonchi; Bishopric of Ancud, 1986).

Collaboration was not only seen within these streets, but also with those who came from the countryside, thus supplying firewood, potatoes or charcoal that were exchanged for other types of merchandise.

The objective of this research is the enhancement of the centennial axis of Chonchi, as a particular urban structure in the Chilote context, highlighting together with this the patrimonial and historical value of the wooden mansions that are in the axis, with a use and important commercial-tourist potentiality adapting to current circumstances. It is here that they seek to lay the foundations for a symbiotic relationship between tourism and tradition, exploring the conservation of identity and culture, by protecting it from the effects of mass tourism that can cause the loss of identity to make way for the commodification of heritage. (Sputnik, 2017)

3. Methodology
Two branches of study will be addressed to approach the subject. First, a contextual and theoretical study will be developed from secondary sources related to the topic of the patrimonial situation of Chiloé from a historical perspective. The factors of the birth of the vernacular style of its subsequent
expansion in the archipelago are studied, understanding it in its close relationship with Chiloé culture and identity, characterizing its richness and understanding where its tourist attraction comes from. Secondly, a specific analysis of Chonchi and its Centennial axis will be carried out as an object of study, where in addition to an analysis similar to that of the first point, an analysis of the heritage mansions that give character to the axis will be carried out. This part of the study deals with the presentation of the mansions as an architectural typology that is part of the Chiloé school of architecture, thus being the materialization of fundamental techniques and cultural aspects for the archipelago and its understanding from the perspective of tourism. Both the constructive and functional aspects are studied within the tourist-commercial context that the Centenario axis has. For this, a comparative table is made that takes 5 representative houses of the axis, which presents the facades, their materiality and use.

4. Results
Currently Chiloé is presented as one of the main tourist destinations in southern Chile. It advocates both a particular landscape both geographically and architecturally and a culture marked in its rites that today are almost transformed into spectacles for the tourist. Within the questionable or not of the latter, understanding that tourism is already part of the dynamics of the archipelago is necessary, but likewise, it is necessary to establish how it is integrated into the social and cultural networks of a place where its cultural heritage is it reflects in its daily life through the construction of a clear identity rooted in the territory that reflects both indigenous and European aspects.

This cultural wealth that is advocated as a justification for the arrival of tourism has its origin since the time of the conquest, and is based on the cultural syncretism that generated contact in the Huilliches and Chonos peoples with the Jesuits who arrived from Europe (Rojas, 2021). The contacts within the framework of the evangelizing missions of the latter resulted in a mixture that today translates into the Chiloe identity, where not only material aspects are recognized, but also immaterial ones.

Thus, among the most notable elements of this cultural syncretism is the configuration of a carpenter and architectural school known as the Chilota School (Subsecretariat, appointment), which, through indigenous knowledge regarding the types of wood and their use, added to the constructive knowledge brought from Europe, it gave rise to the construction of a clear architectural imaginary of the archipelago, reflected in elements such as the stilt houses or the churches of Chiloé, buildings that through wood and their transformation into different constructive elements, such as the larch tiles reflect the material consolidation of an ancestral knowledge and culture.

Although the Chilota school is the ideal example regarding the material development of cultural syncretism, this also resulted in the consolidation of a culture strongly rooted in the sea and the territory, and in a religiosity such that it combines elements belonging to indigenous cosmology and elements of the Catholicism resulting from the evangelization process. In this sense, it is not strange to hear how the island originated after the territorial dispute between Ten Ten Vilú and Cai Cai Vilú while on the horizon it is possible to see the town’s church with its parishioners (Rojas, 2021; Gonzales, 2013). Without going any further with respect to this last point, from an urban perspective, the church takes the role of center, generating the development of the towns around it.

Thus, the Chiloe culture is characterized mainly by its religiosity and rituality, transforming it even into part of its daily life, by its relationship with the territory, as men of the sea and land, and by its architecture, not from a specific constructive or material perspective, that although it also influences, it is not the center of the assessment, but because of its role of materialization of the other cultural aspects; The buildings resulting from the Chiloé school are identified as the body built of a cultural richness and an identity of the inhabitants of the archipelago (Rojas, 2021).

Chonchi, as part of the archipelago, is no exception, concentrating these characteristics on Centenario Street, which is configured as the main artery of the city, joining the Church of Nuestra Señora del Rosario, also known as San Carlos Borromeo, with the waterfront. ; almost poetically, the
axis unites two of the main elements of Chiloe idiosyncrasy. The axis is confused in three strata with respect to its slope, which has earned the recognition of the city of Chonchi as "the City of the Three Floors."

This city differs somewhat from the rest, understanding that its urban development, instead of taking the church as its center, takes the built axis, place both presently and historically. This logic implied that a large part of the buildings considered of patrimonial value are located along the axis, which finally meant the declaration of the sector as a Typical Zone by the Council of National Monuments in 2000 (National Council of Culture and the Arts).

The Chilote vernacular was characterized, in addition to the use of wood, by the construction of low-rise houses, separated from the ground and with gabled roofs, which prioritize the full over the void in order to maintain the temperature inside and For this same reason, they were built around a fire pit that gave heat (Rojas, 2021; Riveros and Tendero, 2019). These characteristics become almost universal within the archipelago from the logic of the construction typology, but like stilt houses, For example, in Chonchi the model underwent a reconfiguration hand in hand with the economic peak associated with the exploitation of wood, specifically the Guaitecas cypress, which implied greater purchasing power, and the arrival of European immigrants who brought the neoclassical to the place (National Council of Culture and the Arts) and also added their own constructive experience to the already particular Chilota school of architecture. The result was some species of mansions, two or three stories high, that interpreted both the European neoclassical and the vernacular Chilote. Thus, the changes to the neoclassical model were reflected mainly on the outside, where wood took its place and the forms it always used within the archipelago, while maintaining its logic towards the interior and regarding the composition of the façade. In addition, the port role of Chonchi introduced new materials that were quickly integrated into the vernacular, such as zinc plates and wallpapers (Fischer, 1987). It is important to highlight how, although the model brought from Europe implied a kind of high standard, the reinterpretation made in Chonchi, under the eaves of its vernacular implied a kind of precariousness associated with self-construction and roots with its own carpentry style as a base. Of the style, therefore one would speak almost of a new style, a neo-classical Chilote, characterized by respecting the precepts of the European model, but reproducing itself in the Chilote way and within its capacities.

Programmatically the European model was also aspired. Thus, the first floor was used for commerce while the upper floors were transformed into housing. This decision transformed the Centennial axis into a kind of commercial promenade, a condition that continues to this day and is presented as an opportunity considering the characteristics of the sector and the current influence that tourism has within the logic of the archipelago as an opportunity for development.
Table 1: Characterization of chonchi Houses

|                         | Alvarez Pérez House | Alvarez House | Andrade | Borquez Andrade House | Cárccamo House |
|-------------------------|---------------------|---------------|--------|-----------------------|---------------|
| **Dibujo**              | ![Image of house 1](image1.png) | ![Image of house 2](image2.png) | ![Image of house 3](image3.png) | ![Image of house 4](image4.png) | ![Image of house 5](image5.png) |
| **Materiality**         | Wood                | Wood          | Wood   | Wood                  | Wood          |
| **Facing**              | ![Pattern 1](pattern1.png) | ![Pattern 2](pattern2.png) | ![Pattern 3](pattern3.png) | ![Pattern 4](pattern4.png) | ![Pattern 5](pattern5.png) |
| **Program**             | Commercial          | Housing / Comercial | Housing / Comercial | Housing / Comercial | Housing / Comercial |
| **Estate of Conservation** | Regular             | Regular       | Regular | Regular               | Regular       |

This characterization of the Centennial axis from material and cultural logics, added to the declaration of Typical Zone mentioned previously and the belonging of the Church of San Carlos Borromeo to the 16 churches declared a World Heritage Site by UNESCO, transform Chonchi into one of the main tourist attractions of the archipelago. In this sense, it is relevant to ask how tourism influences current dynamics, and how this can be projected into the future thinking about the sustainable development of this city.

Within this debate, it is necessary to understand, on the one hand, the finite condition of wood as a construction material, understood as a material susceptible to fire, humidity, xylophages, among others, proposing a useful life of approximately 60 years (Rojas, 2021; Riveros Tendero, 2018), and on the other hand, in the particular case of Chonchi and the Centenario axis, as some of these large houses of importance for the patrimonial nature of the area are in complex conservation states (Araya and Alonacid, YEAR), therefore, raising how to solve these problems is an important part of defining the relationship between tourism, culture and architecture with a view to sustainable development, understanding that the restoration and conservation of these buildings is part of the problem and part of the development opportunity.

The Chonchi Centennial axis has certain potentialities that would allow sustainable urban development from a heritage perspective, considering the role of tourism within the archipelago. On the one hand, there is a raw material with which to work, referring to the built body of the axis that not only includes the houses as valuable elements but also the church and relevant geographical elements for understanding the area, this kind of staggering to which reference was made at first and that translates into the construction of sockets that finally enrich the constructive complexity of this variation of the vernacular chilote. In addition to this, it is a sector recognized as heritage by national official actors and also by international organizations, which mainly provides visibility to the case, but also means technical and economic assistance within the capacities of each actor to the maintenance of these buildings, assuming that these declarations are double-edged as they also imply restrictions regarding the autonomy of the owners to make decisions regarding their properties. Thus, despite this, there are
support programs for the conservation of these buildings, such as the Minor Works Funds granted by the Council of National Monuments (Araya and Almonacid). Along the same lines, the commercial nature of the axis that has been maintained since the construction of these houses implies the existence of a programmatic logic associated with the sector that allows proposing a kind of argumentative line for a tourist urban development in the area, understanding these businesses current as germ for the consolidation of, for example, a commercial hotel district, which is the incipient line that it has today (Vergara, 2018). Finally, almost redundantly, heritage recognition beyond official status implies that from the local population there are valuation dynamics that fall on the axis, in this sense, proposing a development model as it is being done is inserted within a framework If it is carried out in the correct way, that is, without dramatizing the existing heritage, but promoting it from its own systems of relationships, it would become a way of promoting this and local value processes, which finally consolidates the population from its identity.

The establishment of these logics should not overlook the local population at any time, not only from the cultural perspective just raised, but also thinking about problems such as gentrification that is not alien to the archipelago (Soto, 2017). In this sense, tourism development should be considered as a productive activity for those who are already part of the axis, thinking about the inclusion of associated services and equipment, but without this implying the displacement of those who today give character to the place. Thus, a sustainable urban and heritage development within the Centennial axis would also imply its implementation for the sustenance and economic development of the current owners and merchants of the sector, understanding the arrival of tourism as a symbiotic entity for the care and promotion of the area.

What is raised in the research does not start from scratch, since Chonchi is already assuming this character with respect to the current role of the axis within its dynamics. Thus, touring the area reveals the first steps to complement commercial development with heritage and tourism through actions such as appealing to a pseudo-corporate image representative of the sector, through the establishment of a similar style in advertisements, signs or information regarding existing businesses (Figure 3), the installation of commemorative plaques for buildings recognized as heritage (Figure 4) or establishing heritage circuits (Figure 5), these last two actions being germ relevant to the heritage of the area to begin to highlight not only from the material perspective associated with the existence of the building in the place, but as part of a larger system with immaterial dynamics of importance.
This last reflection can be extrapolated to the complete system, thinking that for tourism to take a relevant role within a sustainable heritage urban development, it must understand and take charge not only of the built body that is being used as a cultural resource, but also also of the internal dynamics that make it heritage, this is not a restriction of the relationship, but a potentiality for the correct development of a city and a community that works based on its traditions.

5. Conclusions

- Unlike the other cities of Chiloé, Chonchi is a particular case within the island due to its urban development around the axis of a central street (Centenario) and the reconversion of the Chilote vernacular style through the interpretation of the neoclassical style brought from Europe by immigrants.
- Calle Centenario configures a recognizable area as a unit associated with this axis, where there is the potential to establish a model of sustainable urban development associated with heritage and tourism, where both city and heritage are capable of sustaining themselves through tourism in a balanced manner.
- Among the recognized potentialities, a local commerce system associated with the owners of the real estate in the sector stands out, which could be greatly benefited by the development in the tourist area.
- Tourism development provides the possibility of maintaining buildings recognized as heritage, which, given their age, scale and materiality, require constant maintenance, which in normal situations is made difficult by the capacities of the actors directly related to the buildings.
- The development of a balance between the city, heritage and tourism, can allow a symbiotic development between the agents of the sector, achieving benefits to the different areas of the city, focusing on an integral development of the sector.

6. References

[1] Mancilla J 2008 Pueblos de Chiloé (Castro) p.57
[2] Cebrero P, Mainieri A, Inostroza J, Pinera G and Getarq Ltda 2015 Levantamiento Crítico Eje Centenario (Chonchi: Consejo Nacional de la Cultura y las Artes) pp. 0-64
[3] ONU-Hábitat 2019 Indicador ODS 11.3.1 Módulo de capacitación: eficiencia del uso de la tierra Programa de las Naciones Unidas para el Asentamiento Humano (Nairobi)
[4] Cerda G 1998 Patrimonio arquitectónico de Talcahuano Arquitecturas del Sur 14 (27)
[5] Milner H R and Woodard A C 2016. Sustainability of timber and wood in construction.
[6] Pastor E 2018 El Bordemar en la Isla de Chiloé
[7] Municipalidad de Chonchi and Obispado de Ancud 1986 Cuaderno de la Historia (Ancud)
[8] Rojas E 2021 Artifica tu casa: Edward Rojas habla sobre la arquitectura de Chiloé, [Online Video]. Youtube July 21 2021 [Last view: 2021 December, 9th] https://www.youtube.com/watch?v=WY2ZLPGScdg.
[9] Gonzales M 2013 Habitat de Bordeaux. Gestación, evolución y perspectivas turísticas del patrimonio popular palafitico en el Archipiélago de Chiloé [Thesis for Master’s Degree] University of Valladolid
[10] Consejo Nacional de la Cultura y las Artes 2015 Levantamiento Crítico Eje Centenario (Chonchi)
[11] Riveros P and Tendero R 2021 Vernacular architecture in the palafitos from Chiloé Building & Management 5 (2)
[12] Fischer R 1987 El valor patrimonial de Chonchi, en Chiloé Arquitectura del Sur 2 (10)
[13] Araya K and Almonacid M (no date) Memorial de Intervención Patrimonial Calle Centenario de Chonchi
[14] Soto L 2017 Turistificación en los Barrios de Palafitos de Castro, Chiloé, Chile: Gamboa, Pedro Montt 1 y Pedro Montt 2 [Thesis for Master’s Degree] University of Chile
[15] Sputnik 2017 El turismo masivo provoca una pérdida de identidad de las ciudades