









Politecnico di Torino  
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## **Preserving local heritage in Puglia: restoration and rehabilitation of Masseria Aia Nuova**

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# Contents

## Introduction

### 1 Apulia

1.1 Geography and Territory	12
1.2 General History	18

### 2 The Apulian Masseria

2.1 History	24
2.2 Types	26

### 3 Masseria Aia Nuova

3.1 Case Study	40
3.2 Location - Novoli	42
3.3 History and Description	52
3.4 Survey Drawings	64
3.5 Construction Materials	74
3.6 Architectural Analysis	78

### 4 Project Goals

4.1 Layout Organisation	106
4.2 Demolitions and Constructions	108
4.3 The Project	112
4.4 Architectural Additions and Changes	116
Appendix Norms and Regulations	126

## **5 Decay Analysis and Intervention**

<b>5.1</b> Pre-diagnostics	130
<b>5.2</b> External Decay Analysis	132
<b>5.3</b> Internal Decay Analysis	144

## **6 Project**

<b>6.1</b> The Distillery	150
<b>6.2</b> Doors and Windows	152
<b>6.3</b> Design Drawings	156

## **Bibliography**



# Abstract

The masseria has oftentimes taken center stage throughout Apulia's history, being essential for the management, growth and protection of its land and population, and hosting various activities deemed vital for agriculture, trade and craftsmanship. Not only was the masseria a hub for farmers and workers, but it was also a place where people gathered to celebrate a good harvest, it was a place of congregation and socialization, and above all a place where the landlord and the farmer, the nobility and the working class, coexisted in tandem with the concerted goal of making a living and managing the vast arable lands dispersed throughout the Apulian plain. Today, an increasing shift towards the city and the loss of interest in farming and manual labor means that more and more Masserie are found abandoned or re-purposed for outright different needs, such as to cater for the ever growing hospitality sector and with it the flock of tourists visiting during the sunny months of the year.

A different approach, one that encourages the conservation and preservation of the Masseria under its original purpose, not only ensures the protection of this important heritage, but it also restores the link between the land and its inhabitants once more.

# Introduction

Italy is a land rich with history, its gentle plains, its rolling hills and towering mountains bear witness to millennia of human occupation. Its ideal location in the middle of the Mediterranean made it a gateway between east and west, north and south. A consequence of this are the various civilizations that had, at a certain point in time, come to call this peninsula their home and in the process forged thriving communities, empires and kingdoms. These civilizations now long gone, contributed to the identity of Italy as we know it today.

It is due to this rich history, that Italy today holds the highest amount of *UNESCO*<sup>1</sup> cultural world heritage sites (50 in total) spread out across the country. Most of which fall under the architecture category.

The vast quantities of historical and cultural sites in need of maintenance inside its territory, enabled Italy to become the world leader in conservation and restoration efforts both locally and abroad. Born out of the necessity and the moral duty to preserve precious local heritage.

With this in mind, the topic of this research revolves around Italian *Masserie*<sup>2</sup>, which translates to fortified or unfortified farmhouses or country estates, found mainly in the south of Italy, with

the main focus on those located in the region of Puglia.

The aim is to identify the historical background, typologies and functions of these structures, their current condition and efforts to restore and conserve them along with a detailed case study of *Masseria Aia Nuova* within the same context.

The *Masseria Aia Nuova* has been the subject of a graduation thesis for the Systemic Design Master program at the Politecnico di Torino, titled "*Aia Nuova: Progetto di Riqualificazione Sistemica di una Masseria in Salento*"<sup>3</sup> which translates to New Aia: Systemic Requalification of a Masseria project. In the thesis mentioned, the Masseria would go on to be a participant in multiple collaborations with other producers in which there would be an exchange of products and raw materials.

The main activity to take place within the walls of the Masseria would be distillation to produce Grappa with the other accompanying minor activities to be of a complementary nature. For this purpose grape pomace would be acquired from local wineries which originally use this by-product of wine making as a compost for the terrain, but without any real economic advantage.

Aside from the production of Grappa, the new

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1. Italy, <[whc.unesco.org/en/statesparties/it](http://whc.unesco.org/en/statesparties/it)>;

2. Masseria, <[treccani.it](http://treccani.it)>;

3. Y. Franco, C. Manieri, *Aia Nuova: Progetto di riqualificazione sistemica di una masseria in Salento*, relatore Prof.ssa Silvia Barbero, Tesi di Laurea Magistrale in Design Sistemico, Dipartimento di Architettura e Design, Politecnico di Torino, 2019, p.94

activity would introduce grape pomace flour, an innovative entry in the Italian market. Other products of the Masseria include grape seed oil and pellets made from the dry hard tissues of the entire grape.

While these activities take place inside the Masseria itself, the terrain surrounding it would be put at the disposal of Birra Salento, the brewery provides the seeds for the barley to be grown on site, the harvest is then reacquired by Birra Salento.

Thus, the Masseria is integrated into a functional system sustaining an activity of the region through production of raw materials necessary on the local level and with sustainable organic practices.

This thesis picks up on the previously elaborated data as a launch point to assess what needs to be restored and what needs to be conserved from an architectural and cultural point of view.

An expected final result of this thesis is a full on rehabilitation both functionally and architecturally of the abandoned Masseria, into a productive center that revitalizes the regional economy, all while using sustainable techniques and local materials in all stages of the restoration work and into the manufacturing phase.







An aerial photograph of a rugged coastline. The foreground is dominated by large, light-colored, cracked rocks. The sea is a vibrant turquoise color, with white foam from breaking waves visible. A small, bright green tent is pitched on one of the rocks. A dark teal circle is positioned on the right side of the image, containing the number '1'.

# 1

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# Apulia

*Apulian Sea, Photo from Pexels, free use*



# Apulia

## 1.1 Geography and Territory

The Apulian territory has an area of 1,934,500 hectares, confined between Molise in the north west, Basilicata and Campania in the west and is surrounded by the Mediterranean sea from the east, north and south.

The territory is prevalently flat with 53% of the land being plains, 45% hills and 2% mountains. These mountainous parts are found in the province of Foggia in the north.

The most important plain in the region is the Tavoliere delle Puglie or Table of the Apulias in english, it extends over 4,000 km<sup>2</sup> and is the second biggest plain after the Po valley.

There are 29 rivers mostly characterized by short spans, and 8 lakes.

The region has 762km of coastline, 487 of which are on the Adriatic, 57km on the Otranto canal, and 218km on the Ionian sea. There are 14 islands, all of them are of relatively small size divided in 3 archipelagos: The Tremiti, The Cheradi and the Pedagne, the two principal gulfs are the gulf of Taranto, which is also part of the territory of Basilicata and Calabria, and the gulf of Manfredonia on the Adriatic sea.

The apulian coast is characterized by the presence of 34 caves, sign of a karstic formation, most notable of these are the Castellana and Trullo caves. The Dolina Pozzatina is 100 meters deep and 1,850 meters in diameter making it one of

the biggest in Italy. It also represents one of the most spectacular karstic formations on the Gargano promontory, the second biggest skinhole in Europe.

The Grava di Campolato is a vertical pit around 100 meters deep, its the most important pit of its kind in the Gargano area, both for its depth and development and is one of the main caves in the southern half of Italy<sup>1</sup>.

Also important is the presence of thermal sources in the area, with 5 main centers: Terme di Margherita di Savoia in Foggia province, Terme di Torre Canne a Fasano in Brindisi province, Terme di Santa Cesarea in Lecce province, Terme di Castelnuovo della Daunia in Foggia province and the Terme di Castellaneta Marina in Taranto province.

There are two saltpans, most important of which is Margherita di Savoia that extends some 4,000 hectares. Notable is the presence of pink flamingos in its area along with the practice of bird watching.

Around 30 percent of Apulian territory is considered a part of protected natural areas, this makes Apulia a special region with rich biodiversity and also a bridge between continental Europe and the Eastern Mediterranean. Out of almost 6,000 plant species in Italy, some 2,500 of them (representing 41 percent of the total) are present in

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1. *Fenomeni di Carsismo in Puglia, Grotte, Doline, Caverne e Coste Rocciose*, Puglia Blog, <puglia.com>;



## GEOGRAPHICAL MAP



Figure 1. Y. Franco, C. Manieri, *Aia Nuova: Progetto di riqualificazione sistemica di una masseria in Salento*, relatore Prof.ssa Silvia Barbero, Tesi di Laurea Magistrale in Design Sistemico, Dipartimento di Architettura e Design, Politecnico di Torino, 2019

Apulia, also present are 47 natural habitats out of 142 counted in Europe.

There are two national parks in Apulia: First comes the Gargano with 121,118 hectares then Alta Murgia with 68,077 hectares<sup>2</sup>; eleven regional parks; three marine protected areas: Tremiti islands, Porto Cesareo and Torre Guaceto; sixteen state reserves; seven regional reserves and three protected oasis<sup>3</sup>.

### TERRAIN USAGE

Apulian territory is prevalently used for agriculture with 1,388,899 hectares out of which 1,285,289 are used and 103,610 are unutilized. Built up areas constitute around 10 percent of the territory and 8,890 hectares are used for industry. The most prominent industrial areas is the one in Taranto, covering 2,203 ha, one in Brindisi with 2,700 ha and another in Bari-Mondugno at 1,161 ha.

An issue plaguing apulian territory is the urbanisation of its coastline at 454 km, or 56 percent of the total. Forested areas total 179,040 ha, out of which 145,889 are covered by forests, arboriculture for wood production, tall woods, and areas temporarily lacking soil cover. The remaining 33,151 ha represent other forested territory comprising low woods, sparse woods, shrublands, and an unaccessible or unclassified forested

grounds<sup>3</sup>.

### AGRICULTURE AND CULTIVATION

Agriculture represents one of the main productive sectors of Apulia, both for the quality and amount of territory allocated to the sector (1,285,289 ha).

The main products of this sector derive from arboriculture that occupies 564,421 ha of the region and from cereal cultivation that covers 411,575 ha.

Olive trees are the core cultivation in the sector, a typical native tree, for which Apulia retains the number one in terms of national production, it counts 50 million trees and around 9 million tons of olives produced annually.

Second in place for number of hectares cultivated, are grape vines, both for wine production and for table consumption. Other prominent products include but are not restricted to: cherries, apricots, almonds and on a smaller degree apples, pears, figs, prickly pears, plums, pomegranates. As well as 9,304 ha dedicated to citrus plantations<sup>4</sup>.

Apulia is the main center of wheat production on the national level, with a dedicated land area of 343,300 ha for its growth. In recent years the fo-

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2. *Terme Puglia*, Termelandia, <termelandia.it>;

3. *Parchi e Aree Protette in Puglia*, <parks.it>;

4. *Dati Agri Istat*, <agri.istat.it>, 2017;

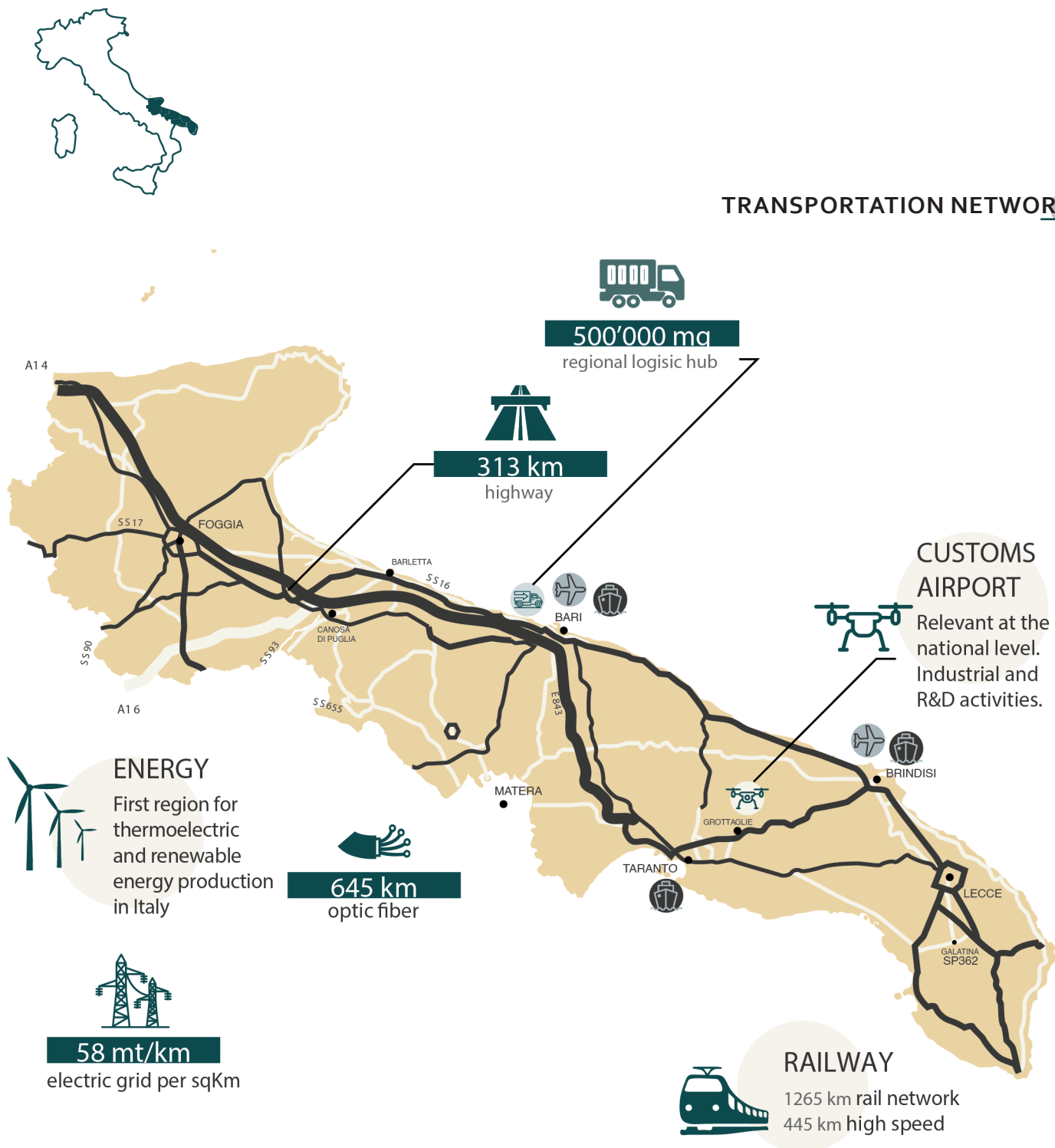


Figure 2. ibidem

cus has been to rediscover and protect local grain varieties such as Russello, Khorasan and Senatore Cappelli.

## POPULATION

Apulia's population numbers 4,048,242 inhabitants, with an almost identical percentage of men (48,6%) and women (51,4%). The population density is relatively low at 208 residents per square kilometer, found in the major cities and some towns of larger proportions and importance in the region. The regional median age is around 40 years<sup>5</sup>, while the national figure stands at 45,9.

This figure is likely to increase with time due to the decline of birth rates, representing a negative trend in demographics, with a decrease from 10 to 7,4 in 5 years while the the mortality rate increased from 7,9 in 2002 to 9,9 in 2017.

In Apulia, the decline of births coupled with the rise of mortality rates would sound an alarm, the decrease of the population.

Another main reason contributing to the decrease in population count in Apulia is the ongoing immigration with 22,879 immigrants in 2016, mostly aimed at other Italian regions and mainly in northern Italy, first of which is Lombardy, followed by Emilia-Romagna, Piedmont and Veneto.

Principle motivations for immigration is educational and work related, affecting mainly the under thirty portion of the population with similar figures for all provinces in Apulia except Bari, which offers high opportunities in terms of jobs and education<sup>6</sup>.

Worth noting is the presence of foreign immigrants, that accounts for 122,724 individuals or 3,3% of the regional population. Their countries of origin are in Africa (mostly Morocco, Senegal and Nigeria), Eastern Europe (mostly Romania and Albania) and China at 4,4%. The majority are from an age group set between 20 and 59 years. According to residence permit applications, their immigration goals are deduced as being: Asylum, work and family related motivations<sup>7</sup>.

Many of these immigrants end up as the main laborforce behind seasonal agricultural tasks, such as picking olives, grape orchards and various fruits and vegetables.

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5. *Dati Istat*, <istat.it>, 2016;

6. Fatiguso V., *Puglia, la Grande Fuga. Ventimila Giovani Partiti*, *Corriere del Mezzogiorno / Economia*, <corriere-delmezzogiorno.corriere.it>, 24 agosto 2017;

7. *Puglia. Rapporto Immigrazione 2016*, Regione Puglia, MiCS - Migrazione Condivisa e Sostenibile, 2016;





Figure 3. *Ulivi secolari nel Salento: scopriamo dove si trovano*, Mare Vivo Castro, <mondomarevivo.com>



Figure 4. *Wheat field*, Photo by Kaboompics .com from Pexels, free use



Figure 5. *Vineyard*, Masseria Le Fabriche, <lefabriche.it>



Figure 6. *Melograni Martino - Melagrane del Salento*, <martinobio-melagrane-del-salento.business.site>, 28 ottobre 2017

# Apulia

## 1.2 General History

Apulia has been home to mankind for thousands of years, with evidence of human settlement dating back to the Middle Paleolithic period, circa 80,000 BC.

The region is characterized with innumerable points of interest, be it natural, cultural, artistic or architectural spanning all human ages, due in credit to the numerous civilizations and empires that colonized and occupied it.

As attestment of prehistoric human activity, multiple megaliths and dolmen are found all around Apulia<sup>1</sup> to the point of earning the title "Stonehenge of Italy", these relics are located in the areas of Vitigliano, Minervino di Lecce, Giuggianello, Giurdignano and Martano among others.

Major permanent cities and settlements came with the arrival of the Messapians, Peucetians and Daunians from across the Adriatic sea. These lapygian tribes settled in southern, middle and northern Apulia respectively around the 7th century BC, and founded many of modern day Apulian cities including but limited to: Brindisi, Otranto, Mesagne, Manduria, Nardo. While archaeological remains dating to that era are found in Muro Leccese, Vaste and Vitigliano.

The Romans<sup>2</sup> conquer the peninsula in between

the 4th and 3rd centuries BC while eyeing the strategic port city of Brindisi due to its proximity to Greece and the Balkans and as a launchpad for their conquest. These aspirations were met with heavy resistance, especially from Taranto, a city founded by the greeks and with whom it held a strong bond, An alliance between Epirus and Taranto fought the Romans for control over the peninsula but eventually Rome emerged victorious. Under Roman control, breakthroughs in public works and infrastructure were favorable, and saw the Appian way find its way through Taranto, Oria and finish in Brindisi. Brindisi itself became a very busy port for trade with the East. Lecce saw a period of prosperity with works such as the Amphitheatre and the Roman theatre and a connection to modern day San Cataldo's port.

In 476 AD, the fall of the Western Roman empire ushered in a series of new conflicts over the ownership of the territory, this time between the Lombards, the Byzantine empire, Ostrogoths and Saracens. The peninsula exchanged hands several times over a few centuries and some of its main cities were ravaged by war until the arrival of the Normans in 1070. This period of time saw a drastic change in the fabric of Apulian society, especially in the southern portion known as Salento, the Byzantines<sup>3</sup> saw fit to repopulate the peninsula due to its strategic location and

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1. *Dolmen e Menhir*, <<http://www.pugliaandculture.com/it>>;

2. Verardi A., *La Puglia ai tempi dell'Antica Roma*, <<https://www.pugliain.net>>, 16 Novembre 2014;

3. Verardi A., *La bizantinizzazione della Puglia*, <<https://www.pugliain.net/>>, 22 Febbraio 2015;



after having been depleted due to wars, as such the empire encouraged the migration of byzantine citizens to the region. That migration is still felt today, with a portion of Salentine inhabitants speaking a dialect of greek that traces its roots to that time period. Worth noting that Venetian relief efforts against Arab armies occupying Bari earned them an ever increasing role in Apulian society, as such a relative period of calm prevailed even if for a short span of time, and trade with the Republic of Venice increased.

The Norman invasion<sup>4</sup> supplanted the Byzantine Empire, and merged the peninsula into the Kingdom of Sicily in 1071 under Robert of Altavilla, better known as Roberto il Guiscardo. The Normans introduced important political reforms, paving the foundations for a strong feudal system and went on to enhance the military capabilities of the region by constructing new forts and castles, notable examples exist, such as the Specchia Torricella in Nardo, and the one in Modugno. It is during this period that a hybrid form of architecture encompassing features from Byzantine, Romanesque and Arab culture dubbed "Apulian Romanesque" saw great importance and prominence, with examples such as the cathedrales of Otranto, Bari, Trani and Taranto being testimonial to its success.

The last of the Altavilla line of kings and queens to reign over the kingdom was Queen Costanza, whose marriage in 1194 to Henry VI King of the Germans and Emperor of the Holy Roman Empire saw the advent of German Holy Roman control over the territory. His son, Frederick II saw over the reconstruction of Bari, which after a rebellion in 1156 against Norman rule got it destroyed in battle under orders of King William I, with only the Basilica of San Nicola being spared. Castel del Monte, constructed around 1240 by William's son king Frederick II is a prized example of many newly erected fortifications under Holy Roman reign and is also a UNESCO World Heritage Site<sup>5</sup>.

It is during this period, that the port city of Brindisi became a much important gateway to the Orient, serving as a launch point for pilgrims and soldiers heading to the Holy Lands, along with the cities of Bari and Foggia witnessing important growth.

Starting in the 15th century, commercial activity was particularly thriving with Apulia hosting influential communities of merchants from Venice, Ragusa, Genova to name a few.

It is also towards the half of that century that Apulia came under Aragonese domination<sup>6</sup>, becoming a part of the Kingdom of Naples. The period saw the beginning of Ottoman incursions

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4. *La Storia Della Puglia Dall'epoca Preromana Fino All'unità D'Italia*, <<http://www.cittacapitali.it/index.html>>;

5. *Il Castello*, <<http://www.casteldelmonte.beniculturali.it/>>;

6. *Normanni, Svevi, Angioini e Aragonesi in Puglia*, <<http://www.pugliaimperiale.com/turismo/index.asp>>;

into Salento, notably with the invasion of Otranto.

Towards the middle half of the 16th century, Apulia came under Venetian control which also coincided with the end of Turkish raids into the territory, in this period businesses flourished and the Apulian cities were granted special privileges, at the same time the construction of many important religious structures started, thus beginning a thriving artistic activity between the 16th and 18th centuries, most notably in Lecce which went on to be called the Baroque capital of Southern Italy.

The 17th century saw misfortune and natural disasters affect the entire region, from the worsening economic conditions in Taranto leading to the revolt of 1647, to the deadly earthquakes of 1627 and 1646 and the epidemic of 1656 that struck Naples.

In 1713, the Treaty of Utrecht briefly handed Puglia over to the Austrians until they were defeated and replaced by the Bourbons after the Battle of Bitonto in 1734, there was a period of economic growth through the construction of new roads and the development of ports. But economic growth mainly came during the Napoleonic period at the end of the 18th century, due to the

abolition of feudalism and adequate distribution of public land, it was also during this period that most of the famous conical Trulli houses were built, even with examples dating back at least 400 years older.

This was a period known for administrative and economic organisation as well as agricultural reform.

In 1861, and as a consequence of rising Italian will for unification and democracy, Apulia was annexed into the new Italian state<sup>7</sup>.

At the advent of the new century, and especially during the Great War, the port cities of Brindisi and Taranto were instrumental in providing trade and heavy industry works due to their safety and distance from the battlefields of the time.

Apulia came under fascist rule in 1922, with its Mussolini's plans to increase Italian auto-sufficiency<sup>8</sup>. Apulia was central to that desire, as it saw great projects in infrastructure, public and educational institutions along with land rehabilitation efforts, this resulted in Apulia becoming one of Italy's main production centers for wheat, olive oil and wine which is still valid to this day. The region simultaneously saw great devastation through allied air attacks during the Second World War, at great human and economic cost to the locals.

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7. *Risorgimento*, <<https://www.britannica.com/>>;

8. *Mussolini's Battles*, <The Battle for Grain, <https://searchinginhistory.blogspot.com/>>, Friday, May 16, 2014;

9. Massafra A, *Storia della Puglia: Dalle origini al Seicento*, Laterza, 2009. pag 32;

After the war, mass immigration of Apulian residents towards the industrialised Italian North began due to the higher standard of living and better work opportunities.

While this division between North and South carried on to this day, Apulia was in a much better state than the rest of the surrounding southern regions due to its intense agricultural output and the recently booming tourism sector.







A photograph of a rustic, weathered stone building with a dark doorway, situated in a field of tall, dry grass and several gnarled, leafless grapevines. In the background, a line of trees is visible under a clear blue sky. A large, semi-transparent teal circle is overlaid on the right side of the image, containing the number '2'.

2

# The Apulian Masseria

*Rustic building, Photo from Pexels, free use*

# The Apulian Masseria

## 2.1 History

"The masseria, of which there are two thousand in all of Apulia, was the umbilical cord between land, man and labour, a combination of functional architecture and farming, known by name or nickname of its owners, its location or a saint."<sup>1</sup>

The origin of the masseria stretches back hundreds of years to the Middle Ages, when the Normans governed Apulia under feudal laws. Maintaining control over vast agricultural lands necessitated the creation of centralized structures out of which the surrounding areas are governed, and as a way of colonizing and farming empty territory. These structures came to be called a casale then a masseria, the latter of which derives its name from the Latin massa, as in the entire plot of rural land which is then entrusted to a massaro, the massaro supervised the farmers working the land.

A masseria is often constructed near a monastery and possesses courtyards, cisterns and walls. Sometime between the 16th and 18th century and due to constant threats from brigands and foreign invaders, the masserie were reinforced with castlelike defensive additions such as trapdoors, hatches and watchtowers. This added an even stronger distinction between farms with fields, those in the forest or those by the sea. A strong variety existed among the masserie in

Apulia based on their location, as some resembled the famous Trulli in the Itria Valley (Figure 7-8), some were near the heavily fortified coast of Otranto and others were located in the Terra di Bari above natural grottos and caves that were used to press olives and grapes.

Regardless of these differences there was a commonality among all masserie, which was the almost assured presence of a central courtyard<sup>3</sup> that connects the different sections of the property, the presence of a habitable part for the owners and workers, the presence of an area for the feeding and herding of farm animals, as well as areas for the storage and protection of the harvest. Before the advent of centralized plumbing, many masserie also have wells dug to extract water for irrigation and consumption due to their locations in remote areas away from dense population centers.

"Between the 18th and the 20th century, the middle class emerged, and the rural domus became a country residence."<sup>2</sup>

At the end of the 19th century and with the lords and owners directly living on the property to check its work, the masseria saw a transitional phase with the addition of decorative elements such as staircases, volutes, railings and statues symbolizing a more refined style, taking influ-

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1. Bacchella A., Montaluri M., *Masserie Ospitalita di charme in Puglia (hospitality in the charming farmhouses of Apulia)*, Adarte, Torino, 2009. pag 12;

2. ibidem

3. Calderazzi A., *L'architettura rurale in Puglia. Le masserie*, Schena Editore, 1989, pag 19;





Figure 7. *Masseria Trullo* in Itria Valley,  
<altosalentorivieradeitrulli.it>



Figure 8. *Masseria a Trulli Fortificata* in Martina Franca  
Puglia, <apuliahouses.com>



Figure 9. *Masseria fortificata Torre Ospina*, Racale,  
<comune.racale.gov.it>



Figure 10. *Masseria Brusca*, Nardò,  
<italianways.com>

ence from the baroque architecture in Lecce but with a more sober tone. With this the masseria which was originally a simple agricultural structure<sup>4</sup> for the peasants to work in came to resemble luxurious palaces of the nobility. This period oversaw the moment of maximum splendor for these structures.

By the mid 20th century following the two world wars, there was a decisive change. The agrarian reform divided and fractured large estates and the farms lost their aggregating role with numerous of them rendered abandoned, in decline or ended up losing their original character.

Nowadays most of the historical masserie have deviated from their original purpose, and have become touristic attractions in the form of summer vacation houses, restaurants or hotels due to multiple factors beginning with the post war reform in addition to the worsening conditions of the agricultural sector as well as the tourism boom that Apulia is witnessing.

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4. Simoncini G., *Architettura contadina di Puglia*, Vitali e Ghianda, 2006, pag. 34;





Figure 11. *Masseria Pettolecchia, Masseria-Castello, Fasano*, <masseriapettolecchia.it>



Figure 12. *Trappeto Masseria tenuta le Taverne, Ostuni*, <planetaostuni.it>



Figure 13. *Masseria Li Nsarti, Masseria Fortificata*, <gianni-carluccio.it>



Figure 14. *Masseria Gianferrante, Masseria Torre, Torre Mozza*, <masseriesalento.it>

# The Apulian Masseria

## 2.2 Types

Going around the Apulian masserie, one can note how these typical rural houses are all equipped with spaces for residential use (generally the ground floor is inhabited by the farmer, the first floor by the owner), spaces for various uses (cisterns, ovens, mills, barns, cellars) and spaces for processing their product (oil, wine, crops). Peculiar are the "aie"<sup>3</sup>: large open spaces in stone where, even today, wheat is beaten and legumes are dried.

A first example is the torre masseria, with a two-story quadrangular plan. The entrance is generally on the upper floor and is accessed via fixed stairs or even by means of a drawbridge.

The masseria con torre is different, in that the tower is the predominant element of the whole but is flanked by a horizontal development of the first floor only. Generally it is fortified and you can find sentry boxes as well as scenographic stairs.

This type of masseria is frequently found in the Fasano area. The masseria fortificata senza torre often called di pecore e da campo is formed from a two-level building with rooms divided according to usage.

In addition, many masserie of this type were expanded according to the increasing needs. The most important detail is that each area has its own autonomy and therefore there are no internal connections with the others.

Here too, the external staircase is very important, in addition to being the only possibility of access and connection between the floors, it becomes an architectural component. This type of farm is located south of Bari, up to the area of Fasano.

The masseria fortificata castello is named as such because it recreates the shape of the medieval castle and is large in size. Generally it has a massive silhouette and has four lateral quadrangular towers, which are also circular in a couple of cases. These farms were totally self-sufficient and in some the presence of an oven, mill, bakery and grain pits is hypothesized.

The masseria con trulli can be both fortified and simple, defining the symbiosis between utilitarian functions and landscape patterns characteristic of the Itria Valley.

All the masserie of this type can be seen as the context, not only to establish the dimensions but also the materials of the building.

The masseria non fortificata di pecora e da campo is characterized by a very large building nucleus and various rooms distributed around the courtyard. The characteristic of this farm is also given by the presence of gable roofs.

Finally, the masseria compatta has a very linear pattern and is generally formed by a single two-storey building with rooms and a chapel on the ground floor. Many farms are now in a state of neglect, although in some cases they are re-

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3. *Aia*, <<http://www.treccani.it/vocabolario/aia/>>;

4. Bacchella A., Montaluri M., *Masserie Ospitalita di charme in Puglia (hospitality in the charming farmhouses of Apulia)*, Adarte, Torino, 2009. pag 27;

used. In fact, many are used as reception houses or for agriturismo, and therefore are often kept in excellent condition.

## EXAMPLES OF DIFFERENT TYPES

### ***Il Rifugio dei Cavalieri in Borgo San Marco - Fasano (fortified masseria)***

This centuries old masseria dates back to the 12th century when it was originally a settlement of Byzantine monks, eventually morphing into a fortified position used by the Knights of Malta in the 15th century and finally a masseria from the 18th century onwards. Remnants of the old settlement and the medieval tower are still visible in the present.

*"San Marco is the quintessential masseria, offering hospitality without distorting its nature"*<sup>4</sup>.

Unlike many modern masserie that steered clear from their original function as a local productive center to a strictly touristic venue, this masseria managed to retain its centuries old identity by continuing to produce extra virgin olive oil for which the region is famous for, all while acknowledging that tourism is a booming sector in Apulia, to which the masseria also adapted by offering accommodation and leisure activities for guests side by side with its oil production.

The original buildings found within the masseria underwent several changes in their interior func-

tion, albeit with minimal to no change to the exterior architecture.

The cross vaulted sheepfold, traditionally where sheep sleep and seek shelter from the elements, was turned into a wellness center with a hamam and tepidarium. The stables became the new lounge and reception areas.

The fortified tower is now home to the mini suites used by the guests for accommodation while the terrace houses a pool.

Aside from the pool which is the only added element to the original masseria, the rest of the buildings are maintained as they were when the owner's family first bought the property in the 17th century. The fortified tower still hosts the arrowslits or "balistraria" once used by archers to defend it.

### ***Countryhouse Cefalicchio-Canosa di Puglia (masseria villa)***

Built in the 18th century as a summer country residence<sup>5</sup> for the great grandmother of the current owners. In the past the villa produced almonds from the almond trees on the estate, but after the second world war a transition began towards grape vine plantation used for wine making.

The villa masseria<sup>6</sup> undertook a major transformation in 2003 when its owners decided to convert it to a country house hotel, it would take another 5 years before the estate opened its doors

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5. Azienda agricola Cefalicchio, <aziendaagricolacefalicchio.it>;

6. Bacchella A., Montaluri M., *Masserie Ospitalita di charme in Puglia (hospitality in the charming farmhouses of Apulia)*, Adarte, Torino, 2009. pag 39;





Figure 15. Il Rifugio dei Cavalieri in Borgo San Marco - Fasano, *Courtyard*, <borgosanmarco.it>



Figure 16. Il Rifugio dei Cavalieri in Borgo San Marco - Fasano, *Facade*, <borgosanmarco.it>



Figure 17. Il Rifugio dei Cavalieri in Borgo San Marco - Fasano, *Interior*, <borgosanmarco.it>



Figure 18. Il Rifugio dei Cavalieri in Borgo San Marco - Fasano, *Interior*, <borgosanmarco.it>



Figure 19. Countryhouse Cefalicchio - Canosa di Puglia,  
*Courtyard*, <cefalicchio.it>



Figure 20. Countryhouse Cefalicchio - Canosa di Puglia,  
*Courtyard*, <cefalicchio.it>



Figure 21. Countryhouse Cefalicchio - Canosa di Puglia,  
*Garden*, <cefalicchio.it>



Figure 22. Countryhouse Cefalicchio - Canosa di Puglia,  
*Interior*, <cefalicchio.it>



to visitors and customers.

The transformation was functional in shape, with the main building, the vaults, flooring and furniture dating back to the 19th century remaining intact in a way that conserves the heritage and authentic architecture of the villa and the region. Worth noting that even with the Villa becoming an elegant hotel for its visitors, wine production is still very active with the estate producing seven labels. The presence of a pool is possibly the only drawback of a mostly traditional and well preserved villa masseria.

#### ***Histo Relais Culti-Taranto (villa masseria)***

Histo is a 5 star hotel albergo with a rich history, it is located near Taranto, peering off the edge of the Mar Piccolo (small sea).

The 18th century building hosting the albergo today, traces its roots to antiquity, and more precisely the late greek and roman period. This rich history is so evident by the fact that in the past and right where the present day structure stands; a roman villa and aqueduct, a greek necropolis, and a medieval basilica dedicated to Saint Peter and Andrew and to which the centuries old Masseria San Pietro attributes its nomenclature, once stood in its stead.

While today's manor hosting the main lounge and reception area dates back to the 18th century in its current form, elements of its foundations are

infact of ancient greek and roman origin, having been incorporated into the architecture of the manor over time. A testimony to the millennia of human presence in the area.

*"And history abounds in this 18th century manor whose foundations date back to the late greek period, resurfacing in the fragments of granite columns, capitals, funerary stones and the colourful shards of glazed pottery dug up from the well in the main courtyard during the restoration."*

The transformation from masseria to a luxury hotel began with the intervention of a group of designers and entrepreneurs from the Culti brand, under the leadership of Alessandro Agrati. The works focused on preserving and maintaining the original architecture and decor as much as possible, hence the 18th century manor, the medieval basilica and various buildings that once housed the animals and production facilities are virtually left intact. Even the colors of the walls and flooring reflect early and sunny tones, with a lack of paint and instead a focus on raw local stone and plaster. This minimal palette of colors reminds the visitors of the manual work practiced on these grounds and within the walls of the masseria, and their attachment to their land where sun and sweat provided the fruit of their labor, the preservation of the existing architecture and materials also conveys authenticity and pride in the history of the establishment instead

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7. Bacchella A., Montaluri M., *Masserie Ospitalita di charme in Puglia (hospitality in the charming farmhouses of Apulia)*, Adarte, Torino, 2009. pag 46;

8. *Relais Histo*, <[www.relaishisto.it](http://www.relaishisto.it)>



Figure 23. Histo relais Culti - Taranto (villa masseria), *Courtyard*, <relaishisto.it>



Figure 24. Histo relais Culti - Taranto (villa masseria), *Pool Garden*, <relaishisto.it>



Figure 25. Histo relais Culti - Taranto (villa masseria), *Interior*, <relaishisto.it>



Figure 26. Histo relais Culti - Taranto (villa masseria), *Spa*, <relaishisto.it>

of tearing it down and replacing that history with an artificial substitute.

The insistence on preserving history and heritage does not mean the masseria should lack modernity, for within and under the walls and floors of the various buildings inside the albergo, modernity is cleverly inserted within plain sight, with heated flooring in the showers, magnetic key cards, lack of wifi within bedrooms enables the occupants to enjoy a stress free and comforting experience.

Having mentioned the various efforts to maintain and preserve the existing structures and their architecture, the interiors have been subdivided based on their functions within each building in the masseria. As mentioned earlier, the manor hosts the main reception and lounge area<sup>8</sup>, a pool within the wellness and spa area is cleverly carved and inserted within the rocks and recesses around an old spring. The lantern house houses the restaurant, the underground oil mill is turned into a place for relaxation destined for reading or yoga, while the animal stall with the mangers kept intact is converted into a hall where musical performances are held.

### ***Le Fabriche-Maruggio (compact masseria)***

Perched on top of a hill overlooking the Ionian sea, Le Fabriche<sup>9</sup> is a salentine masseria dating back to the 17th century located south of the city

of Taranto in Apulia.

This rather small establishment has been under the ownership of Alessia Perucci<sup>10</sup> since 2001, the owner envisioned the ideal location for wine growing and found it within Le Fabriche. The structure would then not only serve as a winery but also a guest house for those visiting it, with the reception, lounge, and restaurant located in the original 17th century building, while the 18 rooms are housed in a different structure thus separating old and new. But the old overtakes the new in almost every aspect. Traditional architecture is preserved entirely as is reflected in the presence of the original vaults, mangers once destined for the farm animals are entirely preserved, as are the original construction materials such as Trani stone and limestone famous for their widespread use in the masserie of Salento. Emphasis on letting natural light into the rooms accentuates the earthly tone of the materials used in the construction as well as the minimalism of the decor. Ample windows assist in that regard, and also provide a wider field of view of the vineyards and the ionian sea in the distance. A notable architectural feat present within the walls of the masseria is a new spiral staircase connecting the reception floor to the noble floor above it, it does so by creating a circular hole in the original barrel vault separating the two floors. Even with the new section housing the rooms

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9. Bacchella A., Montaluri M., *Masserie Ospitalita di charme in Puglia (hospitality in the charming farmhouses of Apulia)*, Adarte, Torino, 2009. pag 56;

10. *Le Fabbriche*, <[www.lefabriche.it](http://www.lefabriche.it)>

11. *Masseria Cimino*, <[www.masseriaticimino.com/en/history](http://www.masseriaticimino.com/en/history)>





Figure 27. Le Fabrice - Maruggio, *Courtyard*,  
<lefabrice.it>



Figure 28. Le Fabrice - Maruggio, *External view*,  
<lefabrice.it>



Figure 29. Le Fabrice - Maruggio, *Interior*,  
<lefabrice.it>



Figure 30. Le Fabrice - Maruggio, *Interior*,  
<lefabrice.it>

and the presence of enlarged windows and the new staircase, this masseria preserves the traditional architecture of Apulian masserie and revives centuries old practices of wine and olive oil making that are traditional in Apulia, and constitute an important source of income and pride to its population. It also retains the essence of the masseria, which is that it is a productive centre first and foremost.

**Masseria Cimino-Fasano  
(masseria with tower)**

The structure of what is now Masseria Cimino has a long history dating back to the 18th century but whose constructive elements predate it in parts by two millennia, having been once used as foundation stones of walls surrounding the Massapi-an-Roman city of Egnathia <sup>1</sup> in the 6th century BC.

The masseria itself is located near the archaeological site of Egnathia, which explains why the locals decided to use the already quarried stones in its construction. The masseria falls under the fortified category and possesses a tower, its surrounded by agricultural fields which once served as a source of income for the landlords.

Its restoration and rehabilitation in 2005<sup>11</sup> was the work of Apulian designer Pino Brescia, who undertook the effort of adapting the masseria to the hospitality sector by playing with the shapes,

colors and materials used to invoke the feelings of authenticity, of being in Apulia.

For instance, the square shape of the stones found in the walls influenced the choice for the furniture and lighting used within the masseria, with the designer resorting to the use of a similar geometry for his choices: the parallelepiped.

The form is found in the beds, lamps, niches, window frames, etc.

Aside from the Tufo stone commonly used in the construction of Apulian masserie, iron, limestone and wood are found in the structure, with emphasis on white colors both in the indoors and outdoors and aim to reassure the guests that relaxation and the mediterranean atmosphere is awaiting them in these doors.

**Masseria Giampaolo-Lecce (tower masseria)**

Giampaolo is an ancient masseria dating back to the 11th century, whose olive oil once reached Constantinople throughout the various ports dotted across the Apulian peninsula.

*"It is one of the sixteen farm complexes which belonged to the feud of the Abbey of S. Maria di Cerate"*<sup>12</sup>

In the middle ages, the plots of land were governed and allotted to various feudal lords or to the church, with each masseria being responsible for a plot of land.

Giampaolo's "sister" masseria, Monacelli is less

12. Bacchella A., Montaluri M., *Masserie Ospitalita di charme in Puglia (hospitality in the charming farmhouses of Apulia)*, Adarte, Torino, 2009. pag 108;

13. *Tenuta Monacelli*, < [www.tenutamonacelli.com](http://www.tenutamonacelli.com) >





Figure 31. Masseria Cimino - Fasano (masseria with tower), *Courtyard*, <masseriacimino.it>



Figure 32. Masseria Cimino - Fasano (masseria with tower), *External view*, <masseriacimino.it>



Figure 33. Masseria Cimino - Fasano (masseria with tower), *Interior*, <masseriacimino.it>



Figure 34. Masseria Cimino - Fasano (masseria with tower), *Interior-spa*, <masseriacimino.it>

than half a kilometer away along the same path the medieval carts would take, both are united under the same ownership of the Piccinni family and both have been restored simultaneously<sup>13</sup>.

In terms of organisation, Giampaolo follows a popular medieval defensive layout with a central structure, in this case the tower, surrounded by walls. The tower itself dates back to the 16th century in its current form, it is adorned with battlements for defensive purposes and used to possess a drawbridge in front of its entrance, as well as multiple trapdoors. Aside from the main tower within the enclosed complex, additional buildings with different functions existed during that active period.

Brick and mud houses, underground olive presses, a mill, an oven and several gardens.

The tower thus acted as a central hub for all the activity taking place on the grounds, as is expected of a masseria. The restoration also saw its conversion from a classic masseria to a hotel, the process was careful as to not alter any preexisting features so as to conserve the architecture and restore it to its original state. With its reopening in 2007 the masseria regained its original splendor, now a center of hospitality with amenities such as a pool and restaurant on its grounds, as well as reviving centuries old practices such as olive oil making and bee keeping.

### ***Masseria Monacelli-Lecce (fortified masseria with tower)***

The fate of this 17th century masseria has been intertwined with that of masseria Giampaolo, its twin that is located less than a mere kilometer away.

Under the tenure of the order of preachers, the property was of considerable size "*This considerable estate included sixteen enclosures for a total area of over 320 "tomoli", which contained 11,423 olive trees to the value of 481 "macine", 177 holm oaks and 100 fig trees*"<sup>14</sup>.

It gradually fell back and lost its importance up until its new owner Annalisa Piccinni, which also concurrently bought its twin Giampaolo, had it restored and converted into a guest masseria in 2000.

In terms of layout, the masseria had an enclosed courtyard typical of most fortified masserie in the region, as well as a tower, an underground oil mill, a well and multiple animal pens.

A structure of note is the presence of a Chapel beside the tower, named the nativity of Jesus Christ, it dates back to 1758.

The once vast fields of olive and fruit trees have been restored under the new tenure as well as the production of wine and olive oil on the estate.

Aside from the addition of a pool, the structure was left intact during the restoration efforts and simple traditional furniture was chosen to decorate the halls and rooms of the masseria.

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14. Bacchella A., Montaluri M., *Masserie Ospitalita di charme in Puglia (hospitality in the charming farmhouses of Apulia)*, Adarte, Torino, 2009. pag 130;





Figure 35. Masseria Giampaolo - Lecce (tower masseria) - Tenuta Monacelli , *Courtyard*, <tenutamonacelli.com>



Figure 36. Masseria Monacelli - Lecce (fortified masseria with tower), *External view*, <tenutamonacelli.com>



Figure 37. Masseria Giampaolo - Lecce (tower masseria) - Tenuta Monacelli , *Interior*, <tenutamonacelli.com>



Figure 38. Masseria Monacelli - Lecce (fortified masseria with tower), *Interior*, <tenutamonacelli.com>









3

# Masseria Aia Nuova

*Masseria Aia Nuova*



# Masseria Aia Nuova

## 3.1 Case Study

Masseria Aia Nuova is a peculiar case study, it exemplifies the typical salentine masseria that has survived the test of time and has been left abandoned and in decay.

Its location in the heart of the masseria's historical birthplace and its local architectural characteristics make it a perfect candidate for a restoration and rehabilitation project, as well as the opportunity to enter and access the premises due to the acquaintance with the owner.

The masseria itself is a century old farm once used as an agricultural hub for farmers and villagers, where crops and livestock were once stored. The owner aims to rehabilitate the masseria once more, and restart the production process.

In this case study, a thorough analysis of the architectural elements and the current condition of the interior and exterior will be presented, as well as a mechanism to detect and classify the decay present within, and propose interventions to restore the edifice.

While most masserie in the region are converted into summer vacation homes, restaurants, and hotels with pools and wellness centers. A different approach will be taken in this case study, the aim will be to restore the original function of this historical edifice, and what the name masseria once stood for. Conserving the architectural heritage of the masseria would be best done by

offering a proposal to reignite its functionality and recementing its original role as a production center in the area.

The project is the establishment of a grappa distillery within the masseria walls, an activity which is rare and almost unheard of so far south in the country due to the region being more familiar with making other types of spirits and local wines. Grappa is a drink mostly manufactured and consumed in the north of the country, both historically and presently.

This is where the sustainable and innovative aspect of the project comes into play, wineries in the region discard many components, most notable of which is pomace. Which ends up being totally unused in the local economy, but with the creation of a distillery, the pomace would become the main ingredient in grappa, thus providing the distillery with an abundant raw material and adding a valuable asset to fill a gap in the market for locally produced grappa.





# Masseria Aia Nuova

## 3.2 Location - Novoli

According to the philologist Gerhard Rohlfs<sup>1</sup> the etymology of the name derives from the Latin *Novulum* (in english: field to be plowed). It seems that this name was used by villagers seeing as the name of the feudal territory was Santa Maria de Novis.

The municipality of Novoli encompasses 18 square kilometers, its 11 kilometers from the Adriatic coast and 23 kilometers from the Ionian. The town itself is known internationally and locally for the Focara di Sant'Antonio Abate festival in which hundreds of thousands of people attend to honor the patron saint of the town, the festival is characterized by a huge bonfire lit using the twigs and remnants of grapevines. The town is known for its strong attachment to the agricultural sector and produces excellent wine and olive oil.

For what pertains to geography, the area is relatively flat with a characteristic reddish soil lacking any rivers, however it is rich in multiple underground caverns and sinkholes that gather rainwater and channel them into subterranean rivers and canals. Surface canals are dug to better manage the rain water and to avoid the formation of marshes.

Most of the territory is made up of plots of land dedicated for agriculture, at around 78% of the

gross area of the municipality, as can be deduced by studying a map of the area that dates back to 2011. As for the typology of grown crops, 565 hectares are dedicated for cereals that do not require irrigation, equalling 30% of the total municipality area. Olive trees with 444 hectares equalling 25% of the total area, and grapevines at 381 hectares with 21% of the total area.

Urban areas represent 15% of the total area of Novoli municipality, of this figure 5% belongs to the dense urbanised town itself and another 5% for the sparsely scattered residential plots, the scattered residential areas are responsible for the fragmentation and division of the lands belonging to the municipality. Natural vegetation is mostly grass fields and shrublands, coming at around 12-13 hectares and making up 1% of the total area of the municipality, forests make up around 6 hectares only at less than 1% of the total area, these areas are fragmented as well.

As for the water resources and sanitation, Novoli is dotted with a sewage and potable water network as well as a water treatment service, permitting the total or partial elimination of waste or polluting elements.

Solid waste disposal figures are studied through monthly data from the "AERP" or Assessorato all'Ecologia della Regione Puglia, from the period

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1. Rohlfs G, *Calabria e Salento: saggi di storia linguistica : studi e ricerche*, Longo, 1980, Pag. 73;

2. *Rapporto preliminare di verifica*, Allegato 5, Comune di Novoli, Marzo 2016;

3. *Comune di Novoli*, La città del fuoco e del vino, <comune.novoli.le.it>;

starting in 2008 till 2015, a slight decrease of total solid waste as well as an increase in sorted waste by 21,63 %, suggesting an effort to separate the produced waste by elements. However the figure is still short of the provincial and regional average, 24,63% and 30,94% respectively<sup>2</sup>.

Among the activities most prevalent in Novoli's immediate surrounding, agriculture and the processing of agricultural products<sup>4</sup> turns out to be the most characteristic of the area, together with some craft activities. In particular, the area around Novoli stands out for the production of excellent quality wines, with the presence of large wineries.

Novoli is perhaps known worldwide for the night of the "Fòcara di Sant'Antonio Abate" (Figure 39-40).

The focara (bonfire) on the occasion of the celebrations in honor of the patron Saint Anthony the Abbot. On January 16 the focara is lit by a fireworks display that illuminates the Novolese sky by day. This event known throughout Puglia attracts thousands of spectators from all over southern Italy and was also the subject of a National Geographic documentary.

The feast that the novolese ascribe to their patron saint begins on January 7 with the Novenary,

to end on January 18 with the feast of all citizens (festa Te li paisani).

The important days of the festival, however, are January 16 and 17, in which all the events and shows that have now come to the attention of the whole region and much of Southern Italy and that attract thousands of visitors and pilgrims, take place.

An event that has roots in the ancient veneration of the novolesi for the "Holy fire", whose cult was made official on the 28th January, 1664, when the bishop of the time, Bishop Luigi Pappacoda, granted the consent to the canon of the supplication of the University and of the clergy, and declared St. Anthony, protector of Novoli.

### **CHIESA DI SANT'ANTONIO ABATE <sup>5</sup>**

(Figure 41)

The original body of the church predates the year 1640, the year in which a previous factory was demolished, to erect a new one thanks to the offerings of the novolese faithful. This information is obtained from the archives of the first pastoral visit of MGR. Luigi Pappacoda, who in the canonical reconnaissance day of May 18, 1640 records the church dedicated to the patron saint of Novoli as an "olim sacellum, nunc ampliatur" (small temple).

The new church was opened to public worship in

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4. O. Mazzotta, *Novoli nei secoli XVII-XVIII*, Novoli, 1986, pag. 149;

5. O. Mazzotta, *I Mattei, signori di Novoli (1520-1706)*, Bibliotheca Minima, 1989, pag. 11

1662. The current status dates from a period at the end of the eighteenth century and the beginning of the XIX century: the plant has three naves, for example, the choir lifted up on a design of Vincenzo Politi, the altar of the crucifix, high altar, in marble and the statue in cartapesta di Sant Antonio Abate is placed in the homonymous niche inside the chapel at the bottom of the left aisle, are the result of the work completed in 1885. The church became a parish on February 26, 1931.

The facade of the Church, preceded by a staircase with adjoining Square, presents a neoclassical style marked by four parastes with doric capitals topped by a triangular tympanum in the middle of which there is a clock donated in 1930 by the rector Don Carlo Pellegrino. The entrance door shows the bronze doors of the Lani Brothers, as well as the entrances of the two side aisles that are lower and backward. On the left side, in a position backward from the facade, finally, there is the high bell tower built in 1937 by the architect Cino Mazzotta that resumes, in maximum simplicity, the architectural lines of the facade.

### **PALAZZO BARONALE <sup>6</sup>**

(Figure 42)

It was built at the beginning of the sixteenth century by the Mattei barons, thus linking its history to the events of this house that held the territory

for two centuries, from 1520 to 1706. This is certainly evidenced by the building of the castle, built by Paolo Mattei just after the possession of the novolese fief; the building became later the seat of a rich library from the work of Alessandro Mattei II, known as "the great humanist and patron of the arts", which is housed in the Baronial Palace, the philosopher and doctor of Leverano Girolamo Marciano who used the Library of the Count "full of many books that has no equal in the province" to complete his "description of the Terra d'otranto".

Towards the middle of the '600 the palace was enlarged and modified, while the last transformations were wanted by The Last Of The Descendants Of The Casato Mattei (the great-grandson Alexander III) who had built in 1700, a walk discovered in the courtyard and the fountain by Giuseppe Cino (still visible inside the Palace, on the upper floor). Inside the Castle, finally, remained at the corners of a hall, some coats of arms of families who stayed: Della Torre, Pepoli, Malvezzi. The fourth was lost.

### **CHIESA DELLA MADONNA DEL PANE <sup>7</sup>**

(Figure 43)

It seems to have been built at the beginning of the seventeenth century in a place called "cuneddha" (from the name of the wall on which the image

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6.G. Arditi., *La corografia fisica e storica della provincia di Terra d'Otranto*, Lecce, 1879, p. 410

7. S. Epifani, *La Madonna di Novoli- Tomo I Sulla Chiesa della Mater Domini*, Youcanprint, 2013, pag. 23





Figure 39. Focara di Novoli, *La Focara di Novoli*, <reginadiulivi.it>, 16.01.2016



Figure 40. Focara di Novoli, *Celebre festa Salento: Focara di Novoli*, <costedelsud.it>, 24.11.2018



Figure 41. Chiesa di Sant'Antonio Abate, Novoli, <ilturista.info>



Figure 42. Palazzo Baronale, Novoli, <capriellorestauro.it>, 21.05.2016

of Our Lady was frescoed), although officially it is described for the first time in the pastoral visit of 1746. For the occasion, in fact, stated the church dedicated to the Virgin of Constantinople was presented with a single nave and three altars, the high altar is a niche in the stone with the image of the Madonna of Constantinople drawn on the wall, and the lateral ones, respectively dedicated to St. Mark and St. Augustine.

Inside the church (at the bottom of the left aisle) is the statue of the Virgin, the work of artist Luigi Guacci; the statue is greeted by a shrine of marble since July, 1930, after a fire started by the falling of a candle (26 April 1929) had destroyed the old statue and damaged the temple.

### **CHIESA DI SANT'ANDREA APOSTOLO**

(Figure 44)

Probably erected around the middle of 1500, since the oldest source in which it is mentioned is the book of the baptized that begins in January 6, 1571; just at that time, Novoli reached a thousand inhabitants, so came the need to erect a larger and welcoming place of worship than the Church of the Immaculate. The Church has always been dedicated to St. Andrew the Apostle although in the parish registers it is always indicated as the mother church or parish "Terrae Sanctae Mariae De Novis".

### **TEATRO COMUNALE<sup>8</sup>**

(Figure 45)

The Teatro Comunale was inaugurated in the last days of April 1891 by the company Almirante, gaining critical acclaim. The building, from an architectural and artistic point of view, constitutes an extraordinary testimony of late-neoclassical architecture, with the internal conformation bracket with two orders of stages and a stage with four dressing rooms for artists. Its importance is also given by the fact that, at the time of its inauguration, it represented the first and only example in Salento of a totally isolated building, which inside mirrored in miniature the structure of the teatro Paisiello in Lecce. Currently the novolese theatre is interested in major restoration works, which will concern both the static consolidation and some substantial changes that will make it available according to the laws provided for in the matter.

### **CHIESA E CONVENTO DEI PADRI PASSIONISTI**

(Figure 46)

The "Immaculate Heart of Mary" church presents itself as an extraordinary jewel of Neogothic style and art, framed above all in the façade dominated by the portal surmounted by the regular tympanum, the spires perfectly executed and the circular window adorned with polylobed

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8. A. Foscarini, *Arte e artisti di Terra d'Otranto*, Edizioni del Grifo, 2000, pag. 67





Figure 43. *Chiesa della Madonna del Pane*, Novoli  
<wikipedia.org>



Figure 44. *Chiesa di Sant'Andrea Apostolo*, Novoli,  
<chiesacattolica.it>



Figure 45. *Teatro comunale*, Novoli, <wikipedia.org>



Figure 46. *Chiesa dei Padri Passionisti*, Novoli, Ibidem

arches. Inside, the immense altarpiece depicting the immaculate Heart of Mary is presented with a single aisle, even if three arches on each side give the impression of the presence of side aisles occupied by altars (important side in polychrome original marble).







CHIESA DEI PADRI  
PASSIONISTI

TRAIN STATION

CHIESA DI  
SANT'ANTONIO ABATE

MUNICIPALITY  
CHIESA DI SANT'ANDREA

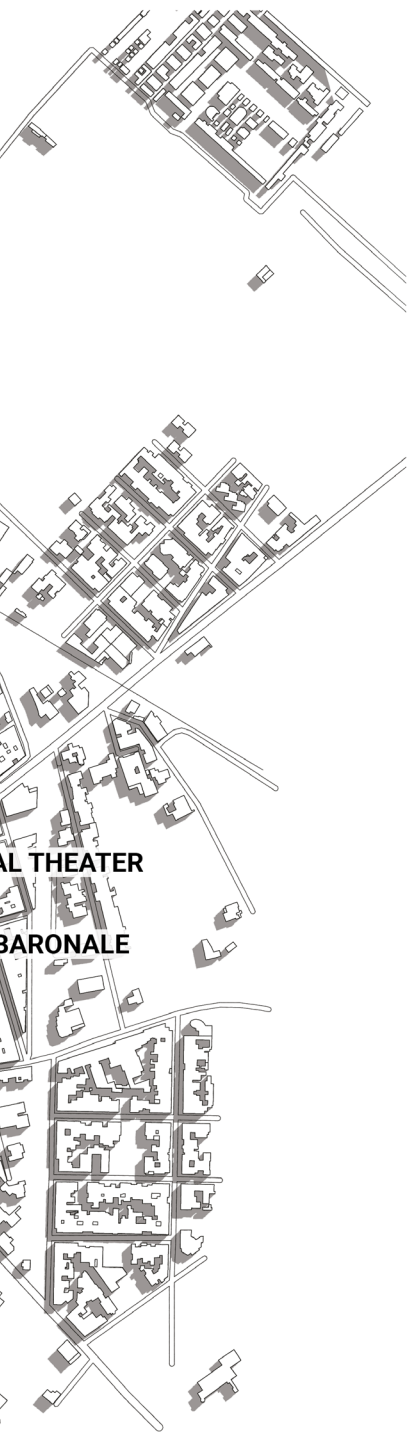
COMUNA  
PALAZZO

CHIESA DELLA  
MADONNA DEL PANE

"FOCARA" SQUARE

MASSERIA AIA NUOVA

0 100 200



## NOVOLI MASTERPLAN

### LEGEND

 territory of the Masseria

### NOVOLI

**11 km** distance from Lecce

**18 km<sup>2</sup>** municipal boundary

**8.078** population (2017)

**11 km** distance from Adriatic coast

**23 km** distance from Ionic coast

### MASSERIA AIA NUOVA

**350 sqm** built area

**800 sqm** courtyard

**8 hectares** cultivated land

**3 hectares** rocky uncultivated land

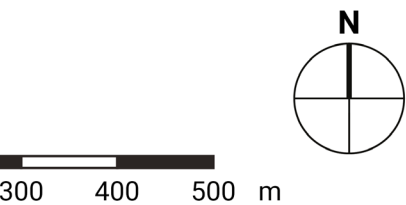


Figure 47. Novoli Map

# Masseria Aia Nuova

## 3.3 History and Description

### HISTORY

At the beginning of the 20th century, the construction of habitable quarters for farm workers and animal stalls was customary in the apulian countryside in general, and in the salentine countryside in specific.

Both habitations were part of a single agricultural complex called the masseria, the structure comprising the focus of this case study is of identical composition and dates back to the early 1920s.

The habitable quarter meant for the workers operating the farm is made up of a few rooms and is of smaller dimensions than the neighboring animal stall, connecting both is an ample courtyard adapted for the work needed on the farm.

The “Aia Nuova” nomenclature was already attributed, and had been picked up through testimonies and interviews of old farmers and landowners who remember how the masseria celebrated the gathering of the crops, grains and other agricultural activities. Up until the 1960s it has been occupied by farm workers and had been an important gathering center for the local agricultural community in the 40s and 50s.

Access to the property is by means of a provincial road linking Novoli and Veglie then through a rural road lined with pine trees at least half a century old.

The typical “aia” in Salento is of a circular shape

and is situated outside, in front of the main entrance to the courtyard. It possesses a pavement made from apulian “chianche”, a typical white stone sourced locally from direct quarrying in Trani and is surrounded by a slightly elevated outline made from tufo or leccese stones. The area’s typical uses were as a gathering ground for the harvested crops or alternatively the local community organized feasts and celebrations related to the harvest yields accompanied with music and dancing.

### ARCHITECTURAL FEATURES

The structure has an L shape with an internal courtyard forming a rectangle, which is entirely enclosed. The access to the courtyard is through an arched entrance dotted with a metal gate, passing through an open space which is covered by a star vault typical of the rural salentine architecture prevalent at the time.

Situated on the northern face are the rooms that constitute the living quarters; an entrance room with large dimensions and a window overlooking the exterior, it would have probably constituted the bedroom at the time. The room allows access to another, with similar proportions and dotted with a star vault but this time with a window overlooking the internal courtyard, probably another bedroom or common room. Through the





Figure 48. Masseria Aia Nuova, *External view*



Figure 49. Masseria Aia Nuova, *External view*



Figure 50. Masseria Aia Nuova, *View from the courtyard*



Figure 51. Masseria Aia Nuova, *The wheat field*

second, a third smaller room can be accessed, dotted with a chimney and an oven it would have most likely been the kitchen, it gives access to the internal courtyard through a door opening as well as a small window above it.

On the same axis, an open air staircase independent of the other rooms is located in the courtyard, it leads to the terraced roof above. Beyond that is a small room with independent access through a door from the courtyard, it houses a stone oven that came utilized for the production of grain based foods, such as bread, local frise, biscuits and soups. To note is the presence of star vaults in each of these rooms.

On the other axis of the main structure are three rooms characterized by the recurring star vault, the first being at the disposal of the working staff, functioning as a deposit for tools and livestock food preparations, it contains a window overlooking the courtyard.

The second room which lacks any flooring is the stall where the livestock is kept and fed, a hole in the vault allows the sunlight and the elements to enter the room. The third and last is actually a two room system made up out of the union between an old animal stall with two vaults and a newer construction lacking any vaults. The access to the courtyard most likely took place through arches that are no longer found today except for the one

above the main entrance. Alternatively, entry to and from the courtyard is done through a door. The animal stall has an uninterrupted manger running down the length of the wall in contact with the courtyard.

The terrace that is accessible through the previously mentioned external staircase, is made up of the tufo blocks coated with a layer of *cocciopesto* plaster traditionally applied in salentine architecture.

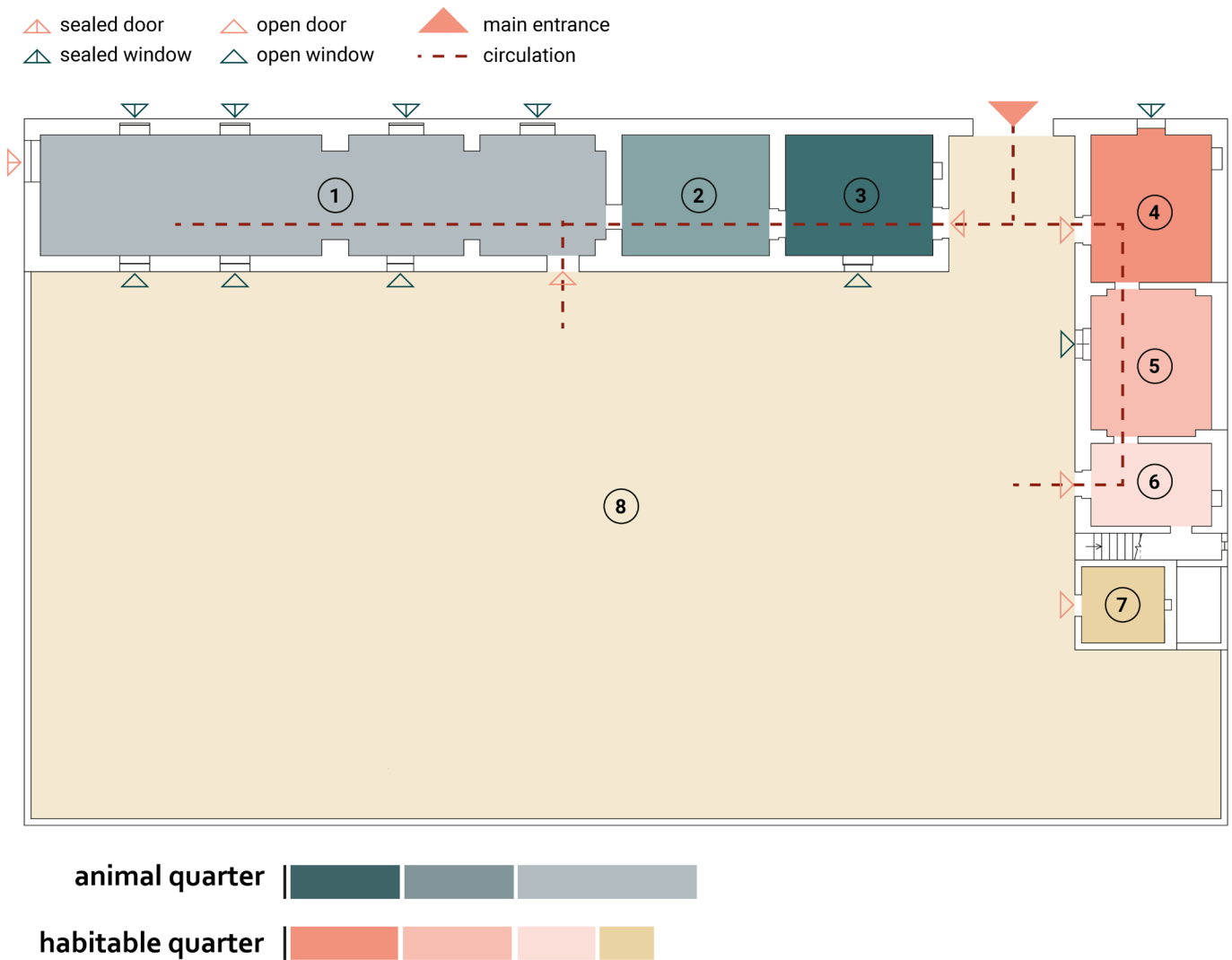
Located separately but always on the property, is a small living quarter of around 50 square meters divided into three rooms which is presently completely out of service and in decay.

In the 1970s, a shed was constructed in the courtyard and was used for storage, today it has been demolished and with it 300 square meters of open space have been freed up, with its removal the courtyard regained its pre 1970 surface area encompassing 800 square meters.

The far end of the courtyard is irregular due to the presence of rock with multiple cacti, almond trees and rose shrubs.

The structure is made up of various components sourced locally and typical of the architecture of masserie in Salento, tufo blocks for the walls and vaults, leccese stone tiles for the flooring, lime plaster covers the interior walls, existing wooden

## AREAS AND FUNCTIONS



- |                         |                  |
|-------------------------|------------------|
| ① The animal manger     | ⑤ The red room   |
| ② The food storage      | ⑥ The kitchen    |
| ③ The multipurpose room | ⑦ The small oven |
| ④ The blue room         | ⑧ The courtyard  |

Figure 52. Areas and functions

doors and windows are in a state of decay.

A lack of sanitation facilities that use running water is due to an absence of a plumbing network and sewer system, as was common at the time, fortunately a water well is located on the property near the entrance and could provide the necessary water for the living quarters and the irrigation of the land. It is 35 meters deep and 1m x 1m in width and was dug manually.

Abandoned for decades, the current owner's father bought the property and being an entrepreneur especially in the olive oil sector, intended to restart the masseria by growing grain crops. Today the masseria is owned by the daughter, and has resumed production of various grain crops such as senatore cappelli wheat, field bean, and emmer wheat or spelt.

The yield is entirely organic, and the crops are rotated seasonally.

The property has an all inclusive surface area of 11.5 hectares, 3 of which are uncultivable due to it being rocky and composed of mediterranean shrubland protected under local law.

In the remaining 8 hectares, the land was divided into multiple plots but has been collectively cultivated as of late. 7 tons (or 70 quintale in italian) of organic-certified wheat of the senatore cappelli

cultivar have been harvested in 2017, translating into 900 kilos per hectare.

The product was then sold to an organic company in the Otranto area producing hard grain by-products such as flour, pasta, bread etc..

In 2018, field beans were planted to enhance the productivity of the terrain in a process called "Green Manure" or sovescio in italian. Emmer wheat or Farro in italian, a species of wheat was planted and harvested in 2019.

The terrain surrounding the masseria is notable by the presence of cultivated fields of grains and olive trees.

## **FACADE ANALYSIS**

Viewed from the exterior and classified based on its orientation, the structure has four elevations, one to the north-east, north-west, south-east, and south-west respectively.

The northern (Figure 54) elevation runs along the length of the habitable quarter and a section of the perimeter wall enclosing the inner courtyard. Notably, the facade is absent any openings except for a very small fixed window in the room under the external stairs leading to the roof terrace, this small room was most likely used as a closet or storage space.

The western (Figure 53) facade houses the main entrance to the masseria, a gate separates the in-





Figure 53. Masseria Aia Nuova, *West face*



Figure 54. Masseria Aia Nuova, *North face*



Figure 55. Masseria Aia Nuova, *East face*



Figure 56. Masseria Aia Nuova, *South face*

ner courtyard from the exterior, the gate can be entirely opened for the entry of vehicles or similar size objects, alternatively a door embedded within it can be opened independently from the main gate. The door is meant for human passage while anything larger will have to go through the bigger gate.

Behind the gate is the arched passageway that effectively divides the habitable quarter on the left from the animal stall to the right, the single large window left of the main gate had been enclosed by stone blocks and mortar to keep trespassers out of the unoccupied property.

On the right side, two pairs of windows span the length of the area dedicated for storage and livestock management, each of the pairs are identical in size and height, and these are similarly sealed by carved blocks as well. Three water drains extrude from the rampart surrounding the upper terrace floor.

Conversely, the southern (Figure 56) facade has minimal details except for a large door leading into the new structure housing the manger. That door is also sealed shut like the previous openings. This makes the main gate the only way in and out until the door's reopening.

Aside from the section housing the door, most of the facade is made up of the perimeter wall run-

ning the length of the courtyard.

The eastern (Figure 55) facade is made up entirely of the perimeter wall with the higher elements composing the animal stall visible in the distance behind it.

### **THE ANIMAL MANGER**

(Figure 57-58)

The largest room in the masseria. It had a double purpose, its where the livestock were kept and fed as is evident by the presence of the manger running across its length, it is built on top of an elevated platform made from concrete, itself on a flooring of poured concrete.

A portion of this room is a recent addition to the masseria, distinguishable by having a flat roof instead of a vault like all the other rooms, while the other half has a volta a spigolo. The window openings of this room are different from those in other parts of the masseria, they are significantly higher and enclosed by a metal barrier. This configuration gave the animals within the room an increased sense of privacy and safety, prevented them from escaping or interacting with the exterior, as well as providing enough air and sunlight. Four of the windows overlooking the road outside have been sealed with bricks once the masseria was abandoned. Another feature in this room are the two arches, their presence is not immediately





Figure 57. Masseria Aia Nuova, *Animal quarter*



Figure 58. Masseria Aia Nuova, *The animal manger*



Figure 59. Masseria Aia Nuova, *The food storage*



Figure 60. Masseria Aia Nuova, *The multipurpose room*

picked up due to them having been sealed up at one point in time, and remained that way since. A large doorway leading outside of the masseria is present in the back of the room, however, it is sealed much like the windows.

Another door leads to the courtyard, it has been built on top of one of the arches, and as such took down a portion of it to make way for the opening. This door is not sealed.

### **THE FOOD STORAGE**

(Figure 59)

The only room with a lack of solid flooring and without a direct link with the exterior, save for a man made opening in the volta a squadro, used as a skylight. The floor is covered with soil and dry hay, this further proves that this room once stored animal feed.

### **THE MULTIPURPOSE ROOM**

(Figure 60)

This room could have had flexible functionality. The room has two doors, one leads to the main entrance and another back to the food storage room. A large window overlooks the courtyard. The flooring is made of concrete. The ceiling consists of a volta a squadro.

### **THE BLUE ROOM**

(Figure 61)

Unlike the three rooms in the animal quarter, this one was meant to host the masseria's workers, as is evident by the flooring made from pietra leccese tiles and the more elaborately painted walls, in shades of white and blue. A door located opposite the main entrance is the main entry avenue into this portion of the masseria while another one leads to the red room, the floor of this entire habitation is elevated by about 20 centimeters. A window overlooking the road outside is sealed shut by bricks. The ceiling is made up of a volta a squadro.

### **THE RED ROOM**

(Figure 62)

A continuation of the blue room. It's similar in every aspect except for the walls being painted red instead of the previous blue, and having a window onto the courtyard.

### **THE KITCHEN**

(Figure 63)

Houses a large oven and a cupboard under the stairs leading to the roof, the latter most likely used as a storage space.

This is where the workers most likely kept and prepared their meals. The flooring is also made of pietra leccese, albeit in a more degraded state than the previous two rooms in the habitable quarter, A door leads to the courtyard, it is





Figure 61. Masseria Aia Nuova, *The blue room*



Figure 62. Masseria Aia Nuova, *The red room*



Figure 63. Masseria Aia Nuova, *The kitchen*



Figure 64. Masseria Aia Nuova, *The small oven*

topped by a very small window likely used as an added light source. Its ceiling is a volta a spigolo embedded to the oven's chimney.

### **THE SMALL OVEN**

(Figure 64)

Due to the small and isolated nature of this room, being accessed only from the courtyard and lacking any connection with the other rooms, it may have been an auxiliary room used for cooking, lighting fires for warmth during cold winters or simply a storage space. Its floor is also made up of pietra leccese tiles, and possesses a volta a spigolo.

### **THE COURTYARD**

(Figure 65-66-67-68)

With a total area roughly four times that of all the masseria rooms combined, this is a huge enclosed space that was once used for day to day farm activities, gathering crops, sheltering livestock and hosting celebrations and events. In its current state its mostly barren, save for some naturally growing shrubs and trees such as bar-bary figs surrounding the perimeter walls, a slab of concrete is present in front of the animal stall, the remnant of a small shed that was once installed on top then taken down.





Figure 65. Masseria Aia Nuova, *Vegetation in the courtyard*



Figure 66. Masseria Aia Nuova, *Internal view from the rooftop*



Figure 67. Masseria Aia Nuova, *Internal view from the rooftop*

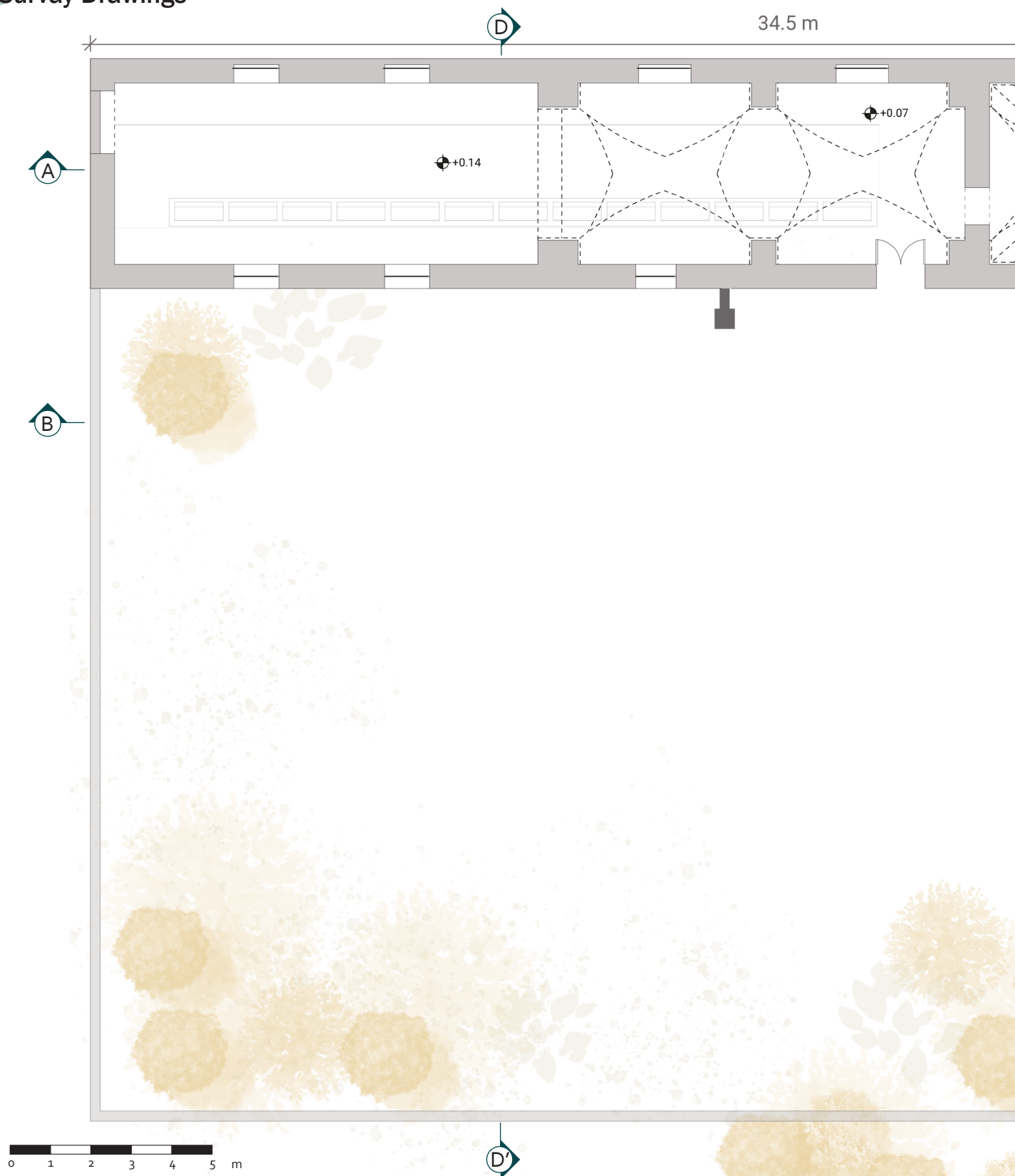


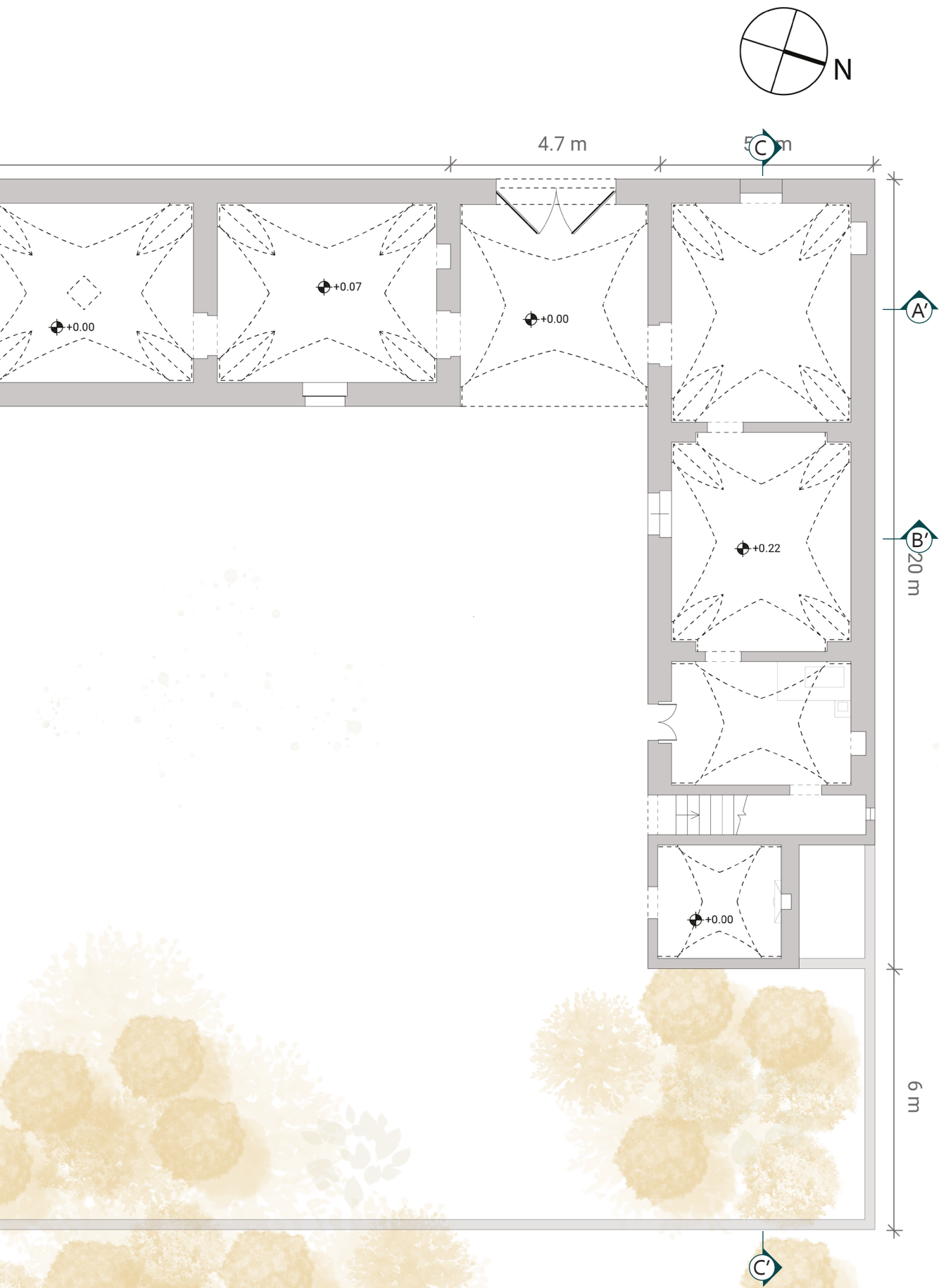
Figure 68. Masseria Aia Nuova, *Courtyard*



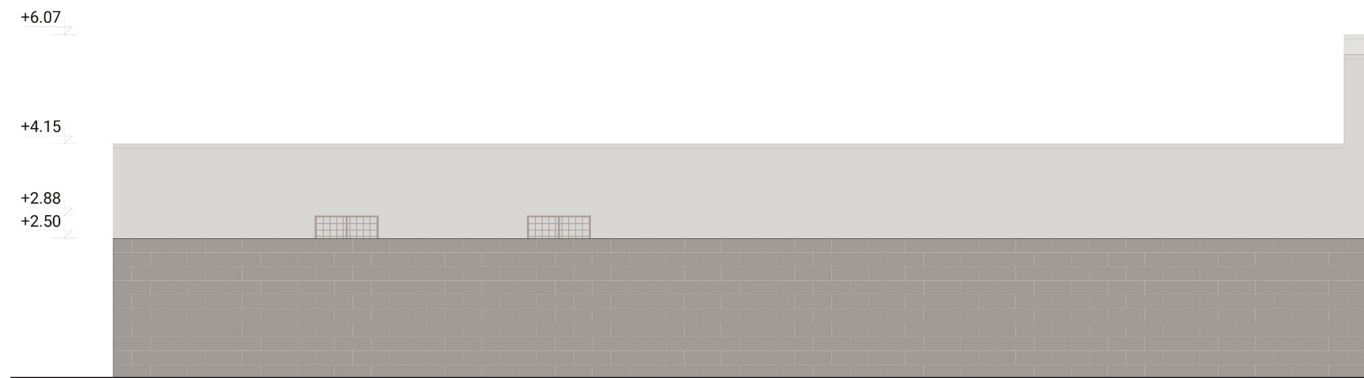
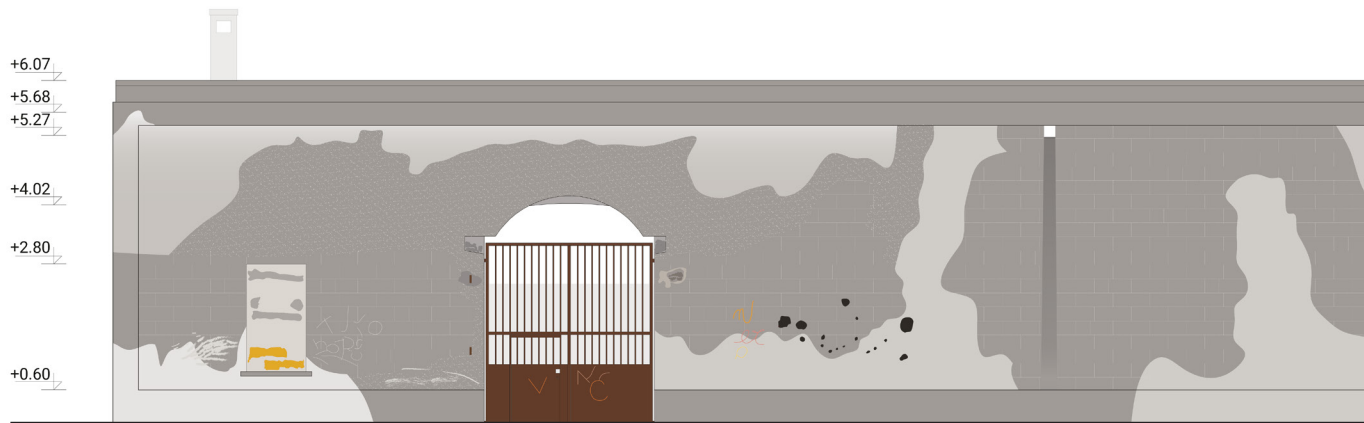
# Masseria Aia Nuova

## 3.4 Survey Drawings



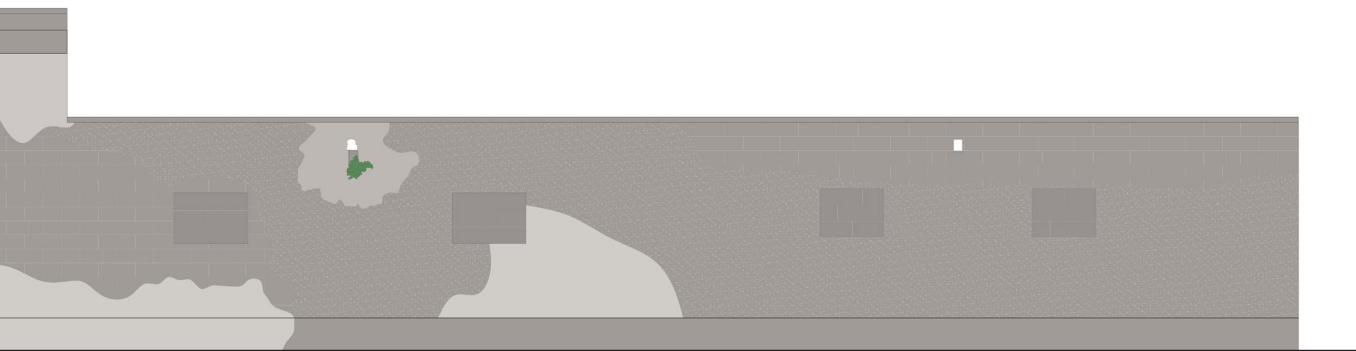


PLAN

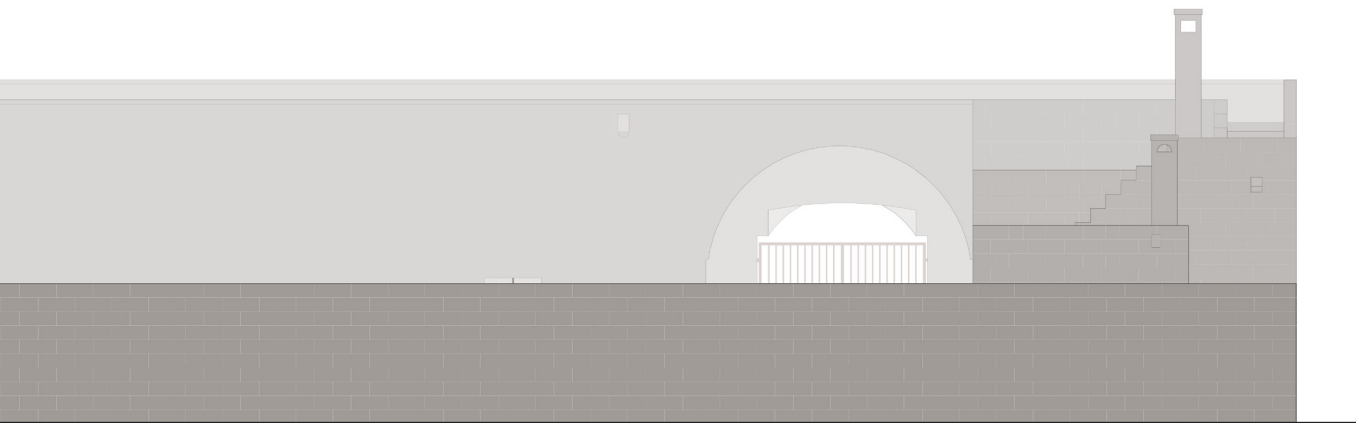




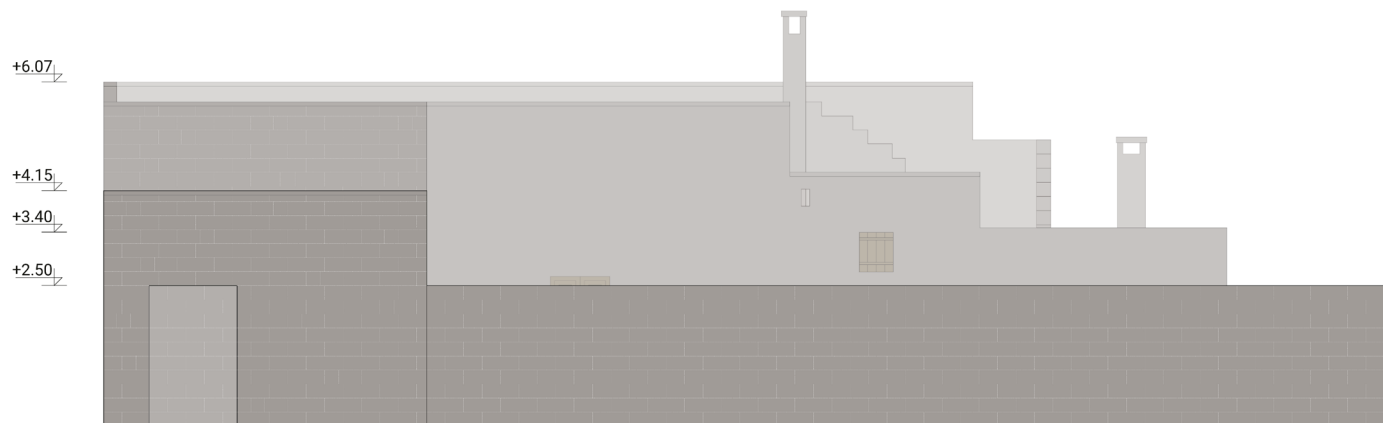
ELEVATION WEST



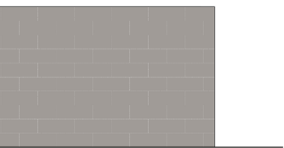
ELEVATION EAST



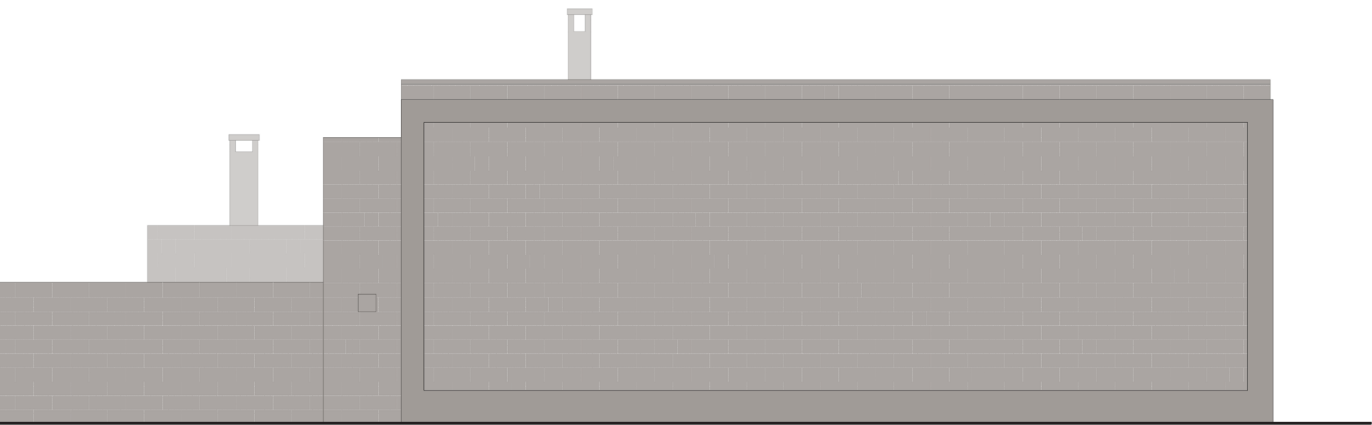
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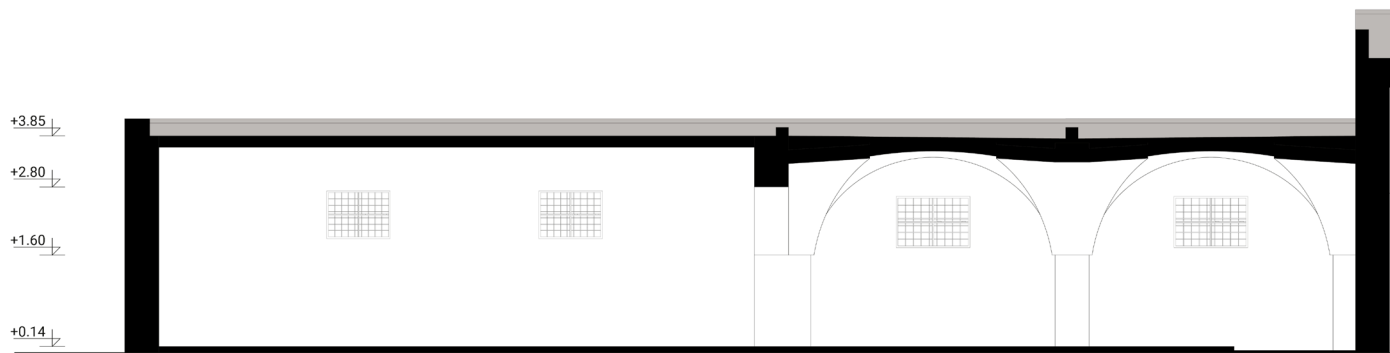
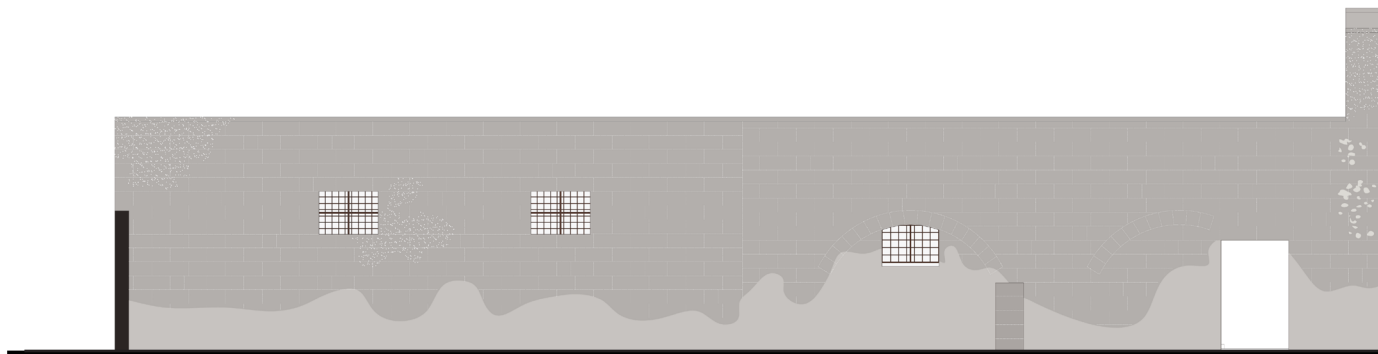
ELEVATION SOUTH



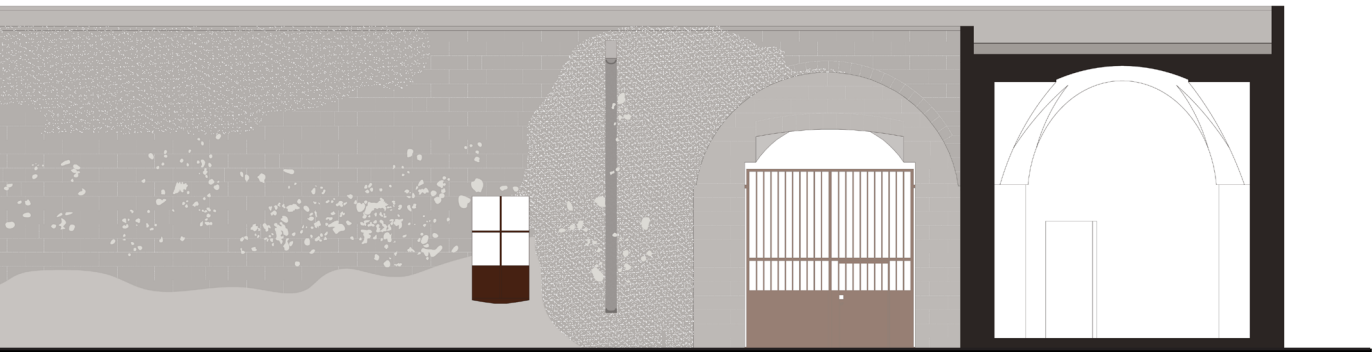
ELEVATION NORTH



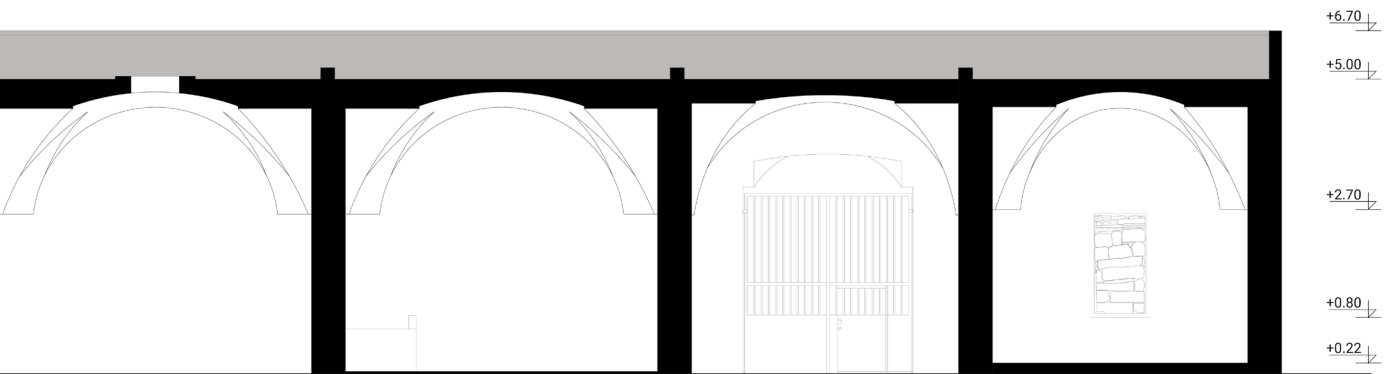


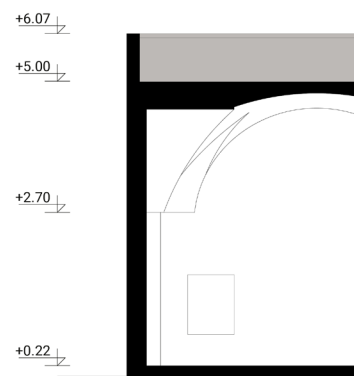


SECTION BB'



SECTION AA'



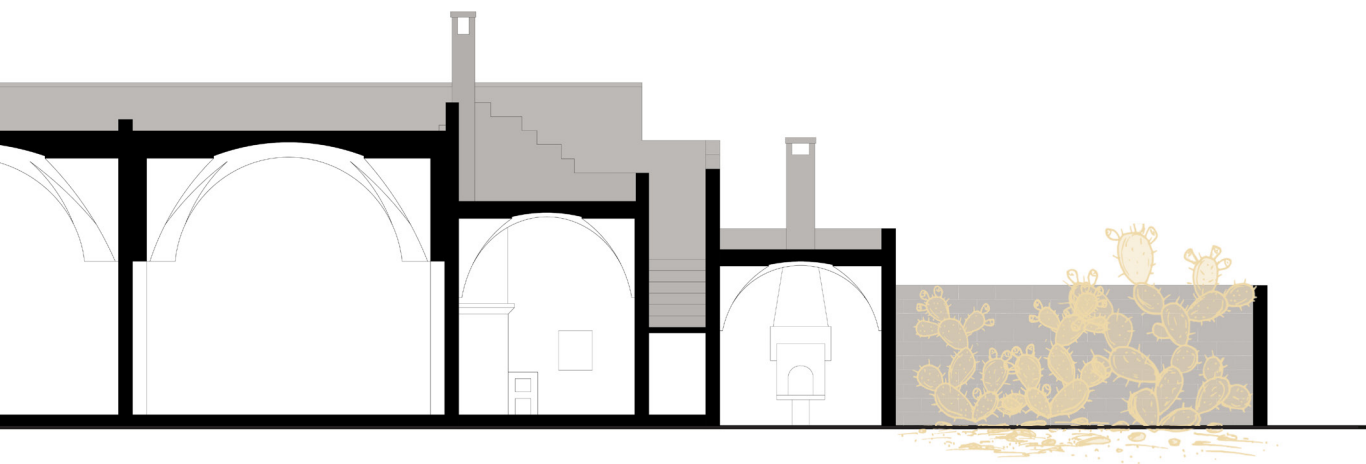




SECTION DD'



SECTION CC'



# Masseria Aia Nuova

## 3.5 Construction Materials

Before the advent of automation and modern transportation, extracting and transporting quarried materials was difficult and very costly. Prestigious and luxurious primary materials were only found in the properties of kings and nobles who often had these shipped from halfway across the world.

Historically, the apulian masseria has always been a rural building used by farmers and the working class for various types of manual labor, due to this the materials used in its construction had to be abundant and sourced locally.

### TUFO

(Figure 69, 73) The most abundant of which is a limestone source rock called tufo locally, it is so abundant that it is found in all aspects of apulian architecture and spans centuries of continuous use.

Tufo<sup>1</sup> (Tuff in english) is a generic name for multiple types of source rocks, depending upon country and location, they range from sedimentary to igneous volcanic rocks. In Apulia, and specifically in the Salento region where the case study is located, tufo mainly refers to calcareous limestones. The subsoil of Apulia is mainly made up of limestone with superficial layers of marine sediments, belonging to the Quaternary and Tertiary periods due to the fact that it was once entirely submerged underwater and as such it is not un-

usual to find traces of fossils and marine life encased within quarried tufo.

While there are many types of tufo in Apulia, the main material used for construction in this case study is dubbed tufo tenero<sup>2</sup>, or gentle tuff in english. It's mined from two main quarries, namely those of Cutrofiano in the Lecce area and Fracagnano in the Taranto area although the Cutrofiano quarry was shut down in the eighties.

The rock from both sources are very similar, white and soft with low hardness, suitable for internal partitions as well as in vaults, it could also be used in exteriors although if left without protection it faced high erosion risks, a solution would be to apply a separating layer of plaster to isolate it from the elements.

Benefits of tufo tenero is its unique workability, the very tender stone can be sawed and adjustments of a few centimeters can be achieved with a rasp. Other benefits come in the form of its affordability and low construction costs, as well as producing somewhat light structures when used in construction all the while not compromising in resistance. These benefits come at the expense of its porous and friable nature, the results of which become evident when the tufo is exposed to the exterior without a protective layer and begins to erode and absorb moisture.

The case study is mainly constructed with tufo blocks.

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1. *Tufo*, <<http://www.treccani.it/tufo>>;

2. Micello A, 2010, *I tufi di Puglia*, in Gaballo M (diretta e curata da), *Spicilegia Sallentina*. Rivista del Caffè Letterario di Nardò, n. 7 – estate 2010. Nardò: Tipografia Biesse, p. 35



Figure 69. .Tufo



Figure 70. Pietra Leccese (Lecce Stone)



Figure 71. Cocciopesto Plaster



Figure 72. Hollow clay brics

### PIETRA LECCESE (LECCE STONE)

(Figure 70, 74) This highly prized stone emerges from the ground throughout the Salento area<sup>3</sup>. In particular near the municipalities of Melpignano, Cursi and Maglie and Corigliano d'Otranto where the majority of the quarries are present.

It contains a bit of marl in the finest and homogeneous paste and lends itself to many special processes due to its high density. It is very well known for its artistic and decorative use in many houses, palaces and churches in Salento. With a prominent presence in Lecce itself where it has replaced marble in the artistic field, especially during the baroque period.

The rock is mainly composed of calcium carbonate<sup>4</sup>, consisting of microfossils and fragments of macrofossils of marine fauna, and of calcitic cement and clay. In terms of color It is white/straw yellow or gray, compact and fine-grained. The coloring varies according to the extraction point and the concentration of its chemical components. Thanks to the presence of clay, it is easily malleable. This malleability opposes it to marble or granite, and favors its use decoratively. In this case study it is used as pavement blocks in the habitable quarters.

### COCCIOPESTO PLASTER

(Figure 71, 75) The cocchiopesto is a plaster, con-

sisting of a lime base to which brick dust is added<sup>5</sup>.

The brick dust gives the dough excellent hydraulic properties, forming a moisture-resistant plaster. This ancient technique was applied by the Romans in the construction of aqueducts, cisterns, walls and roads because it was particularly suitable for damp walls, it was invented by the Phoenicians and left for the former to discover in Sicily.

In this case study the cocchiopesto plaster is applied on the roof of the masseria as a protective layer.

### HOLLOW CLAY BRICKS

(Figure 72, 76) Consisting of a mixture of clay and inerts, drawn and cooked in a high-temperature oven, they have been widely used for many years almost exclusively to make internal walls to which a particular insulating function was not required, while for external walls, load-bearing or of simple plugging, the square blocks of tuff were still used, certainly more resistant but very porous, therefore absorbent, and very heavy. There are many types of hollow bricks and the amount of voids within vary according to the requirements and size but generally do not exceed 70% of the total surface.

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3. *Pietra leccese o pietra di lecce, le origini e gli usi*, <<https://www.carparo.net/pietra-leccese/>>;

4. Vitiello F, 2008, *Manuale di scultura: tecniche d'intaglio ed elegia della pietra leccese. Corigliano d'Otranto: Anet*, p. 9;

5. M.P. Cibelli, *Intonaco di cocchiopesto: tecnica antica e naturale per muri umidi*, <<https://www.architetturaecosostenibile.it/materiali/laterizi-terra-cruda/intonaco-cocchiopesto-tecnica-muri-210>>





Figure 73. Tufo blocks



Figure 74. Pietra leccese flooring



Figure 75. Cocciopesto application on the roof



Figure 76. Gaps in the ceiling showing traces of the terracotta blocks

# Masseria Aia Nuova

## 3.6 Architectural Analysis

In Puglia, the great availability of stone materials prime among which limestone, with its ease of processing and low cost meant that this was the raw material of choice when it comes to construction, from masonry to vault coverings. In addition, it was necessary to make up for the lack of timber in the Salento region that was necessary to build multiple types of roofs. These reasons contributed to the diffusion of stone vaults in salentine architecture, in its so called "Lecce Variant" the structure is self-supporting for most of the construction process, with the wood needed being sometimes used in the lining of the vault's curved bricks, called *unghie* in italian.

Experts of the materials and construction techniques handed their knowledge and skills down to their sons, ensuring its continuity and refinement over time.

Vaults can cover large areas of a room be it square or rectangular, freeing up as much square footage as possible. As such vaults were not only beneficial aesthetically but also helped in the thermal insulation of the rooms and air circulation, adding to the livability of the environment.

The lecce vault was developed around the end of the Baroque period but finds its origins in the construction systems of the renaissance and gothic vaults.

The vaults of Lecce are of two types: *a spigolo*

and *a squadro*. They adapt perfectly to square environments but are born fundamentally to solve the rectangular ones in which cross vaults are aesthetically inferior.

Lecce vaults are an elaboration of the *volta a lunetta* which is formed by joining two generally barrel vaults of different radius, but having axes that are generally perpendicular and coplanar with each other. The vault with the largest radius called the main one, acts as a covering element of an architectural environment, and the other, with a smaller radius, called the secondary one, is useful for creating an opening along the surface of the main vault.

## SPIGOLO VAULT

(Figure 77) The most widespread vault typology in the Salento countryside, it is a compound vault due to it being made up of multiple elements.

Geometrically, it consists of four nails (*unghie*) whose limited length leaves space on top of a cap similar to a sail. Being generally used in presence of discontinuous walls, they need pillars of considerable thickness; for this reason, they are widespread especially in ground floors of buildings.

The construction system of the *spigolo* vaults<sup>1</sup> involves a step by step procedure. The first step is to determine the form of the *unghie* that make up the vault: in the case of a rectangular environment, for the main set of *unghie* one has to choose between the circular, elliptical or ogival form; for the minor set however, it is generally ogival and in rarer cases circular.

Afterwards the form of the arc is traced upon the wall, called *forma madre*, which constitutes the basis for the main set of *unghie* and from which the *forma figlia* is also made for the minor set of *unghie*. The ribs used are not real formwork, they are made of 2 cm thick wooden slats which simply serve as support for the arches that make up the *unghie*. In the case of square environments, the length of the four strings and therefore the size of the arches clearly coincides, and there will be only one type of rib; while there will be two of

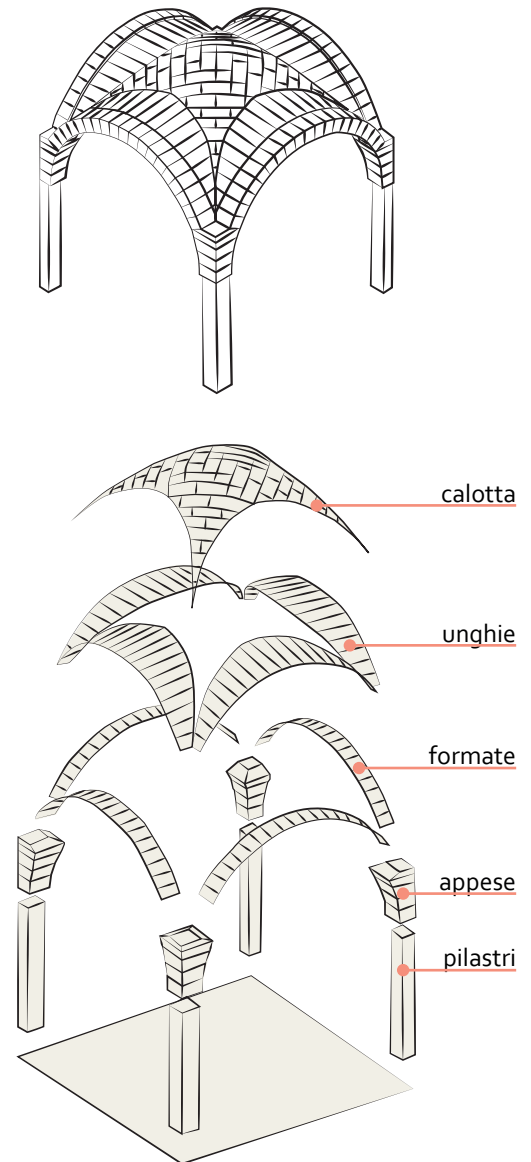


Figure 77. Re-elaborated from Arlati, Accoto, *Le volte...*, cit

1. G. Fallacara, *The Lecce Vault: History, Construction Techniques, and New Design Perspectives. Nuts & Bolts of Construction History*, vol. 3, Paris: Picard, 2012, pag. 99–105,

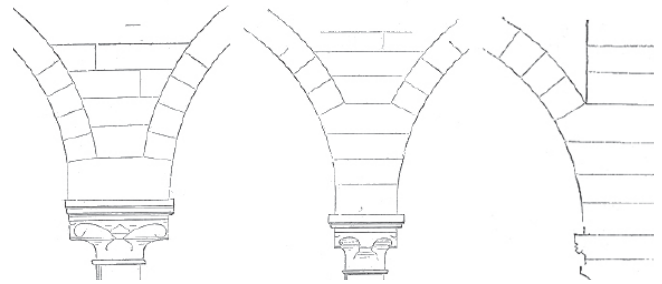
different sizes for rectangular environments.

The first of the *unghie* to be built is the one adjacent to the wall (if present), which in this way constitutes a support for the first row of bricks; for the subsequent rows the support is given by the newly built arch, moving the rib gradually towards the center. Subsequently, the *unghie* will be set on the top of the impost blocks, those on which the loads of the vaulted structure act.

The first rows of bricks are called *appese* and they are considered as elements belonging to the impost block or *piedritti* rather than the vault itself, since they sustain the length of the arch. Their operation is comparable to the *tas-de-charge* of the gothic vaults.

As Viollet-Le-Duc states, "*dans les constructions bien entendues, ou on laisse entre l'extrados de ces claveaux des assises horizontales épousant la courbure de l'arc, ou, si la place ne le permet pas, on pose une série de sommiers avec lits horizontaux*"<sup>2</sup> In good constructions, either horizontal courses are left between the extrados of the springers, following the curve of the arch, or, if space does not allow it, a series of voussoirs are laid horizontally.

"Ils parvinrent ainsi souvent à neutraliser presque complètement des poussées d'arcs sur des murs, ou à diminuer considérablement le volume et le poids des maçonneries destinées à contre-buter



Tas-de-charge placed between the extrados of two arches (left), as a base of two arches (middle), sustained by one arch (right).

In Viollet-Le-Duc E E, 1868, voce 'Tas-de-charge', in *Dictionnaire raisonné de l'architecture française du XI au XVI siècle*. Tome neuvième. Paris: A. Morel éditeur

*ces poussées*" (Contributed to almost completely neutralize arc thrusts on walls, or to considerably reduce the volume and weight of masonry intended to counteract these thrusts).

In the case of *spigolo* vaults, the *appese* or bases are formed generally from 4 or 5 rows of blocks, and their height varies from 0.80m to 1.25m depending on whether the latter are *palmatici*, with rectangular dimensions of 20x25x40/50 cm, or *polpetagni*, with a square section of 25x25x40/50 cm. Of these rows of bricks, the first forms a tooth with respect to the impost block protruding 3 or 4cm from the wall and permits to further accentuate the curve; the last one, called *summarieddu*, has a shoulder shape to accommodate the first

2. Viollet-Le-Duc E E, 1868, voce 'Tas-de-charge', in *Dictionnaire raisonné de l'architecture française du XI au XVI siècle*. Tome neuvième. Paris: A. Morel éditeur, p. 7



row of bricks of the *unghie*. So, it is precisely in the last row of the appese and not on the top of the impost block that the *unghie's piano d'imposta* is located. They consist of rows of bricks arranged perpendicularly to the directing curve and have a constant thickness given by the height of the bricks themselves, of around 20 or 25 cm, while in length they generally alternate between one of 40 cm and one of 50 cm to facilitate the toothing (Figure 78); the protrusion of each *unghie*, that is, the length of the keyline varies according to the measurement of the segments and the size of the environment to be covered, using specifically half the length of the rope.

The *unghie* are therefore set back from the center of the structure, and their diagonal arches unlike in cross vaults, do not actually cross. Knowing the length C of the arch, the protrusion S of the *unghie* can be determined through the following relationship (Figure 79):

$$S = c/2 \times 10/20 = c/4; \text{ and } S = c/2 \times 10/25 = c/5$$

where 20 and 25 indicate the possible thickness of the vault relative to the size of the blocks used, and 10 represents the size of the *sporgiu*, a space between the *unghie* and the *calotta*. The blocks located along the inner edges of the *unghie* end in fact with a diagonal profile being trapezoidal in shape, and the triangular portion of ashlar, called



Figure 78. Arc construction on top of the appese

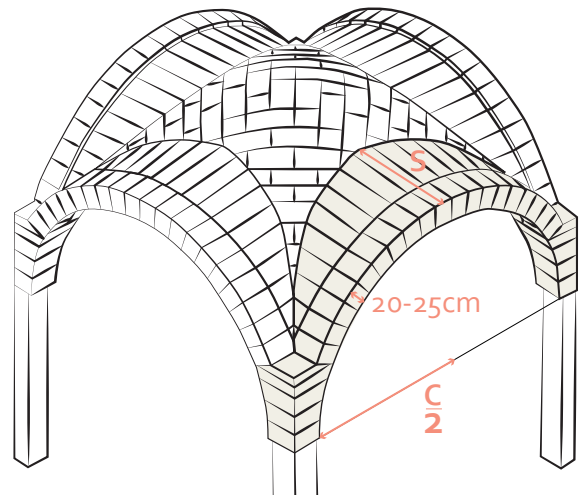


Figure 79. Dimensions taken into account to calculate the width of the unghia

precisely *sporgiu* protrudes 10 cm outward.

A critical point of the *unghie* is the *pizzuto*. This means that at its tip the unghie can “suffer a drop”, the rows of bricks have a longer length at this point, and to that is added the weight transmitted by the rest of the *calotta*; during construction, this is placed at a raised altitude of 5 to 6 cm compared to the key of the main arch. Once the *unghie* construction is completed, another begins for the enclosure of the middle space that has the shape of a four-pointed star whose vertices are also set on the appese between one *unghia* and another. It is in fact from the *spigolo* (edge) shape of the corbels that are placed on top of the *appese* that this type of vault derives its name<sup>3</sup> (Figure 80).

The rows of bricks of the sails, arranged perpendicularly with respect to the their bisector plan and with a rectilinear trend come shaped in their extremities in order to be placed along the edges of the *unghie* proceeding from the bottom to the top.

These edges are then further highlighted through the *capo allegro*, a small dent obtained by raising the *calotta* by 3 or 4 cm with respect to the plane of the *unghie* (Figure 81).

For the first three rows, the thickness of the brick

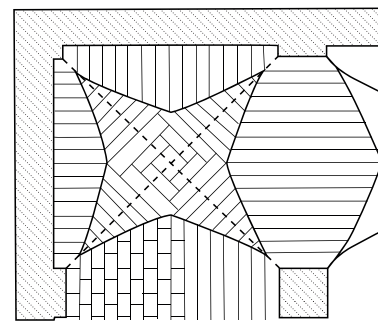
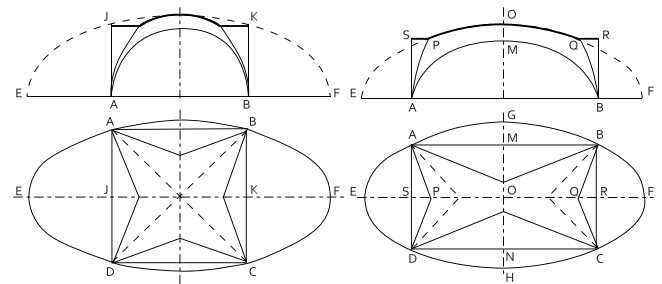


Figure 80. Plan and section of a spigoli vault on a square and rectangular plan. Da Colaiani V. G., *Le volte leccesi* in *Quaderni dell'Istituto di Architettura ed Urbanistica. facoltà di Ingegneria - Università di Bari*, Dedalo libri, Bari, 1967

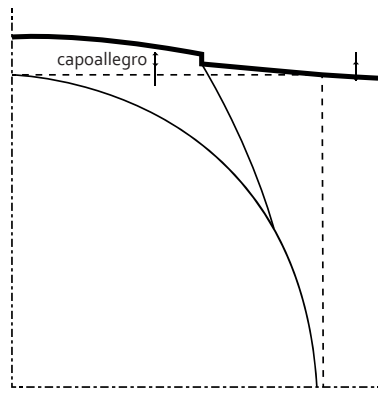


Figure 81. The “capo allegro” between the calotta and the unghie. Ibidem

3. Colaiani V.G., ‘Le volte leccesi’, in *Quaderni dell'Istituto di Architettura ed Urbanistica. Facoltà di Ingegneria – Università di Bari*. Bari: Dedalo libri, 1967, p. 17

is usually 20 cm, while in the rest of the *calotta* (cap) it passes down to 15 cm. The construction of the entire *calotta* proceeds forward at the center of which the 4 rows of bricks meet, since they always kept their initial alignments they are located perpendicular to each other. This causes growth towards the keystone of the vault to take place progressively through rows of self-supporting bricks. In this way it also has the possibility of allowing openings in the center of the *calotta*, allowing for ventilation and lighting to enter the room in which it is present, a single example of this application is present in this case study.

In the instance in which the *calotta* doesn't have an opening, we proceed with the laying of the final brick (*concio di chiave*) which signals the end of the construction and ensures that all previous blocks are correctly embedded (Figure 82).

Subsequently, from the top of the vault, fragments of stones called *scarde* are inserted into the spaces left between a brick and the other, which can never be cut and matched with extreme precision. To conclude the work, especially in the case of non-plastered structures, we proceed to the cleaning and the finishing of mortar joints. Between the key of the main arches and that of the final piece of the *calotta* there is a gap that it is called *sovrasedo* or *reguglio* and has a



Figure 82. Calotta construction. <voltestella.it>

double function: on one hand, it helps in making the direction of thrust in the vault more vertical, and on the other it gives more breathing room to the environment making it less suffocating (Figure 83).

Naturally the four *sovrasessti* are the same in the case of a square room, in which the *conci di chiave* of all the *unghie* are located at the same height seeing as all the arches are equal; they are however different between two pairs of adjacent arches when they are situated in rectangular rooms.

When the vaults are not isolated but follow one another, they are interconnected depending on the pillar locations, by a form of barrel vault called *formata* (Figure 84).

Particular attention is paid to these elements which are made before the *unghie* and that, in many cases even support the weight of the walls of the floors above them, they are made up of particularly resistant stones like those used for *piedritto* walls, usually *pietra leccese* or *carparo* are used due to them being quite resistant. Furthermore, in the case of the *formata* the size of the blocks is different than the other components of the vault, because ashlar refined by knife's edge with a 25x30 cm section are used, therefore are 10 to 15 cm thicker than those of the rest of the structure.

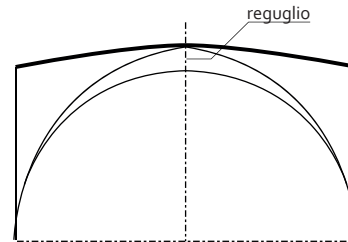


Figure 83. The *reguglio*, difference between the bottom arc and the keystone of the calotta. Da Colaizzi V. G., *Le volte leccesi in Quaderni dell'Istituto di Architettura ed Urbanistica. facoltà di Ingegneria - Università di Bari*, Dedalo libri, Bari, 1967

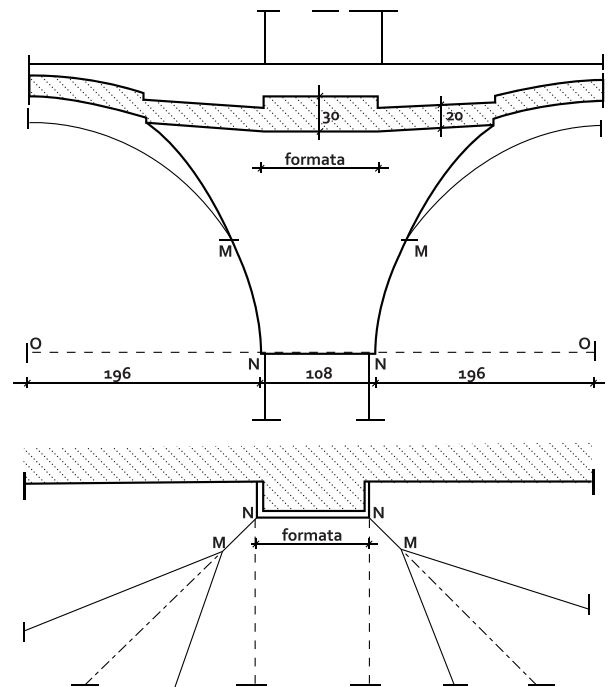
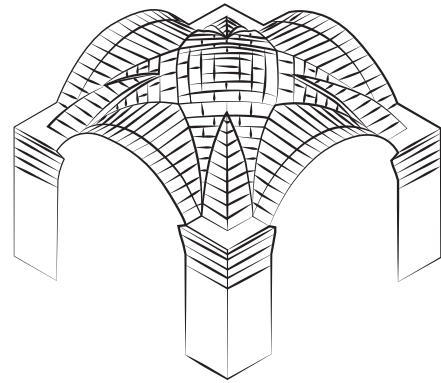


Figure 84. Section and plan of the "formata" between two successive vaults. Ibidem





## SQUADRO VAULT

There are many points of resemblance and differences between the *spigoli* vaults previously described and the *squadro* ones. Both in fact have elements deriving from cross vaults for the four *unghie* and one ellipsoidal *calotta*, but more factors are present in the *squadro* vaults that make them more elaborate and complex than the others (Figure 85). They are found mainly in the presence of continuous walls, and are more frequent on the upper floors of buildings since they do not require large wall thicknesses as is the case with *spigoli* vaults, and a wall thickness of just 20 cm is more than enough to cover a 4x5m vaulted space.

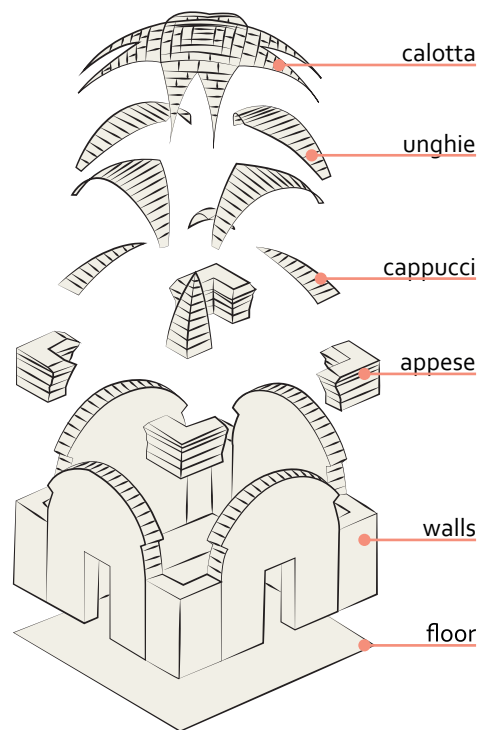


Figure 85. Re-elaborated from Arlati, Accoto, *Le volte...*, cit

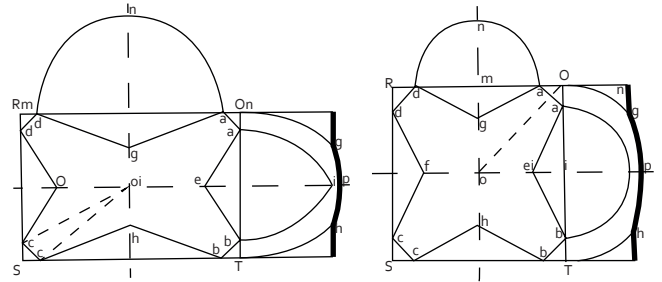


Figure 86. Squadro vault on a square and rectangular plan. Colaiaanni V. G., *Le volte leccesi in Quaderni dell'Istituto di Architettura ed Urbanistica. facoltà di Ingegneria - Università di Bari*, Dedalo libri, Bari, 1967

There are two types of *squadro* vaults: open and closed. The closed *squadro* vault (Figure 86) is the first elaboration of the *spigoli* vault, with the difference that while in the latter the *peducci* end precisely with an edge, in the *squadro* vault there are four transverse shelves protruding on which the *unghie* are set.

To reach the open variation (Figure 87), which is the most widespread, it is necessary to add the *capucci*, or three edges that start from the vertices of the shelves and meet at a certain height, resulting with shapes similar to two hollow triangles in the corners of the room. Specifically, the

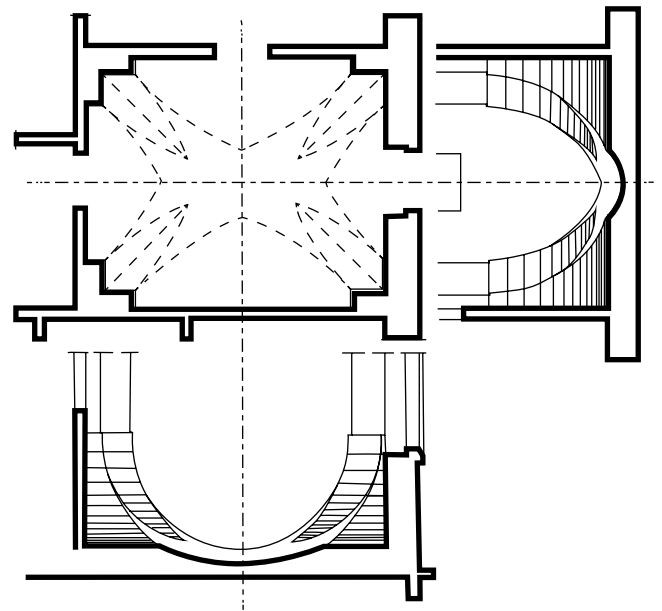


Figure 87. Plan and sections of a *squadro* vault. Ibidem

*capucci* consist of the same cylindrical spindles which are located in the pavilion vaults, and no longer form a single shelf with their impost lines but squares with 90° corners (Figure 88); it is precisely from these that this type of vault derives its name, characterized by L-shaped pillars that empty the corners of the space in which its present.

Their length depends on the area, and ranges from 40 cm up to 1 m. They stick out from the wall creating an offset about 3-4 cm long, while if permitted it can reach 12 cm and set itself to pillars located at the foot of the *squadro* and are 20 to 30 cm thick depending on the space available. From here, therefore, three lines running up the offset: the two lines at the ends of the offset are cross-vaulted corners, the central one at the meeting point between the impost lines is instead that of a pavilion vault.

The extension of the *capucci* (Figure 89), or the point where the three edges from which they are composed meet, has no fixed rule; it makes sure however that all these four *capucci* do not intersect, so they arise generally below the line connecting the vertices of the two contiguous *unghie*.

The *capucci* are in fact separated from the *unghie*, built with the same technique as those of

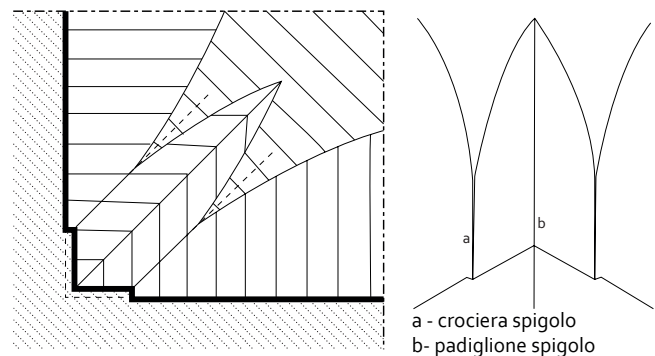


Figure 88. Plan of a cappuccio of a squadro vault with indications of the spigoli that make it up. Ibidem

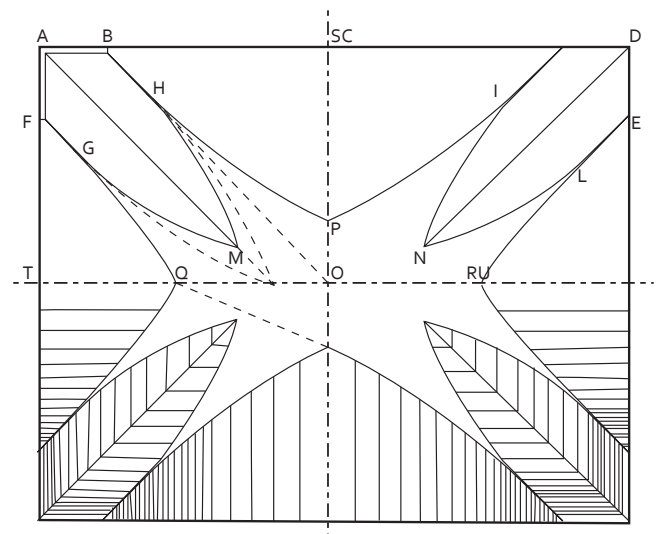


Figure 89. Maximum extension of the cappucci. Ibidem

the *spigoli* vaults but with slightly different characteristics. The protrusion of the *unghie* is a function of the dimensions of the bricks that are used; in this regard, different sizes than the previous ones also have *sporgiu* that are in their terminal portion: while for the *spigoli* vault the trapezoidal part protrudes 10 cm, while that of the *squadro* protrudes 14 cm.

Once the construction of the *unghie* and the *cappucci* is finished, we obtain a stellar surface in which the points are no longer four but eight (Figure 90), finding a pair on each end of the *calotta*; in each pair, the tips are symmetrical with respect to the plane exiting the *cappuccio*. The *calotta* in this type of vault has more important dimensions compared to the previous type and unloads its full weight completely on the *unghie* and *cappucci*, therefore in order to avoid a cave in at the *pizzuti* (the vertices of the *unghie*), the *capo allegro* assumes greater dimensions and the same happens with the *reguglio*, which reaches up to 50-60 cm.

From an aesthetic point of view, the *squadro* vaults constitute a solution of considerable value and elegance, thanks to the presence of numerous different but carefully studied elements that are composed to obtain a pleasant and singular result. They are however quite complex and labor

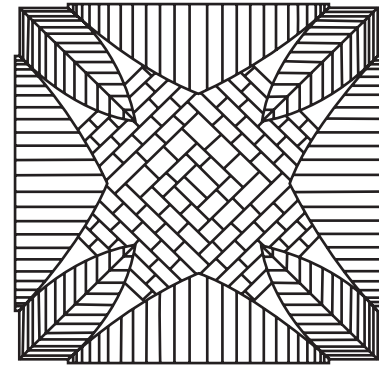


Figure 90. Squadro vault viewed from above showing the layout of the bricks.

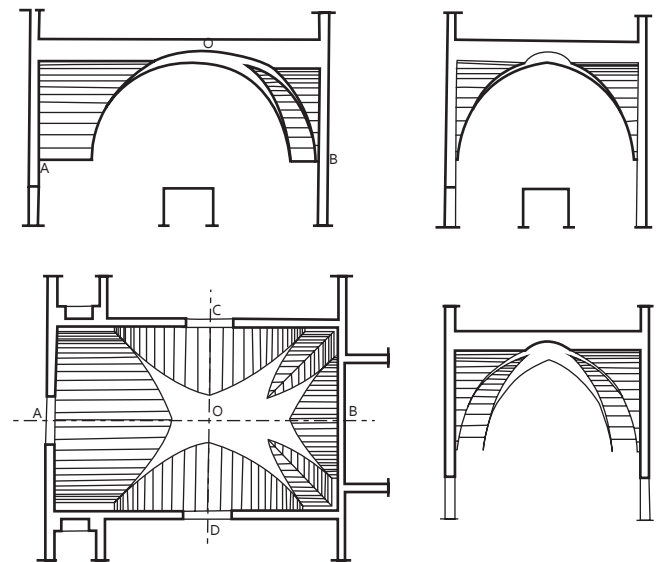


Figure 91. Plan and section of a mixed vault, both spigolo and squadro. Colaianni V. G., *Le volte leccesi* in *Quaderni dell'Istituto di Architettura ed Urbanistica. facoltà di Ingegneria - Università di Bari*, Dedalo libri, Bari, 1967



intensive in their realization, moreover, they are not very suitable for covering rectangular spaces that are too elongated in which case the *spigoli* vault is preferred. Anyhow, these are not irreconcilable solutions because, albeit rarely, they can be combined to form a so-called mixed vault (Figure 91).

These mixed vaults are used in particular cases in which, for example, they have to necessarily maintain certain wall thicknesses and therefore the use of only one of the two solutions is not possible; in similar occasions, however, a barrel vault with *spigolo* heads is often opted for rather than a mixed one which always results a bit out of balance in its components.

The materials used for the construction of the vaults include blocks of Lecce or tufo stones, known for their tenderness and therefore easily modeled albeit still guaranteeing the stability of the structure. Starting with the *appese*, whether they are those of a *spigolo* or *squadro* vault, great precision is given to the cutting and positioning of the stones, especially those located on the top which will have to support the *unghie* in the first case and the *cappucci* afterwards. These segments are, for this reason, shoulder shaped (Figure 92): part of the upper portion has a radial position, in other words is perpendicular to the curvature of the *appese* itself, in order to give it a

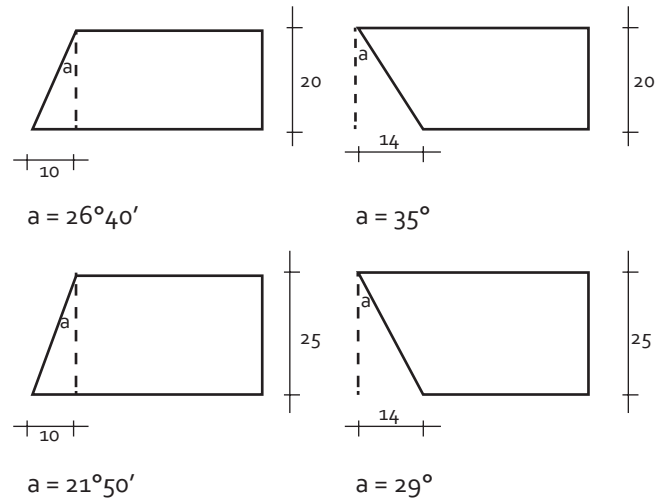


Figure 92. Dimension comparison between sporgiu of a spigolo and squadro vault. Relaborated from Colaizzi V. G., *Le volte leccesi in Quaderni dell'Istituto di Architettura ed Urbanistica. facoltà di Ingegneria - Università di Bari*, Dedalo libri, Bari, 1967



Figure 93. Appese in contact with an unghia in a spigolo vault.

continuity with the next portion of the vault (Figure 93).

Once two *unghie* are placed adjacently on the same shelf (*appesa*), the corner ashlar will have two accordingly shaped sides as consequence. It's worth noting that the *appese* are not independent from the wall structure, they do support the vault but unlike say the *unghie* or the *calotta*, they are part and parcel of the wall itself, being made with the same materials used in those walls differing only in the way they are cut and shaped as seen in (Figure 94).

And this is because the dent protruding from the wall is around 3-4 cm, so the *appese* have to be well embedded within the supporting structure, otherwise the vault risks collapsing.

The next step requires the installation of the *unghie*, and the *cappucci* in the case of the *squadro* vaults. If square or trapezoidal blocks are used for the *unghie*, it is necessary that they also have a triangular edge that will have to match with the sides of the *sporgiu*, or protrusion.

Between the *spigolo* and *squadro* vaults, the *sporgiu's* size differs, being 10 cm for the *spigolo* and 14 cm for the *squadro* vault with the inclination angle also differing based on the brick's height (Figure 95).



Figure 94. Blocks that make up the *appese* and the walls. <http://www.lacortegiuseppe.it>



Figure 95. *Appese* of a *squadro* vault. <http://www.lacortegiuseppe.it>

The blocks used for the construction of the *cappucci* are also trapezoidal and called *spari* because of their different sizes; particularly difficult to design and build are the topmost blocks that close the *cappucci* because they have a singular profile in the shape of a trihedron and are called *cappello da prete* (Figure 96).

Oftentimes instead of cutting two smaller blocks the *cappello da prete* is instead obtained from a single ashlar which is installed together with the first row of the *calotta*, to ensure its seal. In practice, the blocks used in both *spigoli* and *squadro* vaults often contain a further vertical cut in the final part of the *cappello da prete* which allows the creation of a *tooth*, the so-called *capo allegro*, and causes the *calotta* to be set one level above that of the *unghie*.

It is on the inclined side that the *calotta's* blocks are set (Figure 97), which is built in progressive rows until the laying of the final ashlar (*concio di chiave*) is reached, fundamental for the static integrity of the entire vault. The ones used are square blocks to minimize the thickness of the joints, but do not have particular cutting geometries either.

Sometimes the *concio di chiave* can have a square section, depending on the surface that remains

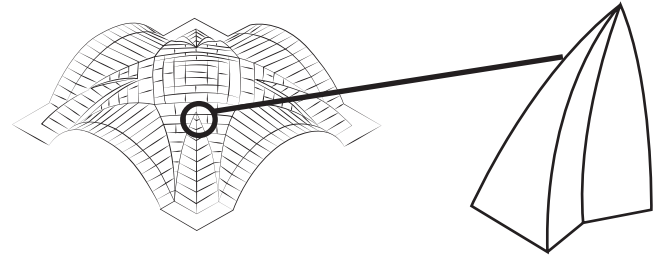


Figure 96. Final block of the cappuccio. Relaborated from Arlati E., Accoto L., *Le volte leccesi tra tradizione e innovazione. riformulare la vocazione ediliziadelle cave.*, Mario Congedo Editore, Galatina, 2001



Figure 97. Calotta under construction in a squadro vault.

after all the rows of the *calotta* have been laid cross perpendicularly.

### SPIGOLO VAULTS

There are four vaults of this typology in the maseria, one in the animal stall, one over the main entrance, and two in the living quarters.

The vaults in the animal manger (n. II in Figure 98), unlike the others, possesses a *formata* (Figure 90), which occurs when the vaults are not isolated but follow one another, they are interconnected depending on the pillar location.

The other three vaults are singular such as they are separated by the bounding walls, the entrance vault is distinct from the rest in that the tufo bricks from which its made can be most clearly identified due to a lack of any paint or plaster covering them (Figure 100).

In the residential quarter, both vaults (Figure 101-102) are intersected by two chimneys due to the presence of ovens once used for baking food. They are distinct in that they are smaller and lower in height than the rest.



Figure 99. *Spigolo Vaults in the animal manger - formata* (n.II in Figure 98)



Figure 100. *Entrance Vault*



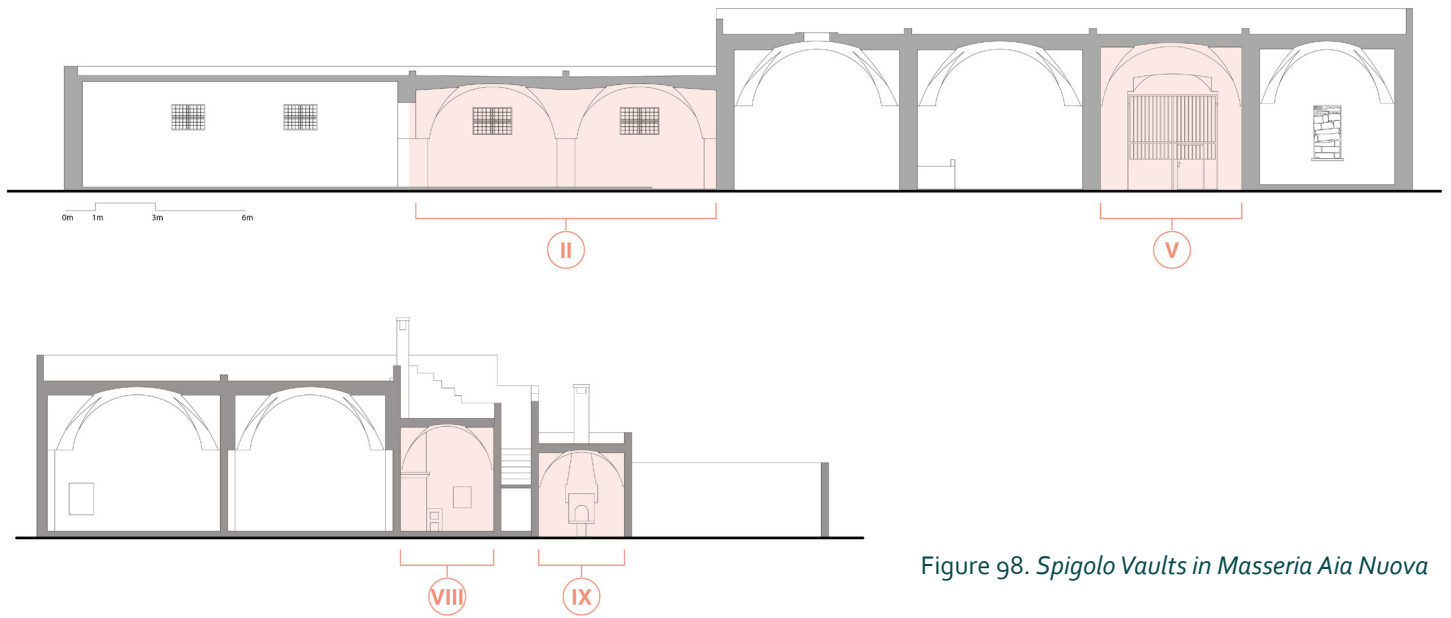


Figure 98. *Spigolo Vaults in Masseria Aia Nuova*



Figure 101. *Kitchen Vault*



Figure 102. *Small oven Vault*

## SQUADRO VAULTS

There are four vaults of this typology in the maseria, two in the animal stall and two in the living quarters. Vault in the food storage (n. III in Figure 103), unlike the others, possesses a vault opening that is sealed with glass and acts as a skylight (Figure 104)

All four vaults are of near identical measurements due to the rooms being of the same size and height, the difference between them is aesthetic with the exception of the roof opening, the vault in the food storage (Figure 104) has absolutely no plaster or paint applied, the closer vault, in the animal quarter (n. IV in Figure 103) has had a layer on top but has partially degraded and is showing the bricks below (Figure 105), while the two vaults in the living quarter (n. VI and VII in Figure 103) are fully painted white with presence of moisture decay but nonetheless the bricks beneath are indiscernible (Figure 106-107).



Figure 104. *Squadro vault with vault opening*  
(n. III in Figure 103)



Figure 105. *Squadro vault in small animal manger*  
(n. IV in Figure 103)

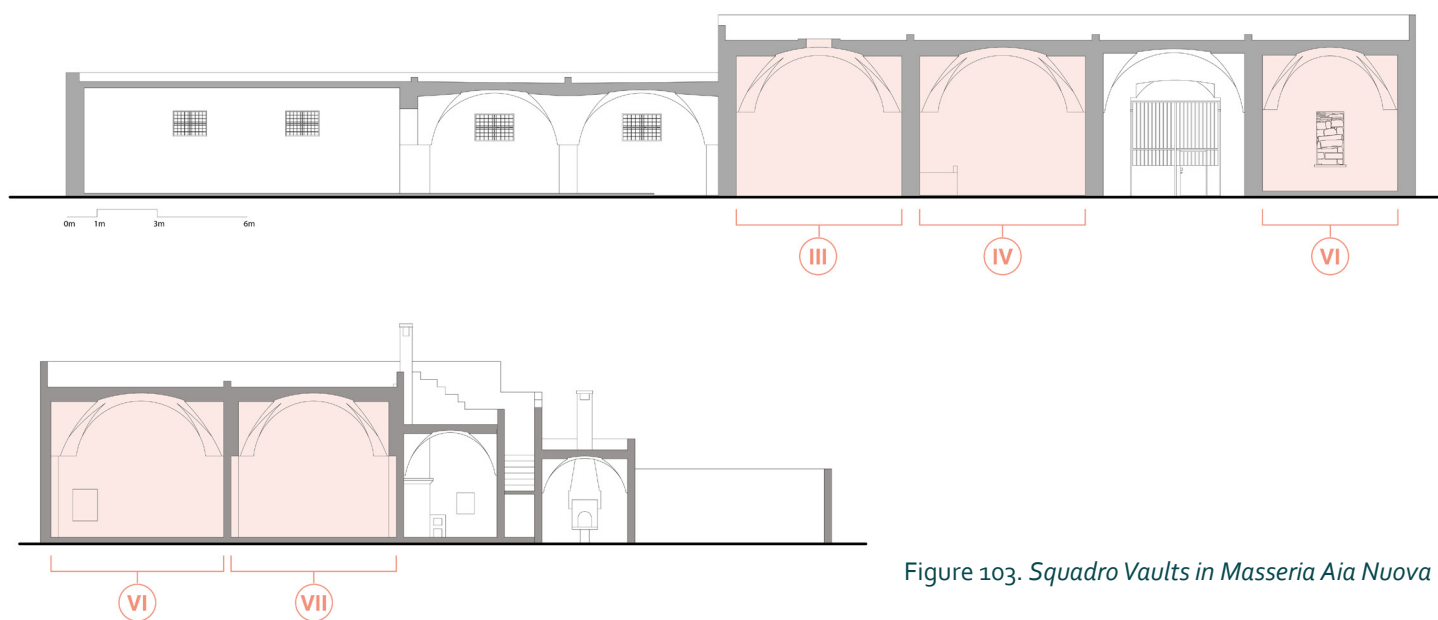


Figure 103. *Squadro Vaults in Masseria Aia Nuova*



Figure 106. *Squadro vault in red room*  
(n. VI in Figure 103)

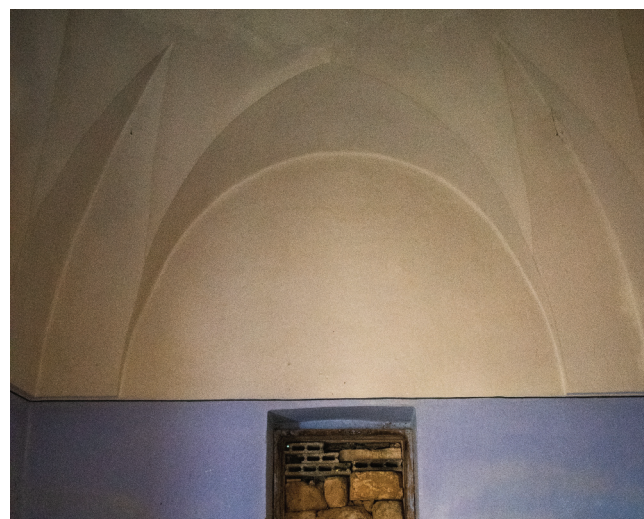


Figure 107. *Squadro vault in blue room*  
(n. VII in Figure 103)

## THE FLAT ROOF

Considering there is no preexisting roof layout data for the building, an on-site inspection to measure and identify the nature of the roofing was needed.

A flat roof is located at the end of the animal stall.

Its components can be identified through the various cracks and gaps exposing the inner truss structure (Figure 108), individual clay bricks can be seen (Figure 109).

Cross section reveals a reinforced concrete slab with lattice joists and hollow clay bricks.



Figure 108. *Inner truss structure*



Figure 109. *Individual clay bricks*





Figure 110. *The animal manger, different roofs*



Figure 111. *The animal manger flat roof*



Figure 112. *The animal manger flat roof with damages*



Figure 113. *The animal manger flat roof*

### ***Hypothesis***

(Figure 114)

Due to a lack of official architectural documents related to the masseria, the inner layout, thickness and materials used in the construction of the walls had to be obtained through an on site inspection.

Coming to the conclusion that the main walls are infact two types: cavity and single layer walls.

### ***Survey***

(Figure 115)

Some details (Figure 116-117) provide the basis for the cavity wall hypothesis, showcasing on two occasions the presence of a 10 cm wide gap between two 25cm brick rows, as well as diatoni occasionally bridging between both. In the instances in which the cavity isn't visible a consistent wall thickness of 60 cm is detected around the door and window openings.

The gap is filled with gravel and small rocks.

The door openings details in the habitable quarter (Figure 118-119) show a depth of a single brick layer measuring 25cm. Based on earlier observations and by referencing the traditional construction practices employed in the Salento region, a few conclusions can be made:

- the main construction material is the tufo stone, and is typical of the region;



Figure 116. *Wall under the window*  
(n. 1 in Figure 115)



Figure 117. *Wall in the animal manger*  
(n. 2 in Figure 115)



Single layer wall

Cavity wall

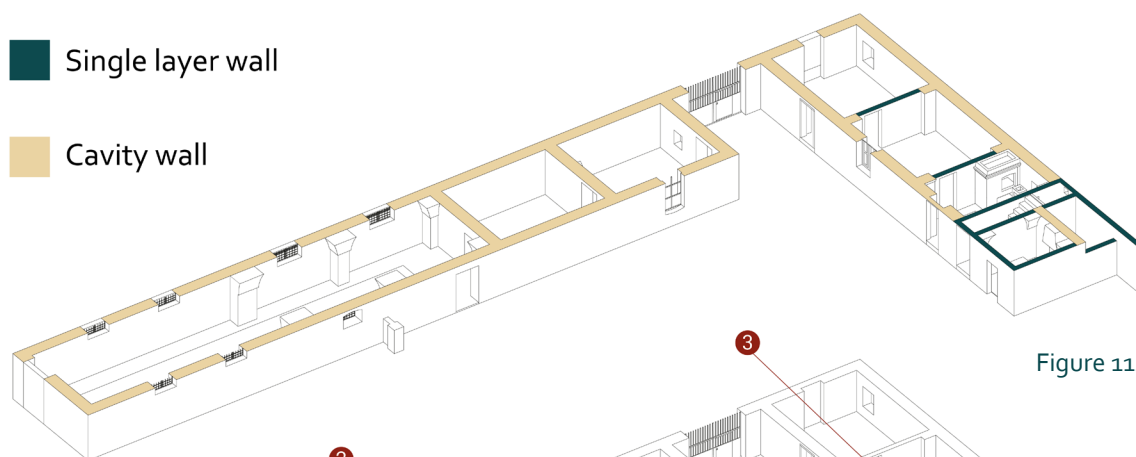


Figure 114. Hypothesis

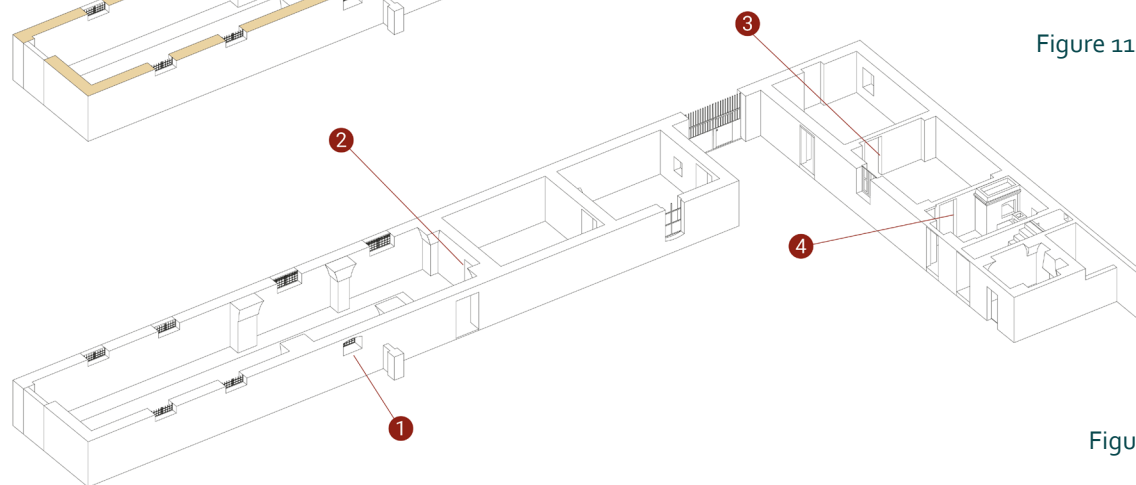


Figure 115. Survey



Figure 118. Door opening between the red and the blue room (n. 3 in Figure 115)



Figure 119. Door opening between the kitchen and the red room (n. 4 in Figure 115)

- the two vault typologies present in the masseria are of the "spigolo" and "squadro" variants;
- the "appese", and the pillars supporting them, are bonded to the perimeter walls, but the "unghe" are not
- the walls of the masseria are divided into two categories: cavity and single layer walls with the former being the most abundant, whilst the latter separates the various rooms found in the habitable quarter of the masseria.

Figure a (in Figure 120) shows the volta a spigolo present in the animal manger, its elements and composition along with its relation to the cavity wall, the cavity along with the "diatoni" are visible (n.2 in Figure 120).

There is a possible infill over the extrados of the vault, traditionally using stones and gravel (n.1 in Figure 120).

Figure b (in Figure 120) shows the single layer wall separating two rooms in the living quarter (n.3 in Figure 120).



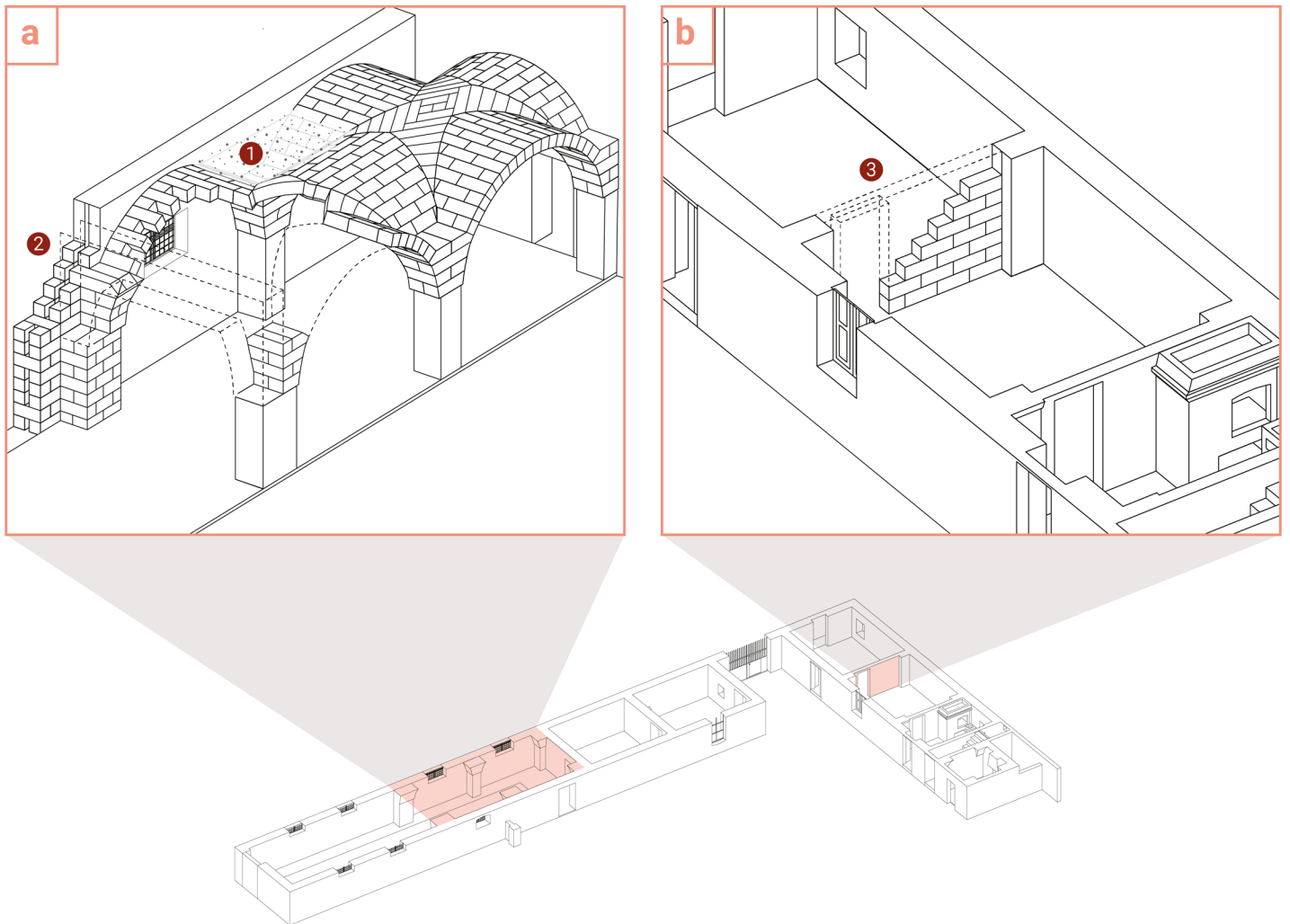


Figure 120. *Wall analysis*



Yes Please





4

## Project Goals

Distillery, <slowfood.it>



## Project Goals

The Masseria project proposal focuses on three main points: the production of Grappa as the transformation process, cultivation of beer grade barley as crops for the arable land and the organization of cultural activities for the dissemination of the project.

The objectives of the Masseria are primarily the reuse of the territory's outputs; in particular the distillery will use the pomace, a fresh, quality kilometer zero product from wineries around Novoli.

The outputs deriving from the production process of Grappa will become adequately reallocated, creating new opportunities and creating value in the surrounding area; this systemic approach of material flows will lead to the stipulation of partnerships with local actors, creating a mutual exchange of products and services.

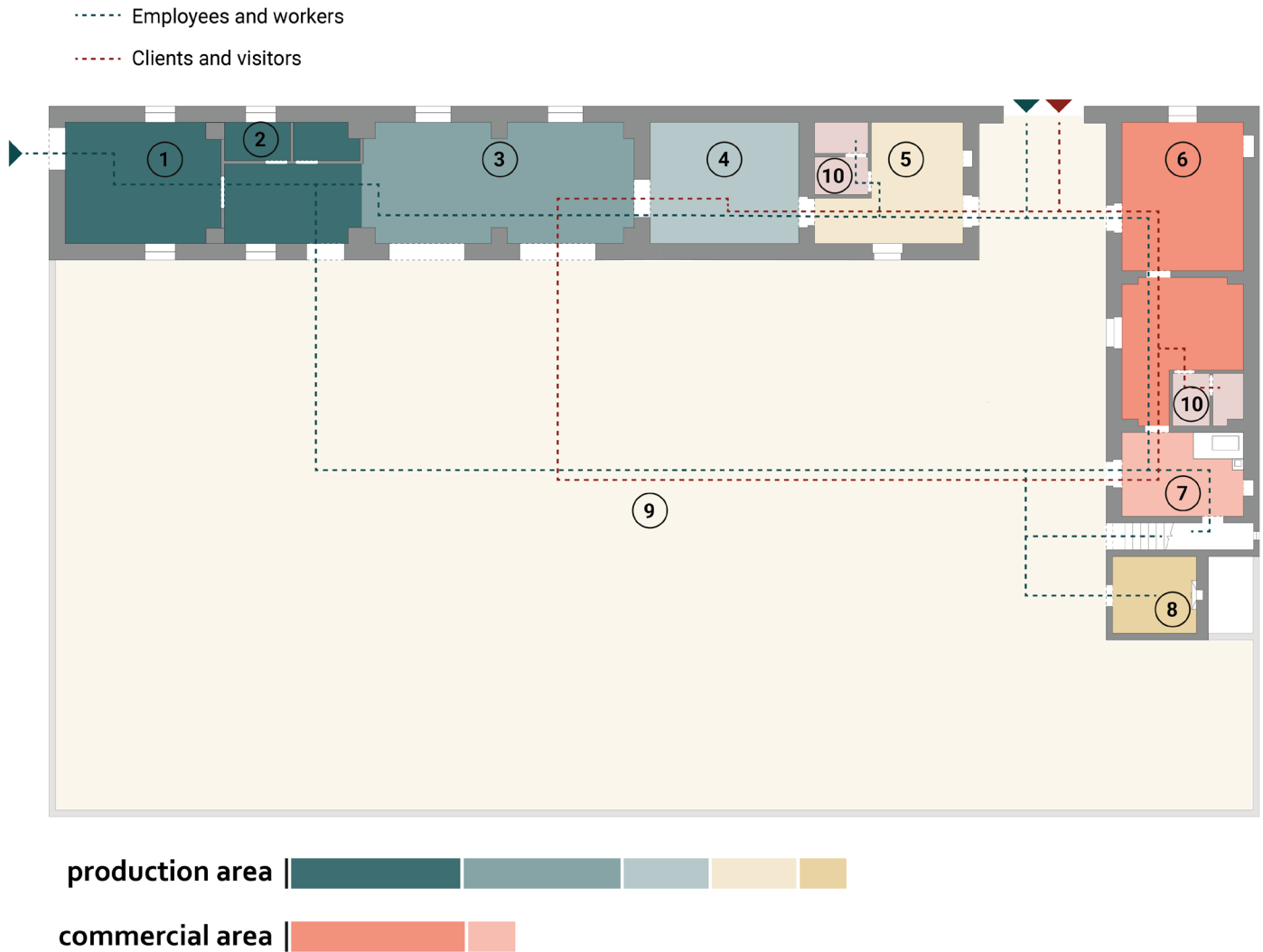
The cultivation of beer barley in the fields della Masseria is born from the desire to satisfy the needs of the Birra Salento brewery to cultivate the raw material for the production of its craft beer; collaboration with the business allows it to be inserted within an already present cooperative system, thus supporting the needs of a local company.

The approach to the cultivation of the land of the Masseria would need to be in line with the processes and the times required by nature, without

the use of chemicals such as fertilizers or herbicides; therefore organic farming practices designed specifically for the land will be implemented, in order to allow their regeneration, with the consequent possibility of making profits from sowing them. The cultural activity of the Masseria is another fundamental point: the goal is to showcase the project that led to the business's creation and make the community of the territory an active, giving life to a point of aggregation for the community. To that end, educational visits will be organized inside of the Masseria since an active community is more responsible and attentive to the needs of the territory. Visits to the company will lead to a rapprochement of the people towards the agricultural culture, with a rediscovery of traditions and customs that have been lost in recent years; the dissemination of know-how will have positive repercussions concerning the citizens' awareness, creating cohesion and synergy in the community for a sustainable lifestyle.



## AREAS AND FUNCTIONS



① Distillery room

② Lockers room

③ Bottling room

④ Ageing room

⑤ Offices and laboratories

⑥ Events and tasting room

⑦ Exhibit room

⑧ Storage room

⑨ Courtyard for events

⑩ Restrooms

Figure 121. Areas and functions

# Project Goals

## 4.1 Layout Organisation

Firstly, constructions must have a solid structure. However, layout requirements must include functional separation of activity processes, possibly through appropriate plant techniques or appropriate criteria for preparation, packaging and storage operations; these may involve risks of various kinds. They must also allow for proper hygiene practices that also prevent cross-contamination, during operations, between food products, equipment, materials, water, air exchange or personnel interventions. Buildings, in addition to not being themselves a source of contamination, must be designed and constructed in such a way as to prevent any danger to products and people while respecting safety regulations.

### SPACE MANAGEMENT

In drafting the proposal, high attention to the distribution of spaces that best respond to the needs of the various activities was considered. To each area of the Masseria one specific function was assigned based on the architectural and spatial characteristics and its position within the complex itself.

The wing perpendicular to the entrance avenue will be dedicated to activities related to the distillery and the processing of its by-products, with annexed offices and labs. This area is in fact the largest for dimensions and, in some portions, it is possible To implement expansion interven-

tions or architectural and structural modifications, since there are no elements to preserve like arches or vaults. In fact, looking closely at these spatial divisions starting from left to right:

The animal manger will be divided in two, one portion will house the distillery equipment, while the other contains the bottling and packaging equipment. It is worth noting that the openness and lack of obstacles makes this room suitable for machinery, as well as the presence of two sealed arches that, once restored to their previous state, will provide an excellent gate towards the courtyard. This is important both on an aesthetic and on an operational level.

The vault with a skylight is the room adjacent to the animal manger and is distinguishable by the fact that it has no windows, instead it has a gap where the keystone of the vault would normally be. The lack of windows makes the room suitable for storing grappa for aging.

The small manger is the last room in the animal quarter, its position nearest to the main entrance as well as having a large window makes it suitable as an office.

The vertical wing, the one formerly used as a habitation for the workers, will be reserved for reception activities, with rooms dedicated to tasting and the consumption of the products of the company. The choice is justified by a clear

division of the environments already present at the structural level of the building, with rooms of modest dimensions but characterized by typical architectural elements that give it particular aesthetic values.

The red room and the blue room, both are to serve a single function: hosting the tasting bar.

The big oven room will house the exhibition area dedicated to showing the eventual final product, explaining the production methods, origins of the raw materials, awards, etc.

The small oven room, once used as a kitchen, is the only room that is only accessible from the courtyard. Its lack of windows, small size and location, make it suitable as a storage room.

The courtyard, empty and abandoned in its current state, will be shaped to meet the needs of the masseria, a portion adjacent to the fence on the side opposite the avenue, will be occupied by a synergistic green area. In the space of about 600 square meters, trees and shrubs especially selected to be able to grow and thrive without the necessity of continuous maintenance, will be planted, coupled with plants that would spontaneously grow in the ground, which will create a sort of garden in which visitors will recognize the traditional smells and flavors of the Mediterranean flora. While a portion will be dedicated for the tasting area, a set of tables will be placed

in front of the bar. Enough navigable space will be left in front of the production area, to ensure clear passage of vehicles and supplies entering the facility.

As for the fields surrounding the masseria, they will be used for the cultivation of beer barley as previously mentioned, and beans to be used as a green manure to enrich the soil. Alternating between the two each year.

## **CIRCULATION**

Aside from the main entrance, the masseria possesses another point of entry located in the rear portion of the animal quarter, a sealed doorway which would be made usable again.

The project envisions areas for clients and guests, which would give them freedom of movement in the bar, the exhibition area and the courtyard, however a guided tour is needed in the production area. This one would see them take a designated path through the offices, the aging room, and the bottling area and then outwards to the courtyard. The distillation room is off limits for guests, however the glass curtain wall separating the bottling and distillation areas ensures the guests a full view of what takes place behind it. As for the employees, they have full access to all portions of the masseria.

# Project Goals

## 4.2 Demolitions and Constructions

For this project, retaining the architectural aspects of the existing building is desired, however some structural changes need to take place to ensure circulation and functionality of the masseria in its working phase.

Firstly, the flat roof (n.8 in Figure 122) will be taken down regardless of the project, due to its current decayed state, in its stead a volta a spigolo will be constructed to go in line with the other roofs in the masseria.

The doorway located in the back of the animal stall (n.1 in Figure 122) was once one of two entrances into the masseria, the first being the main gate. It was sealed off to prevent access into the abandoned building, it will be reopened in any restoration effort.

The animal manger (n.2a in Figure 122) running along the length of the main stall along with the elevated concrete slab underneath, will be removed as they constitute an obstacle to the future function of the space.

The two arches located between the manger and the courtyard (n.5 in Figure 122) have been sealed up in the past, however the project sees them reopened again and double up as windows and doors.

Space for a new door will be made in the animal manger (n.4 in Figure 122), in the portion where the distillery will be located, this door will provide an easier exit to and from the courtyard.

The small manger (n.2b in Figure 122) located in the first room upon entry to the animal quarter, will also be taken down to make room for staff restrooms. Another restroom will be built in the red room, located in the habitable quarter.

This doorway (n.3 in Figure 122) connects the animal stall with the feed storage room, to make way for the heavy machinery and complex processes in the distillery, it will be widened by taking down a portion of the wall.

*Parts of the exterior wall between the stall and the courtyard will be taken down to make way for a door to better enhance the circulation in and out of the courtyard and to lower congestion in a packed workplace, this door will provide access to the future distillery room.*

A portion of the wall surrounding the window located in the multipurpose room, has been destroyed on the bottom end (n.6 in Figure 122), either from human intervention or through erosion over time.

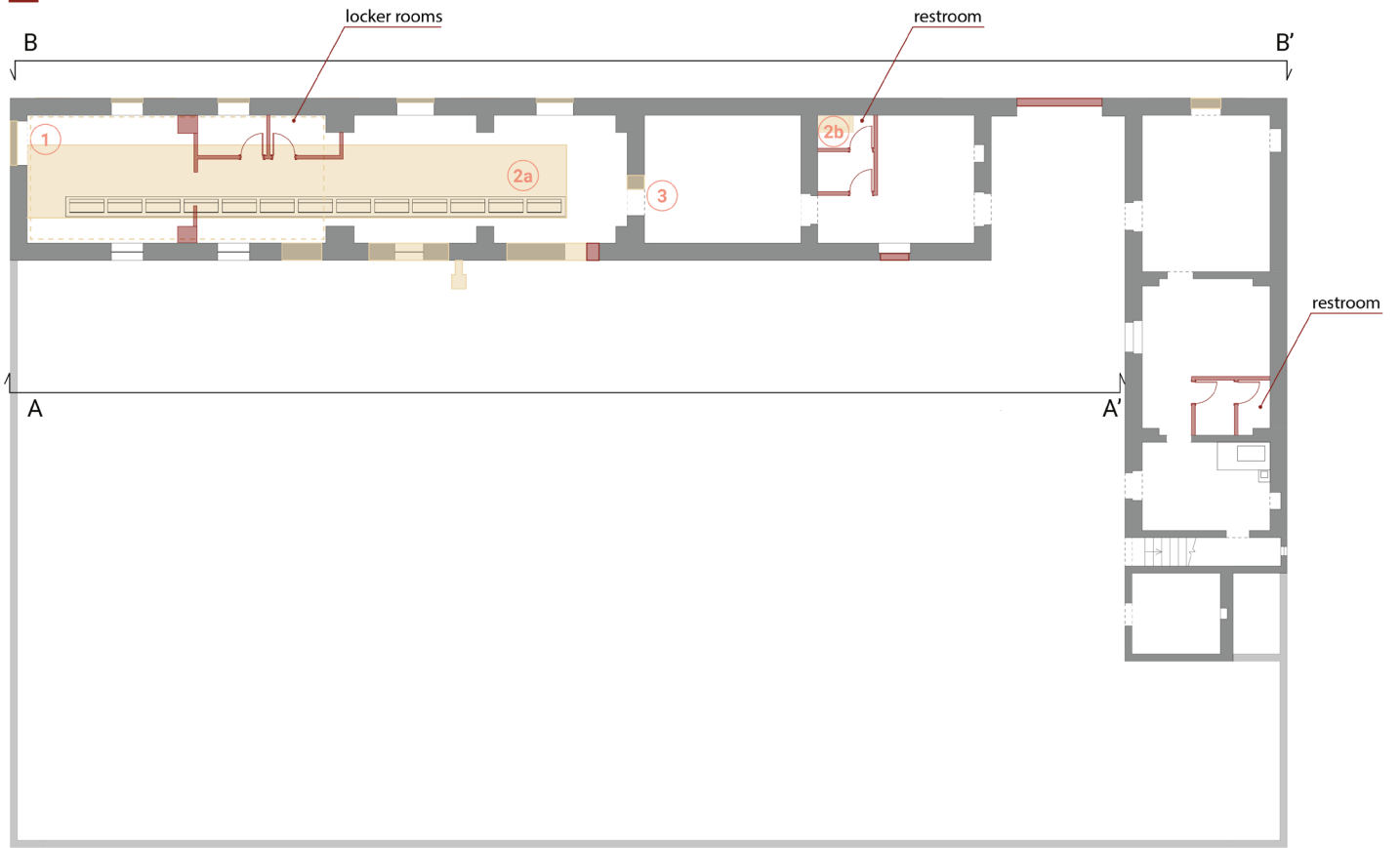
It must be rebuilt to fit any future window frame.

The wall above the main gate (n.7 in Figure 122) has a circular cutout most likely made with the intent of adding an arch window, this intervention was not concluded for unknown reasons. The cutout must be reshaped again to align with the arch behind it.

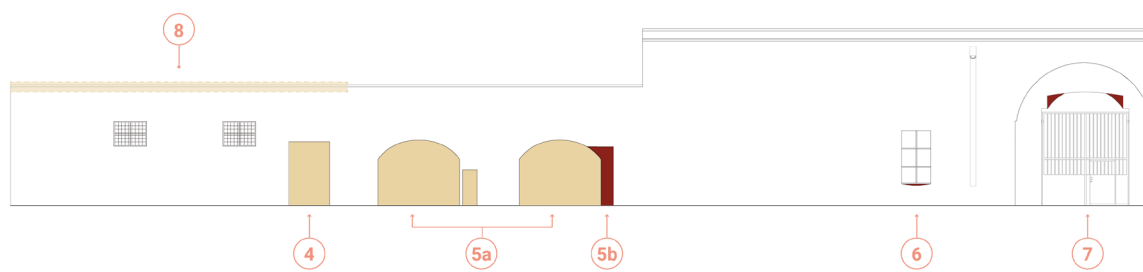


- Demolitions
- Constructions

## DEMOLITIONS AND CONSTRUCTIONS



### ELEVATION AA'



### ELEVATION BB'

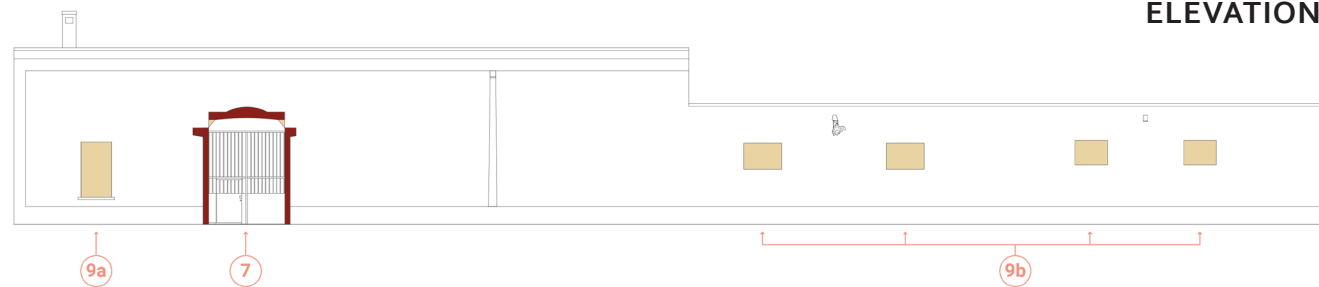


Figure 122. Demolitions and constructions



Figure 123. Masseria Aia Nuova, *Animal quarter*,  
(n.1 in figure 122)



Figure 124. Masseria Aia Nuova, *The animal manger*,  
(n.8 in figure 122)



Figure 125. Masseria Aia Nuova, *The food storage*,  
(n.2a in figure 122)



Figure 126. Masseria Aia Nuova, *The multipurpose room*,  
(n.3 in figure 122)



Figure 127. Masseria Aia Nuova, *Animal quarter*,  
(n.5 in figure 122)



Figure 128. Masseria Aia Nuova, *The animal manger*,  
(n.6 in figure 122)



Figure 129. Masseria Aia Nuova, *The food storage*,  
(n.7 in figure 122)



Figure 130. Masseria Aia Nuova, *The multipurpose room*,  
(n.9b in figure 122)



# Project Goals

## 4.3 The Project

### THE PROJECT

Masseria Aia Nuova will be incorporated within a system that sees it as the protagonist of a series of collaborations with other companies, with whom there will be an exchange of raw materials and products. The distillery will be the main activity of the structure, accompanied by a number of other smaller complementary productions. Pomace, the raw materials for distillation, will be sourced from local wineries that currently use them as a fertilizer for the land, without making a real profitable advantage from them. In addition to the production of Grappa, the new business will introduce pomace flour to the market, a highly innovative product for the whole Italian panorama; a small part of the pomace destined for distillation will be used to obtain flour by milling with the use of a special machine. The other products that will come from the Masseria are: grape seed oil, extracted directly on the farm from the de-alcoholized pomace, The grapeseed pellets, produced out of the solid residue from the oil extraction process and exhausted barrels, it's in great demand to be used as furniture by wine bars. A strong collaboration will also be struck with the Birra Salento brewery: the company needs fields for the cultivation of beer grade barley, which will be provided by using the masseria's own. Moreover, the masseria will enter a cooperative created by the brewery

which provides the seeds used to grow the barley, and once the barley is mature for harvesting, the barley is bought back by the brewery.

The collaboration with the company has the advantage of integrating the Masseria into a well-functioning and already on going system, supporting an activity on the territory through the production of the necessary raw materials at a local level and with sustainable means.

### DISTILLATION SYSTEM

The distillation process, which will produce a year aged Grappa, needs a procurement of input from the territory and the relocation of the output within it. Some of the inputs that will be used will be of regional and national origin: it is mostly common equipment such as barriques, silobag (Figure 131), products for cleaning, pallets and various packaging.

The necessary implants will be purchased in prevalence from North Italian companies, that are more specialized in the realization of these types of instruments, since they are located in the areas renowned for the production of Grappa. The inputs that will be found locally are the fermented pomace, which will be provided to the farm by the wineries together with the stalks and dregs deriving from the vinification process of Apulian grapes.





Figure 131. *The silobag*, <distilliedilorenzo.it>



Figure 132. *The "vinaccia"*, <bar.it>



Figure 133. *The fermentation*, *Appunti di Enologia*, <agraria.org>



Figure 134. *The distillation*, *In viaggio nel Trentino della grappa Distillerie storiche legate al territorio*, <italiaatavola.net>, 25.11.2015

With the water necessary for the production being extracted from the well already present in the Masseria grounds, which will be equipped with a treatment system in order to remove any impurities that could damage the quality of the production.

Grappa is obtained from the distillation of a solid raw material : the "vinaccia" (Figure 132) or the grape skins after it has been squeezed to make wine.

Fermentation (Figure 133) is very important because it is the process by which an organic substance is transformed into alcohol by unicellular microorganisms: yeasts. To create a distillate (such as Grappa, Cognac or Whiskey, etc ...)

Distillation (Figure 134) is a physical procedure which allows the separation of the volatile parts of fermented substances, according to their different boiling point. In practice, it is necessary to heat the substance to allow the alcoholic vapors to evaporate together with the aromas. In doing so, the amount of alcohol contained in the fermented substance is concentrated. If these vapors are cooled the end result is a liquid with a high alcohol content.

Then ageing (Figure 135) is done in casks of various types of wood to improve the flavor of the liquor. Oak wood is the most used variety, but some more expensive grappas are aged succes-

sively in casks of acacia, ash and cherry-wood.

After the desired ageing period is completed, the grappa is then emptied from the wooden casks, with the reduction to the desired alcoholic level by adding demineralized water, the possible addition of sugar (max 2%), the refrigeration and filtration of the distillate. Then the grappa is transferred into the bottles (Figure 136) which will be the final product destined for marketing. The entire process is automated.



Figure 135. *Ageing, Distillerie Bonollo Umberto Spa*, <bonollo.it>



Figure 136. *Bottling, Confezionamento Distillerie Bonollo Umberto Spa*, <bonollo.it>

# Project Goals

## 4.4 Architectural Additions and Changes

The aim of this project is the conservation and restoration of the masseria without altering its notable features and preserving its architecture, based on the previous regulations a handful of changes will be introduced.

Firstly, since the newest and arguably the least preservable area in the masseria, the last portion of the animal manger, has an aging ceiling that needs replacing, the idea is to substitute the fledgling flat roof with a spigolo vault similar to the ones present in other rooms of the masseria. The new vault would retain the same height and proportions as the other vaults all while giving adequate space for the machinery that would later be placed underneath.

Some doors and windows have decayed beyond recuperation and need to be taken down and replaced, adequate replacements for the openings would be made of wood and glass panes which is traditional and widespread in Apulian architecture.

The casement is the preferred window choice for the larger openings found in the reception and office areas, as they are excellent for natural ventilation strategies as well as their aesthetic look. Awning windows would be placed in the smaller elevated openings found in the production area,

these windows provide a better control of the air circulation as well as ease of use due to their simple, outward opening mechanism.

Different doors are used depending on the function and location of each room, hermetic doors are used in the aging room where air and temperature controls are crucial for the finished product, wooden doors with glass sockets or whole wooden doors are used when there is no need for strict temperature controls.





# Project Goals

## Appendix - Norms and Regulations<sup>1</sup>

Establishments must meet the following requirements in regard to areas of processing:

1. large enough departments to be able to carry out professional activities in appropriate hygienic conditions. They must be designed and arranged in such a way as to avoid any contamination of raw materials and products.

2. departments where handling, preparation and processing of raw materials and the manufacture of the products covered by this manual supplied with:

A- Solid floor made of waterproof and durable materials, easy to clean and disinfect, arranged in such a way as to facilitate the possible evacuation of water and equipped with adequate devices for outflow. The drains must be suitable for that purpose, sufficient to make needs and must be designed and constructed in such a way as to avoid the risks of contamination of products;

B- Walls with smooth, intact, easy to clean, durable, waterproof surfaces coated with a washable and clear material up to a height of at least two meters or up to the height of the storage and properly protected to avoid any damage caused by circulating means and equipment;

C- Easy to clean ceiling and overhead equipment, designed, constructed and finished so to avoid the accumulation of dirt and reduce condensation in the premise where they are handled, prepared or processed raw materials and/or unpackaged products;

D- Doors made of tamper-proof material or made such as a result of appropriate treatments, easy to clean; the doors of refrigerated rooms must be leakproof and possibly equipped with an automatic opening and closing system;

E- Sufficient ventilation both to prevent any condensation of moisture and to avoid development of mold; in the case of steam formation an effective evacuation system of the same. It is necessary to avoid mechanical flow of air from a contaminated area to a clean area; in the end, ambient air must not be a source of unwanted contamination;

F- Sufficient natural or artificial lighting;

G- Windows and other openings constructed in such a way as to prevent the accumulation of dirt, fitted with insect nets easily removable for cleaning. If the opening of Windows may cause contamination of products, these must remain closed and blocked during production;

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<sup>1</sup>- Normativa *manuale corretta prassi igienica-settore distillati e liquori*, rev. 00 del 13 maggio 1998;

H- Sufficient number of hand cleaning and disinfection devices equipped with cold and hot running water or pre-mixed water at appropriate temperature.

In working departments and in toilets, faucets must be provided with cleaning product and / or disinfection as well as disposable hygienic means for drying hands. The plants for washing food products should be separated from the washbasins.

3. Storage rooms for raw materials and products covered by this manual comply with the conditions set out in points (2-A) and (2-F), except:

- in refrigerated storage rooms, where an easy-to-clean floor is sufficient, and to be disinfected, arranged so as to allow easy evacuation of water;
- in freezing rooms, where a floor of waterproof material is sufficient, and rot proof, easy to clean.

In such premises the refrigerating capacity must be able to keep the products in the suitable thermal conditions; they should also be equipped with a precise thermometer, (with full scale to a maximum of one degree) easily readable or recording device continuous temperature.

In the sizing of the refrigeration or freezing system must be kept account:

- the need to counterbalance external thermal radiation;
- the loss of temperature caused by people and vehicles entering the cell;
- the temperature and quantity of the products and the frequency of storage;
- fans and light sources in the cell;
- the energy required for automatic defrosting cycles;
- the type of insulation material;
- the frequency of opening access doors.

Storage rooms must be large enough to hold the products.

For refrigerating rooms, the sizing of the thermal insulation must be carried out in function of the temperature difference between the outside and the cooling chamber. For environmental reasons, floors, walls and ceilings must always be insulated. To avoid possible condensation the insulating material must have such a structure as to ensure high vapor diffusion, and the storage cell must be properly ventilated.

- 4. appropriate protective measures against unwanted animals (insects, rodents, birds);
- 5. changing rooms in sufficient number with smooth, waterproof and washable walls and floors,

of washbasins and flush toilets, the latter without direct access to the working rooms. The wash basins must be dotted with hygienic devices for cleaning and drying hands; wash basin faucets must not be manually operated, so as not to cause cross-contamination. It is also necessary, in relation to the number of users of the changing rooms, to provide an adequate number of double-compartment cabinets with upper floor inclined and of suitable material;

6. premises or devices used exclusively for the holding of cleaning and cleaning substances. disinfection of rooms, structures and installations, which must be accessible only to staff;

7. premises or cabinets used exclusively for the storage of equipment and tools for cleaning and disinfection of rooms and installations;

8. closed lockers to store small emergency tools and/or materials used for the maintenance necessary for the operation of production machines/plants.

Premises:

(A) for the storage of raw materials; (B) for the production, preparation and (C) for the storage of finished products; (D) for the possession of

substances not intended for food, they must be distinguished; and separated and in numbers appropriate to the production potential and the characteristics of the plant and the finished product (S), with separations and equipment suitable for ensuring the hygiene of products in process.

In the case of undertakings which also carry out retail sales for consumption it is mandatory that the workings take place in benches other than those of sale, with separations and equipment suitable to ensure the hygiene of products. The health authority may allow in particular cases, including in relation to the needs of the production process, that the premises referred to in points (A), (B), (C) and (D) are a single room of adequate size.

## **DISINFECTION PROCEDURES**

Pests pose a significant threat to food safety and hygiene as potential vehicles of biological hazards capable of contaminating food, especially in the post-CCP (recontamination) stages. Since infestation can occur more easily where there are suitable places for reproduction and sources of nourishment, general hygiene practices should be used to avoid creating an environment conducive to the development of weeds. In addition, effective action should be taken to prevent the entry of animals from the outside and to quickly



dispose of animals entering the establishment. In addition, to establish and manage an effective system of monitoring, prevention and control of weeds, it is necessary to know enough about their characteristics and eating habits, bearing in mind that among the weeds the most harmful are the following:

- rodents (e.g. mice, rats)
- crawling insects (cockroaches, cockroaches, spiders)
- birds (birds and mammals)
- other domestic mammals (dogs, cats)

Prevention methods:

#### (A) Outdoor environments

Buildings must be kept in good condition so as to prevent access of animals and eliminate potential breeding grounds. Holes, gutters and other passages where animals may have access must be carefully sealed.

The following measures should also be taken:

(a) the doors to the outside should be leak proof, possibly self-closing (e.g. hydraulic arm, spring hinges, photocell). Where this is not possible, it is necessary to give clear indications on the obligation to keep the doors closed;

(b) windows facing outward shall be fitted with a

removable and washable protective mesh;

(c) the external openings of ducts and pipes must be protected to prevent the entry of weeds.

#### (B) Indoor environments

All potential animal shelters, such as cracks and holes in walls and floors, obsolete plants and materials, should be removed from buildings. Other elements such as switchboards and points of passage of pipes and cables from one room to another must be leak proof.

Where false ceilings exist, they must be hermetically joined to the walls of the premises in order to facilitate cleaning operations and avoid the risk of nesting weeds. Any space between the suspended ceilings and the floors must be inspected and accessible to eliminate any infestations and carry out routine cleaning operations.

In the event that there is a wall covering consisting of ceramic tiles or plastic/metal profiles, the joints must be made of hard, non-flaking and washable material. The design of the walls must be such that they do not have horizontal surfaces that can provide dust and dirt accommodation and allow a path for the transfer of weeds.

The passage of pipes to the ceiling or on the walls should be avoided as possible, while the entrance/exit of the same from the walls should always be properly sealed.

Internal doors between the premises where raw materials, semi-finished products and finished products are processed and/or stored shall be made of tamper-proof and easily washable material and should be protected against the possible entry of weeds.

The presence of water attracts weeds and allows their development. Therefore, food and waste should not be abandoned without protection and water stagnations should be formed, and potential food sources should be placed in protected containers and / or lifted off the ground and away from walls.

## **MATERIAL CHOICES**

The materials used for the construction must be capable of preventing deterioration caused by moisture, chemical agents and microorganisms. They must also have smooth surfaces, resistance to corrosion, abrasion, be non-absorbent, non-porous and non-toxic. These requirements are especially important in parts directly in contact with the product. The product should come into contact with painted or galvanized surfaces which have been previously determined to be suitable for contact with food.

Suitable materials:

### **(A) Stainless steel**

300 series steels are acceptable. In particular AISI 304, 316.

### **(B) Aluminium**

Aluminum may be subject to corrosion and exposed to corrosive agents or substances. However, the use of this metal should be limited to parts not in direct contact with the product.

### **(C) Plastic**

The plastic material in contact with the product must be of the food type.

It is necessary to ask suppliers and installers for documentation proving its compatibility with food.

### **(D) Wood**

The wood is mainly used in the production of barrels used in the aging phase and can come from different varieties, from ash to cherry, Chestnut to Oak and others. Once the trees have been felled, the wooden boards must stand for at least 3-4 years in the open air in order to obtain good drying and loss of bitter polyphenols by oxidation in tannins. The processing of timber, in particular slats, should be of the "split" type and not by saw to avoid too high porosity. Before using the barrels it is necessary to proceed with steaming or thorough washing with boiling water.

## **ROUTINE STRUCTURAL MAINTENANCE**

In order to ensure compliance with hygienic parameters during processing, the premises must undergo periodic renovations to prevent the loss of suitability conditions or restore it if it has occurred.

The renovation of the premises usually involves significant health problems due to the intervention itself (dust formation, spreading of materials used for painting, exhalation of smelly vapors and presence of microbiologically high risk substances during interventions on the sewers) and to the operators who perform it (masons, painters).

Therefore, it should be carried out at the moments of halt in production, at least for the interventions of wider scope. Interventions of limited scale that relate to specific and well-demarcated portions of the premises, can be made during working hours, provided that the area or the place is adequately enclosed with suitable separations that can ensure the absolute impossibility of contaminating the premises in which production is ongoing, and the personnel who perform the maintenance, have access to the affected areas without interacting with the production areas.

After each operation, it is necessary to rectify inadequate hygienic conditions by means of documented cleaning and disinfection before resuming

ing production.

## **DESIGN AND CONSTRUCTION**

The design and construction must be such as to allow easy access for sanitary sanitation and mechanical maintenance, especially with regard to the parts of the plant directly in contact with the product. These parts also need to be smooth, without protrusions, bolts, rivets, blind bottoms. Installations must avoid infiltration of liquids, accumulation of material, penetration of insects or other animals and must not present parts inaccessible to the necessary cleaning. To facilitate cleaning it is necessary that the system can be quickly and easily disassembled and reassembled, minimizing the equipment necessary for the purpose. It must be of simple construction and consist of a few parts.

It is also necessary to take into account the following:

- Machinery engines must be positioned or protected in such a way that any loss of lubricant cannot contaminate the product.
- The corners of the parts in contact with the product must be rounded and not at a right angle except where this is essential for operation or to facilitate the drainage of liquids.
- The plants must be self-draining or must not allow water to stagnate.

- Welds must be smooth and continuous.
- Painting of surfaces above the product must not be allowed.
- The nuts and bolts must be of the self-locking type.
- Filters, sieves, sieves must be quickly removable for inspection and cleaning and must be designed in such a way as to avoid replacement errors.
- Cellulose filters must be disposable, regenerable cartridge filters must be made of polypropylene.
- Conveyors must be moisture resistant and non-absorbent. Guides and shoulder straps of the tapes must be easily removable.
- Lubricants that may come into contact with the product must be "food grade" or otherwise of the approved type.

## **PERSONAL HYGIENE**

### **Clothing:**

Work clothes of food production, preparation and handling personnel must be clean, light in colour and used only within the plant and not used as civilian clothing. Cold protection vests in areas where there is an increased risk of contamination should be worn under work clothing.

Anyone entering the processing premises must, however, wear suitable protective clothing.

Work clothes should not have external pockets; if indispensable, they should be placed above the waist; each closure should be made with adhesive strips or with automatic metal buttons. They should be washed frequently preferably by the company and not by the workers.

It is not allowed to carry in your pocket tools and objects other than those related to the conduct of the activity. The headdress must completely collect the hair and must be worn before entering the production premises.

Beard cover is required, at least in areas where the products are in direct contact.

It is necessary to wear safety footwear, made of material that can be cleaned and disinfected. Footwear must be kept in suitable hygienic conditions and must only be used within the establishment.

In the case of the use of gloves, these must be of the disposable type. However, the use of protective gloves is permitted. If punctured or broken, they should be replaced immediately after washing and disinfecting hands. Rings, hairpins, earrings, bracelets, necklaces, brooches, wrist watches and jewelry in general should not be worn.

Glasses should be securely fastened, for exam-



ple, with a metal clasp to the nape.

#### Hand sanitization:

Hands and forearms should be thoroughly washed with soap, disinfected and rinsed under a stream of warm water.

This must be done:

- a) before entering a production area;
- b) after using the toilet;
- c) after each suspension of work;
- d) after coughing or sneezing by covering your nose and mouth with your hands;
- e) where there has been an opportunity for fouling or contamination.

It is also necessary to carry out such procedures after handling raw materials, semi-finished products or products that may be a source of contamination for subsequent activities.

The use of nail polish should be prohibited.

Each washbasin must be constantly provided with hot and cold or pre-mixed water, liquid soap dispenser, possibly disinfectant, disposable towels and containers for those used with pedal opening.

Wounds, cuts, abrasions, burns and localized infections of the hands should be immediately reported to the immediate superior.

Injuries to the hands should be protected with renewed dressing as needed and at least every day and covered with protective rubber gloves.

## OTHER PRECAUTIONS

In the areas of production, packaging and storage it is forbidden to take food, drinks, or other (chewing gum, candy, confectionery) and smoke. Such activities may be carried out only in areas intended and prepared for this purpose.

## WORKZONE CIRCULATION

Movement of goods within the premises must be done with dedicated means and equipment. This operation could prove critical for the hygienic aspect, essentially for two reasons:

1. if the goods are in direct contact with the means used for handling, the latter may become a vehicle of contamination;
2. if the means and equipment are not suitable for handling, breakage or alteration may occur on the packaging which may pose a danger to the product.

For this reason:

- the handling of unprotected products should be avoided if they may be contaminated by dust, condensate or other physical contaminants;
- the means/equipment used for the handling of goods within the establishment must not be used outside;
- the means / equipment must be cleaned in ac-

cordance with the procedures laid down and with the frequency laid down;

- where the areas used for the maintenance of the means/equipment must not coincide with the production premises.

## **TRANSPORT**

Vehicles intended for the transport of products must meet the general hygiene criteria:

- they must be designed so that the transported products are protected from all contamination and atmospheric influences that could lead to deterioration;

- if intended for the transport of goods to be stored at controlled temperature, they must comply with ATP recommendations ("agreements on the international transport of perishable foodstuffs and on special equipment to be used for such transport " - Economic Commission for Europe-E / ECE/TRANS / 563, Geneva, 1.07.1990);

- the internal surfaces of vehicles must be of suitable material, smooth and easy to clean; the packaged and/or packaged products must be transported in such a way that the packaging and/or packaging material remains intact and the product is not contaminated;

- cargo compartments and / or containers should not be used for the transport of goods other than

food, in order to avoid possible contamination;

- in the case of promiscuous transport of different foods and goods or of different types of food, direct contact between them should be avoided;

- if necessary, the means of transport between loads must be cleaned.

## **PROCESSING WASTE AND RESIDUES**

Waste materials must be managed in such a way that there is no risk of contamination to the products. For this purpose, within the production areas, all material discarded from the processing process (waste and processing residues) must be placed in clearly identified containers in order to prevent any type of confusion or error. Such containers should be removed and emptied as frequently as possible and at least once a day. They must be fitted with a lid, if possible, hermetically sealed, handy and made of easy-to-clean material.

Liquid processing residues must be channelled and disposed of hygienically to suitable storage containers. Processing residues, intended to be reused for the production of food for human use, must be treated as raw materials. Those intended for other uses shall be collected in specially identified areas. These areas should be located as far away from the processing areas as possible to avoid cross-contamination.

During the transport of waste materials, they must not come into contact with the products. It should be borne in mind that the collection areas must be included in particular in the pest control programmes.

### **WATER SUPPLY**

The use of drinking water is mandatory in the establishments in accordance with the regulations in force. The supply of drinking water must be adapted to the needs of the plant and to the extent of the work. L1 vapour which comes directly into contact with foodstuffs must be obtained from drinking water and must not contain any substance which poses a health hazard or could contaminate the product.

Pipes in the drinking water and Steam distribution network intended to come into direct contact with raw materials, semi-finished products and finished products shall be of non-toxic and corrosion resistant material.

Where the drinking water distribution system provides for the use of a chlorination plant, the chlorination plant shall be equipped with an automatic visual and audible alarm system indicating the irregular operation of the plant and allowing immediate restoration.

The spare tanks, if any, must be kept in perfect maintenance condition and subjected to regular cleaning operations according to a precise schedule.









5

# Decay Analysis and Intervention

*The animal manger*

# Decay Analysis and Intervention

## 5.1 Pre-diagnostics

Maintaining the condition of an architectural structure to the one it had at the moment of its construction entails going against the fundamental tendencies of the material, which undergoes a slow albeit continuous degradation over time.

This change, or degradation, that the structure goes through is due to the contact with its surrounding environment by way of the materials out of which it was made.

This process is one directional and cannot go backwards, in other words it is irreversible. As harmful as it is for buildings and structures, it is imperative and essential for the ecosystem.

Contributing to this irreversible change<sup>1</sup> are various actors, be it natural or man made, that could potentially accelerate this change depending on their occurrence and contact with the components of the structures.

The main cause of most transformations is the heat exchange from the building envelope towards the surrounding environment or vis versa, which is also often accompanied by water transfer in liquid or vapor form, as such the degradation processes, physical or chemical, directly connected to the life cycle of the affected material and dependant on the characteristics of the environment in which it is present, represent the main factors that cause the aging of the materials, be it artificial or natural, raw or worked.

Natural materials extracted from stone or rocks and placed in a construction site, do not differ from their source of origin. That is mainly due to the fact that the mineral and chemical composition of said materials remains unchanged after excavation, which means that their behavior would be exactly the same whether they're still in the source or on the construction site. It is however possible that the superficial porosity of a material may be altered by undergoing a few steps, such as the mechanical carving of source rocks during extraction and their subsequent polishing process.

The same can be said of artificial stone and brick materials that, once produced (through means such as baking, hydration, etc..) and without coming across environmental changes in their surroundings, maintain their characteristics for a prolonged period of time.

As such, the speed and typology of the transformation processes<sup>2</sup> that affect construction materials depend upon a series of factors such as morphological characteristics of surfaces, physico-chemical properties, macro and microstructural characteristics, defects, as well as the environmental context.

The thermodynamic model, however, must be applied with some caution and can be shared only on condition that the architectural artifact

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1. I. Guerriero, *Stato aeriforme ed equilibri gassosi*, Milano, Alphatest, 2003, p.74;

2. C. Arcolao, *La diagnosi nel restauro architettonico*, Venezia, Marsilio, 2008, p.16

system is recognized as the status of an organism with unique and peculiar characteristics, composed of matter carrying constructive and formal intentions and not of simple material immersed in the environment , as can be a rocky outcrop.

The formal intentions of the builders in particular, are also expressed by the physical characters impressed on the surfaces of the artifact that constitutes its outer layer, but also appearance, character, external quality. The term surface acquires a meaning that is placed in the regions of aesthetics, where the surface is understood as an appearance, as an exterior capable of transmitting figural content of objects. In this case, the surface is enriched with the most diverse attributes, incorporating chromatic, gloss, roughness, drawing and other values, in an evaluative activity that can relate both to natural and artificial morphological qualities (color, shine, roughness ,consistency etc.. of the rocks of origin or those that altered by man) of the surface of the materials the first characteristics that the degradation goes to alter and that become the spy through which to evaluate the state of conservation.

In this general theme, the goal is the exposure of a pre-diagnosis method, which helps us to understand the processes with the help of accurate

macroscopic observations, explorations through the senses and analytical tests using easy-to-use tools and procedures of alteration of the materials, and of the building components of the architecture starting from their most evident manifestations, and allows to identify any scientific investigations and instrumental measurements necessary to obtain rigorous and detailed data.

The moment of data collection and assessments to be carried out in situ will be deepened to build a correct pre-diagnosis of the state of conservation of the materials that make up the historic buildings.



# Decay Analysis and Intervention

## 5.2 External Decay Analysis

As mentioned previously, there are multiple techniques to survey and assess an architectural structure, chief of which is visiting the site and its documentation.

In this case study, and due to the lack of existing architectural drawings of the masseria. An inspection of the site was needed. Equipped with a photcamera, a laser rangefinder and a measuring tape, we visited the site and checked the dimensions of the building in order to take measurements and high quality photographs of both the interior and exterior of the masseria, before drawing the plans, sections and elevations in a dwg format.

"Planning and designing in the field of architectural heritage requires not only knowledge of contemporary building techniques, design processes and national and international guidelines, but also a deep understanding of architectural heritage, its evolution and genesis, the building techniques that have been applied, materials used, traditions, etc."<sup>1</sup>

The first observation upon inspecting the external facade, is that the entire building is constructed using tufo blocks, as is traditional in all masserie, these tufo blocks are covered in a plaster coating that has degraded over time. As such, most

of the decay present in these facades is related directly to the plaster with separate instances of deeper damage on the tufo itself.

The major part of the damage is under the form of efflorescence decay born from salt crystallization, it is caused by constant exposure to weathering<sup>2</sup> and moisture. It manifests itself as white crystals on the surface of the plaster, due to its increased presence in the mortar joints between tufo blocks, the outline of each block is visible on the exterior of the plaster.

Other types of decay include biological patina, growth of lichens mostly on drainage pipes and follow the usual flow of rain water cascading on the facades. As well as vegetation growth present in and around these water gathering areas.

Instances such as decay of metal and wood joints used in window and door fixtures are present, holes and cuts in the walls are mostly due to human intervention such as the ones present in the front facade hosting the main gate.

And in other instances naturally occurring damage to the plaster and tufo blocks can be classified as spalling, located in areas of the wall closer to the groundline.

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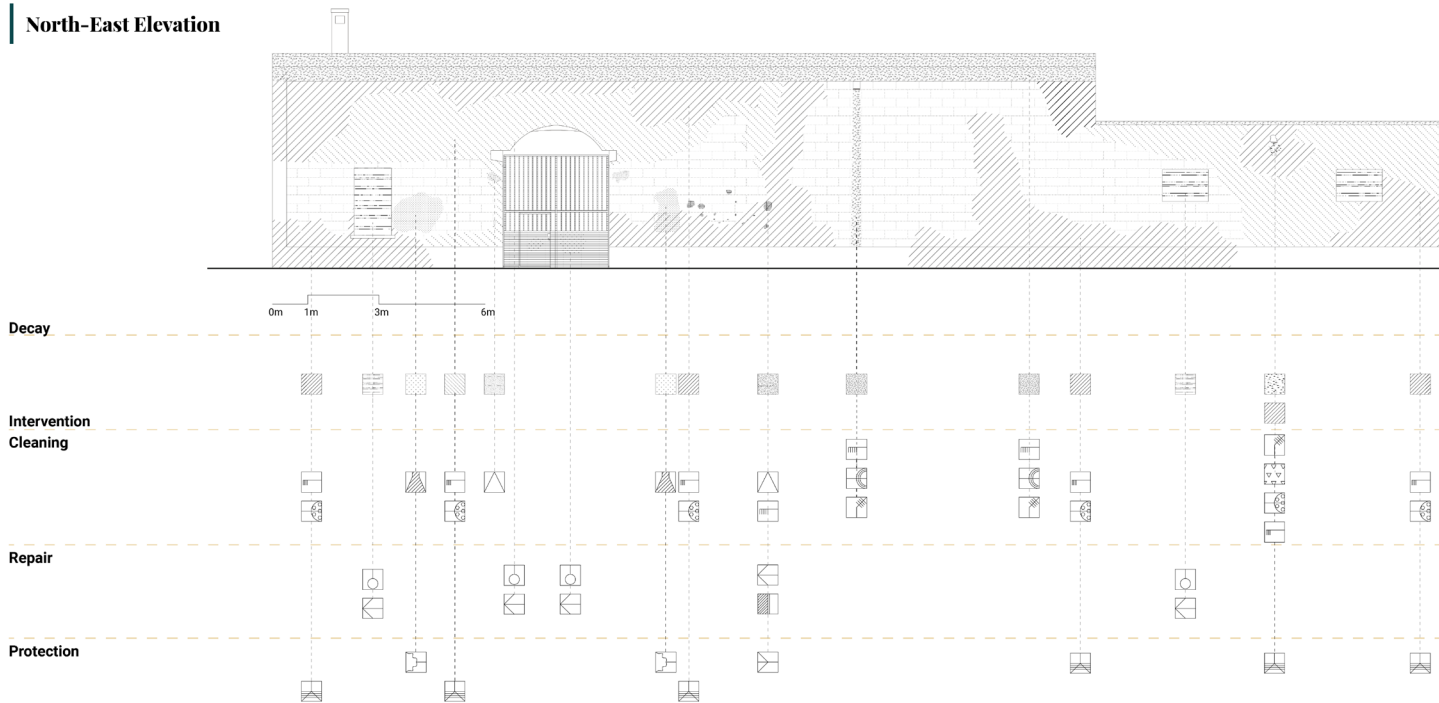
1. ISPRS , *26th International CIPA Symposium, Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, Volume IV-2/ W2, Ottawa, Canada, 2017.

2.G. Carbonara, *Restauro architettonico: principi e metodo*, Roma, m.e architectural book and review, 2012, p.150

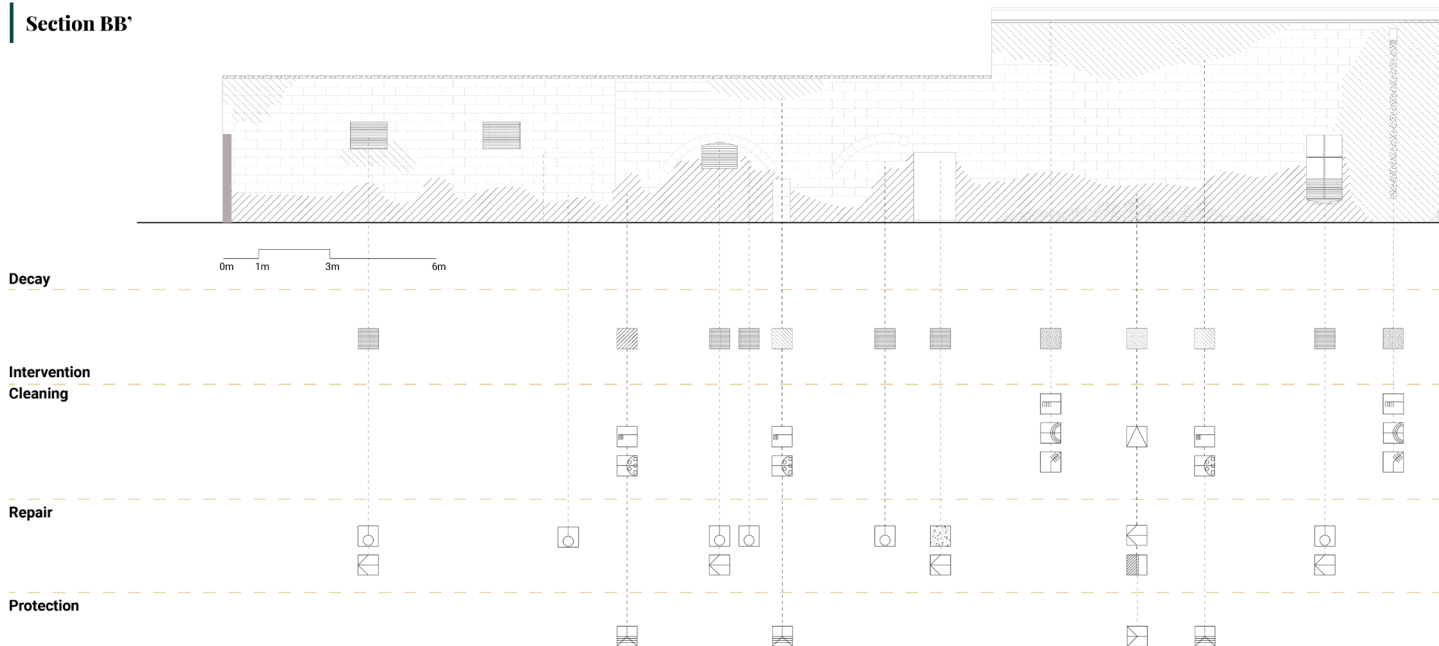




## North-East Elevation



## Section BB'



### Decay legend



**Efflorescence (severe)**  
Exposure to constant or heavy rain and wind. Presence of humidity due to weather conditions with the lack of maintenance.



**Efflorescence (light)**  
Exposure to constant or heavy rain and wind. Presence of humidity due to weather conditions with the lack of maintenance.



**Vandalism**  
Engraving, scratching, cutting or application of paint, ink or similar matter on the stone surface.



**Wall gap**  
Engraving, scratching, cutting or application of paint, ink or similar matter on the stone surface.



**Biological patina**  
A result of concentrated discharges of rain water from a drain, lack of maintenance.



**Spalling**  
Natural weathering of the exposed face of the bedding material.



**Wood decay**  
Exposure to constant or heavy rain and wind. Presence of humidity due to weather conditions with the lack of maintenance.



**Human intervention**  
Man-made intervention to prevent trespassing.



**Vegetation growth**  
If buildings are not maintained, plants will eventually colonize places where is accessible, extending roots into joints and fractures.

### Intervention legend

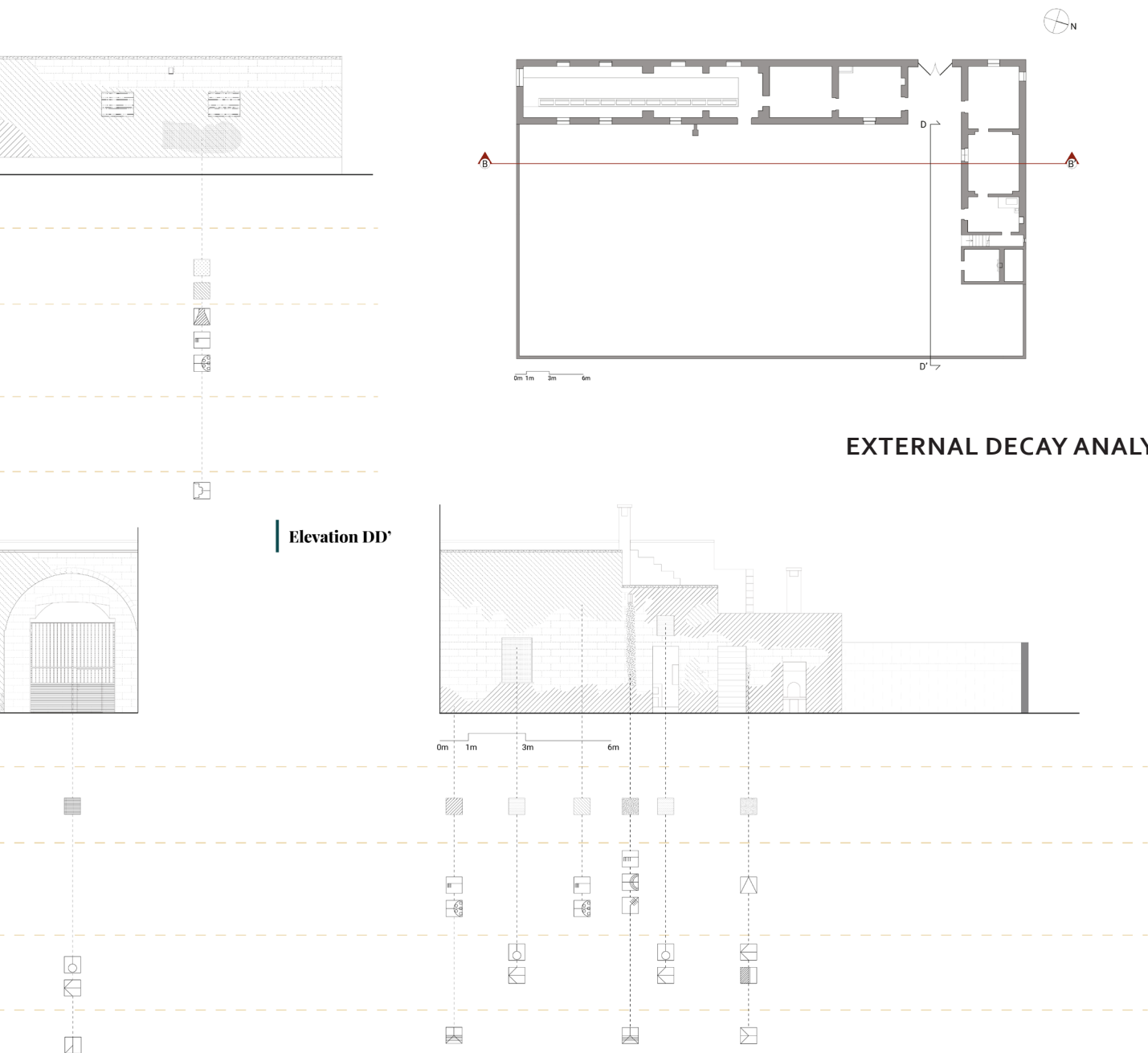
Removing defective brick  
Removal of the degraded element in its entirety

Cutting back decayed face of the brick  
Removal of the damaged parts only

Light brushing  
Removal of surface residue by brushing

Vegetation removal  
Manual removal of the present vegetation

#### 1. CLEANING



## EXTERNAL DECAY ANALYSIS

**Application of nebulized water**  
Deposits water on the surface at negligible pressure

**Application of water spray at moderate pressure**  
Pressure water washing useful in removing stubborn patches of dirt and detached substrate

**Biocidal spray**  
Application of plant and fungus killing solution

**Removal of detached paint**  
Removal of defective paint

**Chemical product washing**  
The injection of liquids under pressure through several holes in the wall resulting in making the pores and capillaries hydrophobic leading to blocking the water from rising further

**Abrasive wet blasting**  
Removes coatings, contaminants, corrosion and residues from hard surfaces

**Removal of detached plaster**  
Removal of detached plaster

**Brushing with stiff nylon brush**  
Removal of coarse substrate in hard to reach places

### 2. REINTEGRATION AND REPAIR

**Replace missing elements**  
Removal and replacement of damaged parts

**Demolition**  
Destruction/removal of the selected parts

**New paint job**  
Reapplication of a new paint coating over the selected material

**Reintegration of mortar**  
Restoration of joints by executing a mortar injection where needed

**Reintegration of the plaster**  
Refurbishment of the plaster to preserve the underlying bricks

### 3. PROTECTION

**Protection against rain and humidity using caulk**

**Application of acrylic resin**

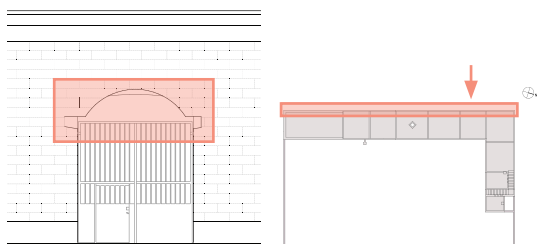
**Injection of chemical barrier**

**Anti graffiti coating**

**Apply water repellent products**

Figure 137. External decay analysis

Gate



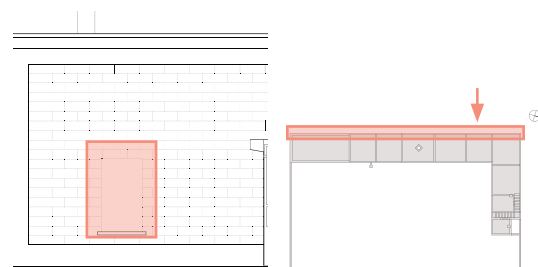
**Material** Iron

**Degradation found** Corrosion and degradation of the metal

**Hypothesized cause** Oxidation due to exposure to the elements over a long duration. Lack of maintenance

**Proposed intervention** Replacement of the entire chassis

Closed door



**Material** Tufo blocks

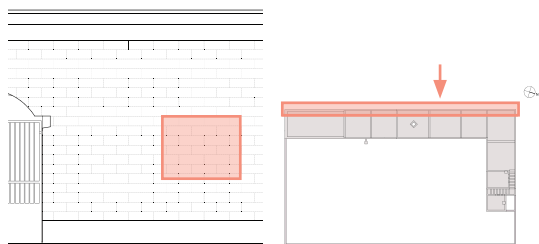
**Degradation found** Sealed window, disconnection from facade's plaster layer

**Hypothesized cause** Man-made intervention to prevent trespassing

**Proposed intervention** Removal of the blocks, installation of a window frame



## Holes in wall



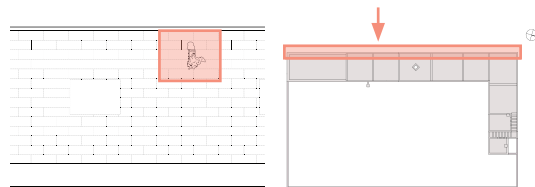
**Material** Tufo blocks

**Degradation found** Cracks and voids in the wall structure

**Hypothesized cause** Possible human intervention and vandalism

**Proposed intervention** Filling of the voids, it is normally done with a lime paste mortar, but in the case of medium to large cavities most of the voids is filled first with pieces of an aggregate of suitable size (fragments of bricks or stone) mixed with a hydraulic mortar (e.g. lime paste/pozzolan); then a final layer is made up with lime paste mixed with crushed stone

## Vegetal growth



**Material** Tufo blocks

**Degradation found** Presence of vegetation growth

**Hypothesized cause** If buildings are not maintained, plants will eventually colonize places where is accessible, extending roots into joints and fractures

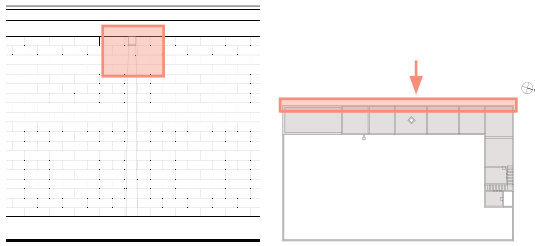
**Proposed intervention** Biocidal application by spraying. Removal of the vegetation. Washing the surface with deionized water to eliminate treatment residues

G. TORRACA, *Water cleaning, Cleaning of Architectural Surfaces, Lectures on Material Science for Architectural Conservation*, 2009 J. Paul Getty Trust, p.105.

Icomos-ISCS, *Illustrated glossary on stone deterioration patterns/ Glossaire illustré sur le formes d'altération de la pierre*, ICOMOS, Paris 2008, p.36.

Icomos-ISCS, *Illustrated glossary on stone deterioration patterns/ Glossaire illustré sur le formes d'altération de la pierre*, ICOMOS, Paris 2008, p.74.

## Drain



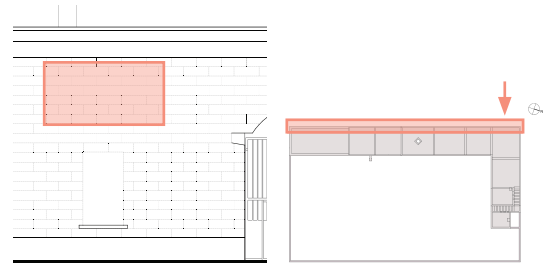
**Material** Plaster

**Degradation found** Moist area, discoloration

**Hypothesized cause** A result of concentrated discharges of rain water from a drain, lack of maintenance

**Proposed intervention** Chemical barrier: the injection of liquids under pressure through several holes in the wall resulting in making the pores and capillaries hydrophobic leading to blocking the water from rising further. Reintegration of macroporous plaster

## Facade



**Material** Plaster

**Degradation found** Efflorescence. Surface formation of crystalline or powdery or filamentous appearance, generally of a whitish color

**Hypothesized cause** Moisture carrying salts from inside the bricks and mortar to the surface where the water evaporates leaving the crystalline salts. Under most conditions it disappears without deleterious effect within one year. In exposed brickwork that is constantly subjected to a cycle of wetting and drying, efflorescence can occur at any time

**Proposed intervention** Remove the soluble salts by brushing the surface thoroughly with a stiff nylon brush. Water cleaning by spraying nebulized water. Use of water repellent products such as alkoxysilanes, silicones, and fluoropolymers

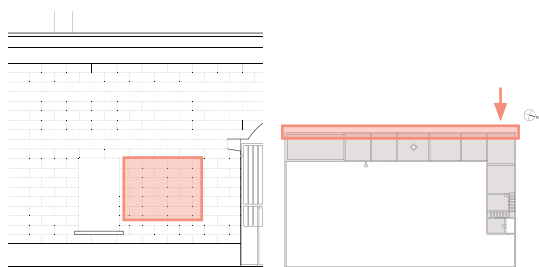
E. DOEHNE, C.A. PRICE, *Stone conservation, an overview of current research*, published by The Getty Conservation Institute 2010, p. 44.

Icomos-ISCS, *Illustrated glossary on stone deterioration patterns/ Glossaire illustré sur le formes d'altération de la pierre*, ICOMOS, Paris 2008, p.54.

G. TORRACA, *Water cleaning, Cleaning of Architectural Surfaces, Lectures on Material Science for Architectural Conservation*, 2009 J. Paul Getty Trust, p.98.

E. DOEHNE, C.A. PRICE, *Stone conservation, an overview of current research*, published by The Getty Conservation Institute 2010, p. 44.

## Graffiti



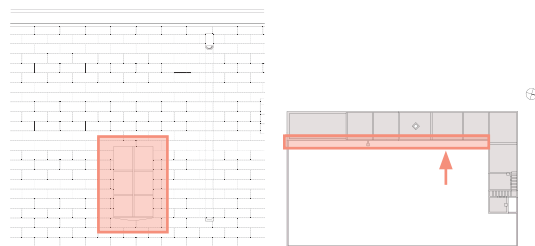
**Material** Plaster

**Degradation found** Engraving, scratching, cutting or application of paint, ink or similar matter on the stone surface

**Hypothesized cause** Graffiti are generally the result of an act of vandalism

**Proposed intervention** Chemical product washing. Application of anti-graffiti paint or coating

## Area 2



**Material** Iron

**Degradation found** Corrosion and degradation of the metal

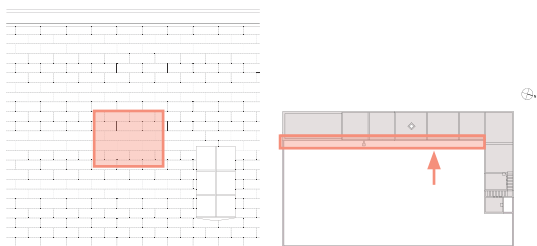
**Hypothesized cause** Oxidation due to exposure to the elements over a long duration. Lack of maintenance

**Proposed intervention** Replacement of the metal chassis

Icomos-ISCS, *Illustrated glossary on stone deterioration patterns/ Glossaire illustré sur les formes d'altération de la pierre*, ICOMOS, Paris 2008, p.56.



## Area 2



**Material** Plaster

**Degradation found** Efflorescence. Surface formation of crystalline or powdery or filamentous appearance, generally of a whitish color

**Hypothesized cause** Moisture carrying salts from inside the bricks and mortar to the surface where the water evaporates leaving the crystalline salts. Under most conditions it disappears without deleterious effect within one year. In exposed brickwork that is constantly subjected to a cycle of wetting and drying, efflorescence can occur at any time

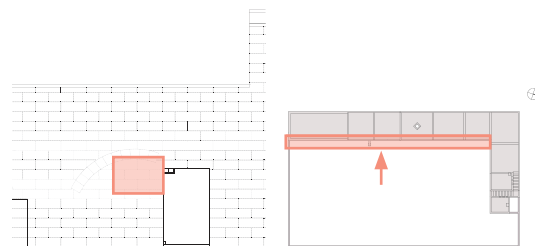
**Proposed intervention** Remove the soluble salts by brushing the surface thoroughly with a stiff nylon brush. Water cleaning by spraying nebulized water. Use of water repellent products such as alkoxysilanes, silicones, and fluoropolymers

Icomos-ISCS, *Illustrated glossary on stone deterioration patterns/ Glossaire illustré sur le formes d'altération de la pierre*, ICOMOS, Paris 2008, p.54.

G. TORRACA, *Water cleaning, Cleaning of Architectural Surfaces, Lectures on Material Science for Architectural Conservation*, 2009 J. Paul Getty Trust, p.98.

E. DOEHNE, C.A. PRICE, *Stone conservation, an overview of current research*, published by The Getty Conservation Institute 2010, p. 44.

## Type 2



**Material** Plaster

**Degradation found** Efflorescence. Surface formation of crystalline or powdery or filamentous appearance, generally of a whitish color

**Hypothesized cause** Moisture carrying salts from inside the bricks and mortar to the surface where the water evaporates leaving the crystalline salts. Under most conditions it disappears without deleterious effect within one year. In exposed brickwork that is constantly subjected to a cycle of wetting and drying, efflorescence can occur at any time

**Proposed intervention** Remove the soluble salts by brushing the surface thoroughly with a stiff nylon brush. Water cleaning by spraying nebulized water. Use of water repellent products such as alkoxysilanes, silicones, and fluoropolymers

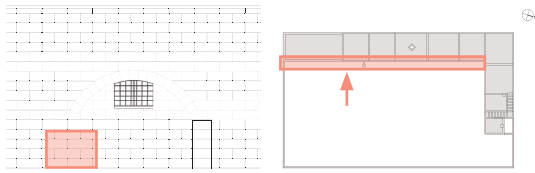
Icomos-ISCS, *Illustrated glossary on stone deterioration patterns/ Glossaire illustré sur le formes d'altération de la pierre*, ICOMOS, Paris 2008, p.54.

G. TORRACA, *Water cleaning, Cleaning of Architectural Surfaces, Lectures on Material Science for Architectural Conservation*, 2009 J. Paul Getty Trust, p.98.

E. DOEHNE, C.A. PRICE, *Stone conservation, an overview of current research*, published by The Getty Conservation Institute 2010, p. 44.



Type 2



**Material** Plaster

**Degradation found** Lacuna: Loss of continuity of surfaces (part of a plaster and a painting, portion of dough or ceramic coating, mosaic tiles, etc.)

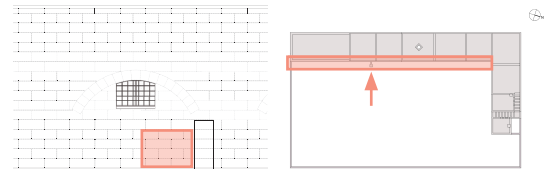
**Hypothesized cause** Natural weathering of the exposed face of the bedding material

**Proposed intervention** Removal of the defective plaster with the proper tools. Reintegration of the plaster that closely matches the existing one in strength, hardness, color and texture

UNI 11182, *Beni culturali, Materiali lapidei naturali ed artificiali, Descrizione della forma di alterazione - Termini e definizioni*, Norma Italiana, 2006, p.25.

M. FORSYTH, *Brickwork, Historic buildings conservation*, Blackwell publishing, 2008.

Type 2



**Material** Tufo blocks

**Degradation found** Formation, on the stone surface, of cavities (alveoles) which may be interconnected and may have variable shapes and sizes.

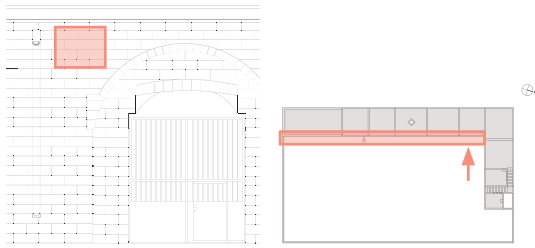
**Hypothesized cause** Weathering possibly due to inhomogeneities in physical or chemical properties of the stone. Lack of protection. Humidity

**Proposed intervention** Injection of a liquid (water initially then thermoplastic resin) meant to clean the internal voids by removing dust and fine debris. Surface Grouting: hydraulic binder (lime) with suitable admixtures is injected by hand in surface cracks in stonework or masonry and behind renderings. The finest cracks into which hydraulic grouts can penetrate are a few tenths of a millimeter wide; to consolidate finer ones, a low-viscosity thermosetting resin such as an epoxy is required. Reintegration of the plaster that closely matches the existing one

Icomos-ISCs, *Illustrated glossary on stone deterioration patterns/ Glossaire illustré sur le formes d'altération de la pierre*, ICOMOS, Paris 2008, p.28.

G. TORRACA, *Water cleaning, Cleaning of Architectural Surfaces, Lectures on Material Science for Architectural Conservation*, 2009 J. Paul Getty Trust, p.104.

## Type 2



**Material** Plaster

**Degradation found** Plaster cracks: presence of cracks in the superficial layer

**Hypothesized cause** Cycles of frost and thaw  
Mechanical deterioration due to crystallization in the wall

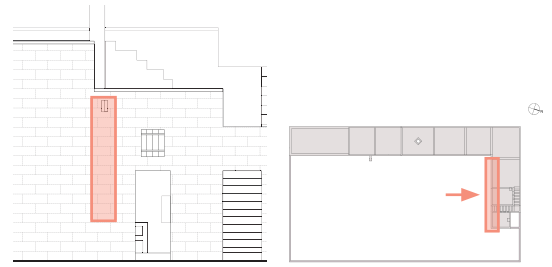
**Proposed intervention** Remove residue from crack  
Filling the cracks with compatible plaster that closely matches the existing in color and texture

Icomos-ISCS, *Illustrated glossary on stone deterioration patterns/ Glossaire illustré sur le formes d'altération de la pierre*, ICOMOS, Paris 2008, p.12.

G. TORRACA, *Filling of cracks and void, Consolidation of Architectural Surfaces, Lectures on Material Science for Architectural Conservation*, 2009 J. Paul Getty Trust, p.104.

UNI 11182, *Beni culturali, Materiali lapidei naturali ed artificiali, Descrizione della forma di alterazione - Termini e definizioni*, Norma Italiana, 2006, p.13.

## Lichen



**Material** Plaster

**Degradation found** Lichen, Vegetal organism forming rounded millimetric to centimetric crusty or bushy patches, often having a leathery appearance, growing generally on outside parts of a building. Lichen are most commonly grey, yellow, orange, green or black and show no differentiation into stem, root and leaf

**Hypothesized cause** Humidity and exposure, lichens are a common feature on outdoor stones and are generally best developed under clean air conditions. Former lichen growth may be detected by typical pitting structures or lobate or mosaic patterns and even depressions

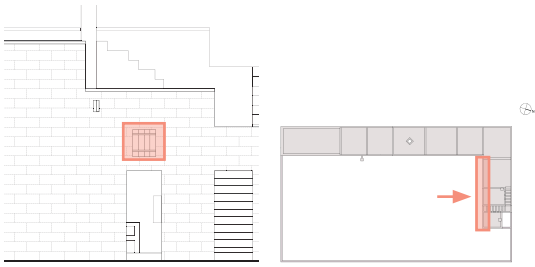
**Proposed intervention** Management of lichens, where acceptable, can be achieved in small areas by physical removal. Chemical control using appropriate biocidal products may also be appropriate, but generally they should only be considered in exceptional circumstances

Icomos-ISCS, *Illustrated glossary on stone deterioration patterns/ Glossaire illustré sur le formes d'altération de la pierre*, ICOMOS, Paris 2008, p.68.

UNI 11182, *Beni culturali, Materiali lapidei naturali ed artificiali, Descrizione della forma di alterazione - Termini e definizioni*, Norma Italiana, 2006, p.5.



## Window



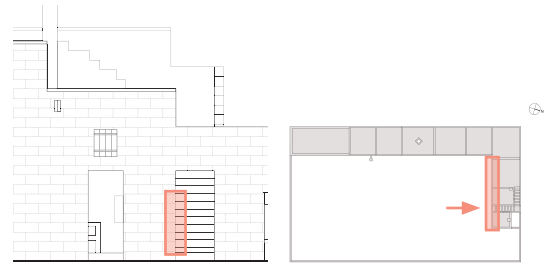
**Material** Wood

**Degradation found** Detachment of finishing elements

**Hypothesized cause** Exposure to constant or heavy rain and wind. Presence of humidity due to weather conditions with the lack of maintenance

**Proposed intervention** Replace the missing wood ornaments

## Wall



**Material** Tufo blocks

**Degradation found** Scaling, detachment of stone as a scale or a stack of scales, not following any stone structure and detaching like fish scales or parallel to the stone surface. The thickness of a scale is generally of millimetric to centimetric scale, and is negligible compared to its surface dimension

**Hypothesized cause** Exposure. Erosion

**Proposed intervention** Microfilling, filling is normally done with a lime paste mortar, but in the case of medium to large cavities most of the void is filled first with pieces of an aggregate of suitable size (fragments of brick or stone) mixed with a hydraulic mortar (e.g. lime paste/pozzolan); then a final layer is made up with lime paste mixed with crushed stone. Colored stone powders are added to the filling mortar to adjust the color to match that of the adjacent material

Icomos-ISCS, *Illustrated glossary on stone deterioration patterns/ Glossaire illustré sur le formes d'altération de la pierre*, ICOMOS, Paris 2008, p.26.

G. TORRACA, *Filling of cracks and void, Consolidation of Architectural Surfaces, Lectures on Material Science for Architectural Conservation*, 2009 J. Paul Getty Trust, p.105.

# Decay Analysis and Intervention

## 5.3 Internal Decay Analysis

Internal decay levels vary in each location, they are mostly influenced by the varying degrees in air temperature, moisture, wind and various other factors<sup>1</sup>. As well as the type of materials present in each room, the primary recipient of decay inside the masseria is the plaster on the walls. due to the fact that it is the first point of contact between the external elements and the walls, multiple types of decay affecting the plaster such as black crusts, usually occurring in areas of moisture and porous substrate, developing generally on areas protected against direct rainfall or water runoff. Black crusts usually adhere firmly to the substrate. They are composed mainly of particles from the atmosphere, trapped into a gypsum matrix. Another type of recurrent decay is the discolorations and staining of the paintjob, due to the presence of moisture in and around it.

Efflorescence manifests itself in almost all the rooms of the masseria due to the nature of the walls (being made of porous tufo blocks) and the plaster on top. It is generally whitish, powdery or whisker-like crystals on the surface. Efflorescences are generally poorly cohesive and commonly made of soluble salt crystals.

The presence of decay is exponentially higher in proportion in rooms with greater exposure to water and air currents, which is tied to the presence of windows and doors in it. Which is why, the animal feed room is one of the least damaged rooms

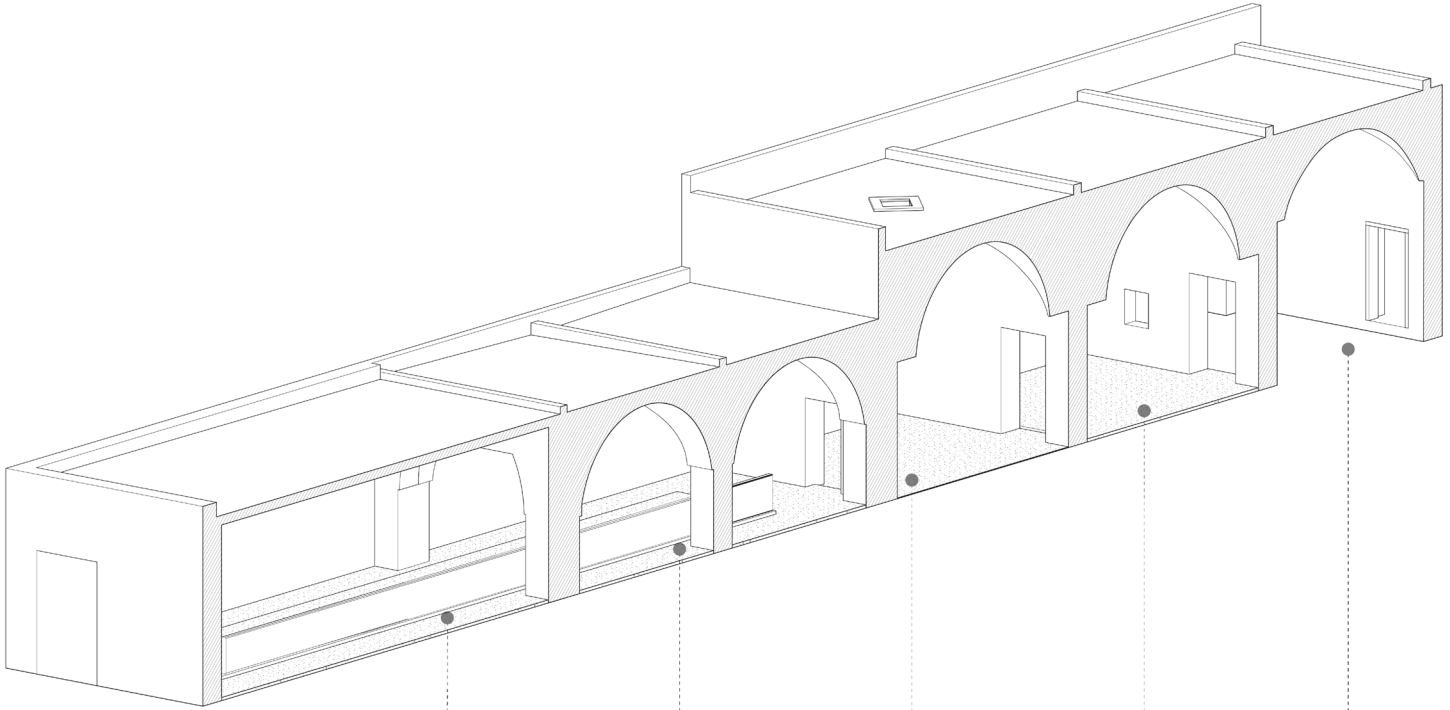
in the entire masseria, due to the fact that it has no openings that lead outside, as such having minimal contact with the elements that usually cause internal decay. In contrast, rooms with a direct link with the outside, such as the animal stall, the rooms in the habitable quarter and the small oven, are all affected significantly.

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1. Musso. S, *Recupero e restauro degli edifici storici*, EPC libri, 2010, p.30





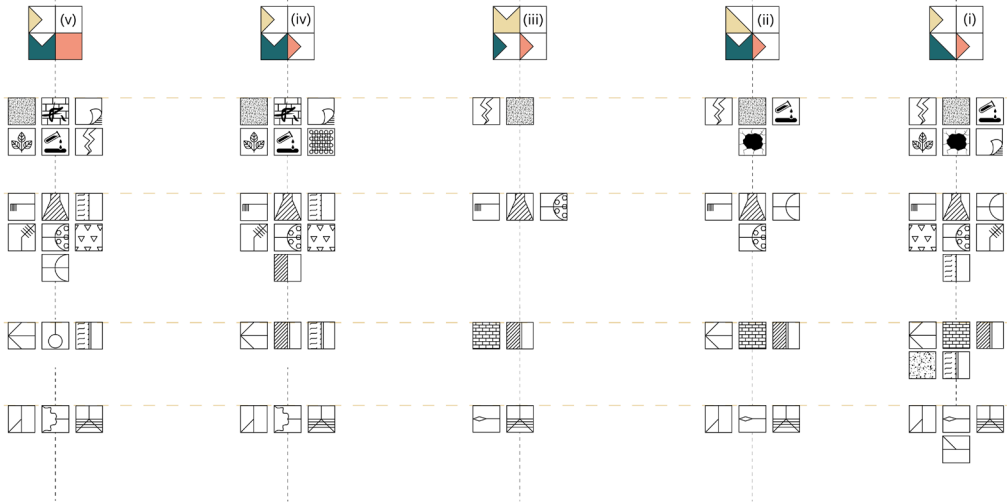


Decay

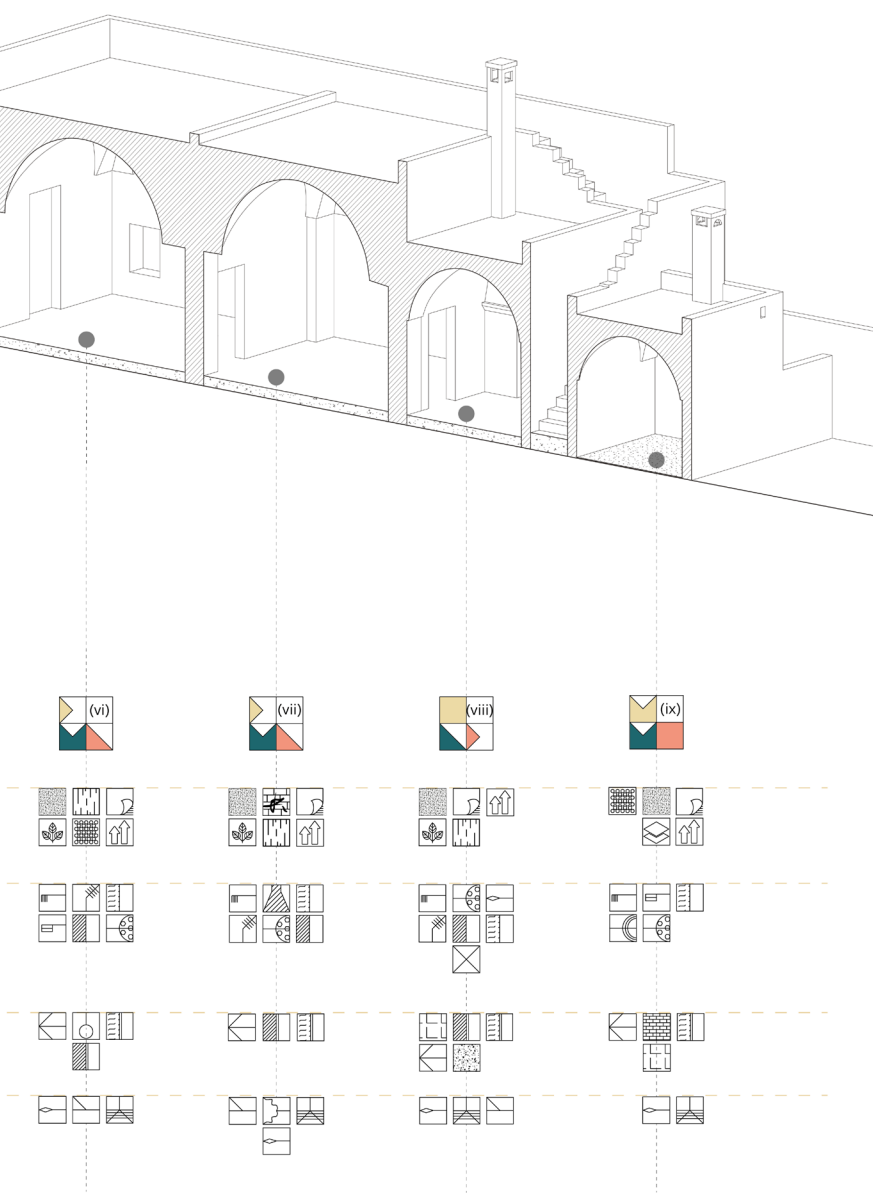
Cleaning

Reintegration  
and repair

Protection



# INTERNAL DECAY ANALYSIS



## Decay summary

No Decay

Light

Medium

Heavy

Very Heavy

Floor

Walls

Ceiling/Vault

Rooms by function

i - Entrance

ii - Room

iii - Storage

iv - Manger-vault

v - Manger- flat roof

vi - Blue Room

vii - Red Room

viii - Big Oven

ix - Small Oven

## Decay legend

Cracking

Alveolization

Biological colonisation

Vandalism

Wood decay

Peeling of paint

Spalling

Efflorescence

Black Crust

Metal decay

Wall gap

Rising damp

## Intervention legend

1. CLEANING

Removing defective brick

Vegetation removal

Abbrasive wet blasting

Application of water spray at moderate pressure

Water cleaning by brush

Cutting back decayed face of the brick

Biocidal spray

Brushing with stiff nylon brush

Removal of detached plaster

Light brushing

Removal of detached paint

Application of nebulized water

Chemical product washing

2. REINTEGRATION AND REPAIR

Replace missing elements

Reintegration of tufo superficial layer

Reintegration of mortar

Reintegration of the plaster

New paint job

Demolition

3. PROTECTION

Protection against rain and humidity using caulk

Application of acrylic resin

Injection of chemical barrier

Apply water repellent products

Anti graffiti coating

Figure 138. Internal decay analysis









6

Project

*Masseria Aia Nuova*



# Project

## 6.1 The Distillery

As stated in the objectives, the goal of the proposal for the masseria is its rebirth as a production center. The restoration efforts would see all the faces of the masseria cleaned in an intervention, the grey color resulting from weathering and age would dissipate to a light sandy color originally present before the building's abandonment. The plaster covering the facades would be removed, as such only the tufo blocks would remain in place, and with the sufficient care and routine maintenance, they would remain decay free.

The old windows and doors are removed and replaced with new ones, the choice of fixtures is reinforced by having precedents and examples in other contemporary and traditional masserie, the overall use of wood is a must while also keeping in mind the sensitive environment in the production areas. In these areas, conforming to the traditional fixtures is impossible due to them not offering much protection from changes in temperature and moisture, newer more complex doors and windows have been selected to fill the gap.

In terms of furniture and machines used for the production, heavy fermentation silos are to be installed in the later half of the animal manger, along with distillation equipment. While the other half contains the bottling and packaging machinery. Ease of access and wide enough openings are necessary to enable production

capacity. As such, the large door present at the rear end of the animal stall will be reopened and used strictly for employee access in and out of the masseria, a vehicle stop used for loading and unloading supplies will be located in front of the door. Awning windows are the best choice here due to the height, width and type of work taking place in the room, of course while taking into account the normativa regulating these kinds of activities.

The two arches in the bottling area are turned into panoramic windows, one of which will have a built in door to ease access to and from the courtyard, coupled with a new door built in the wall in the area housing the distillation equipment.

Flooring in this area is to be easily cleaned and easily maintained. The ideal choices are ceramic tiles coated with epoxy resin, also placed on the walls up to two meters, in accordance to the normativa.

Changing rooms will be built using gypsum panels, dotted with water proof tiles. These will be used by the staff working in the distillery.

The vaults will be coated with epoxy resin to ensure ease of cleaning and maintenance, and prevent the buildup of dust.

The aging room entrances will be dotted with hermetic doors to ensure constant temperature levels within, due to the lack of doors and windows leading to the exterior, it is easier to monitor and

ensure the product isn't damaged.

The offices will be located in the multipurpose room, along with a restroom for the staff.

Wooden doors and windows are used in this room as well as the rest of the habitable quarter.

The flooring of choice is pietra leccese.

The main entrance will be dotted with a new gate to replace the decayed predecessor.

The tasting lounge located in the blue and red rooms, will host the bar serving drinks and grappa, as well as the store from which visitors and clients can purchase products of the masseria.

The red rooms will have a restroom within it, reserved strictly for the guests.

The big oven room will become an exhibition area with large glass casings showing the products of the masseria.

The flooring of choice, similar to the desk area, is the pietra leccese tiles, restored from the ones previously present in it.

The small oven room will serve as a storage area.

The courtyard will house the green area, the outdoor seating for the clients of the bar as well as a possibility to access the terrace roof.

# Project

## 6.2 Doors and Windows

Doors and windows in old masserie were made from locally sourced materials, mainly wood which is typical of apulian rural buildings, with an emphasis on both simplicity and low cost due to the scarcity of premium materials. Restoration efforts in modern masserie attempted to recreate or retain if possible, the prevalent use of wood in all fixtures, both to stay true to the heritage of apulian architecture as well as provide authenticity to the restored building. However, due to conditions related to the grappa production process, special attention needs to be allotted to the types of doors and windows being fitted.

### ***Steel doors***

(Figure 140) (n.1 in Figure 139)

Metal doors with wooden coating, mainly used for employee access and transport of supplies in and out of the production area.

### ***Awning window***

(Figure 141) (n.2 in Figure 139)

To be placed in the distillery room, due to their small size and height from the ground, due as well to the presence of heavy machinery.

### ***Hermetic door***

(Figure 142) (n.3 in Figure 139)

Placed to protect the delicate atmosphere inside the distillation and aging areas, where variations

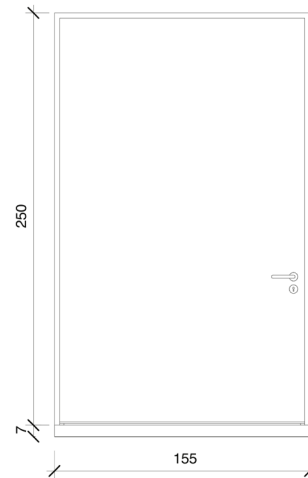


Figure 140. *Steel door*  
(n. 1 in Figure 139)

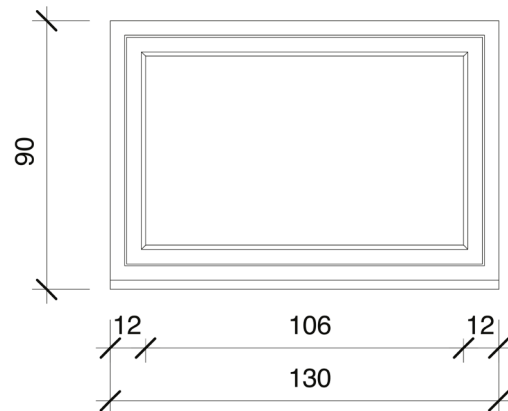


Figure 141. *Awning window*  
(n. 2 in Figure 139)



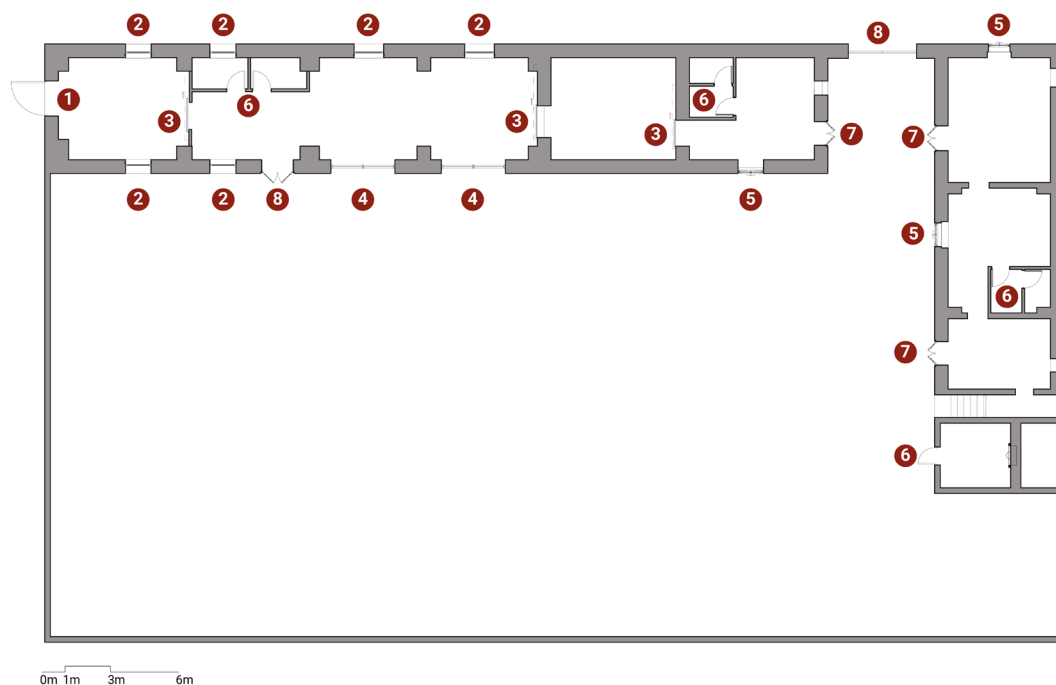


Figure 139. *Doors and windows plan*

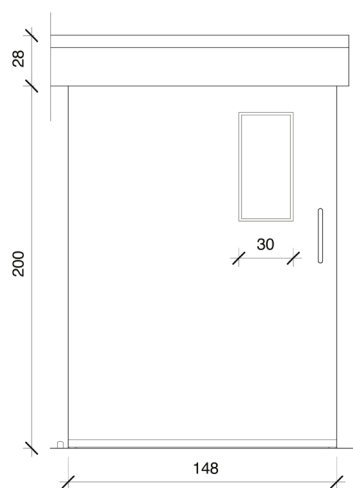


Figure 142. *Hermetic door*  
(n. 3 in Figure 139)

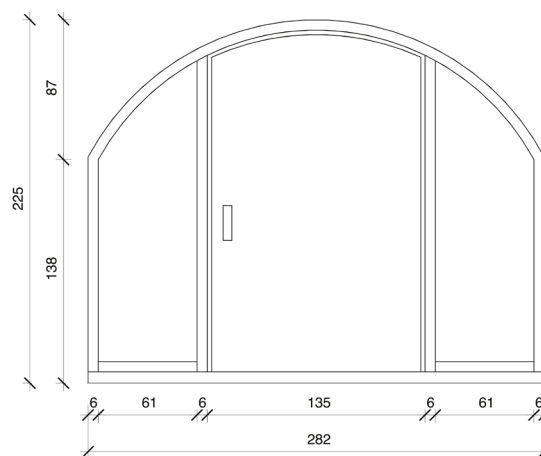


Figure 143. *Panoramic window*  
(n. 4 in Figure 139)

in moisture and air temperature can have grave effects on the production process.

***Panoramic window***

(Figure 143) (n.4 in Figure 139)

Large panoramic windows making use of the arch's entire area.

From the conservative point of view, in fact, all the existing cubatures and volumes have been preserved as they were originally.

***Casement window***

(Figure 144) (n.5 in Figure 139)

Selected for the bigger openings in the masseria, ensures sufficient lighting and airflow.

Its design is reminiscent of the one used in traditional masserie.

***Wooden door***

(Figure 145) (n.6 in Figure 139)

Basic door used for the restrooms in the masseria.

***Wooden door with glass panels***

(Figure 146) (n.7 in Figure 139)

Wooden doors reminiscent of the ones present in traditional masserie

Used for the entrances into the habitable area and offices.

***Main entrance gate***

(Figure 147) (n.8 in Figure 139)

The main gate will be replaced with another custom made for the measurements of the entrance.

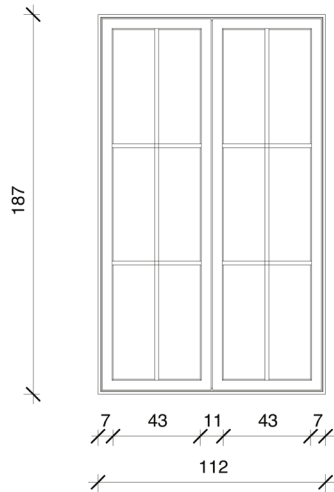


Figure 144. Casement window  
(n.5 in Figure 139)

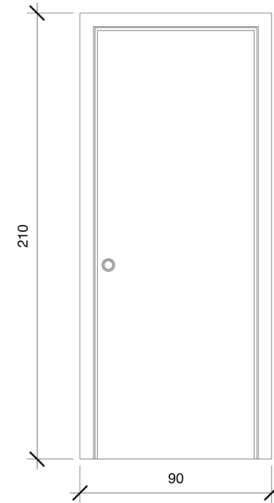


Figure 145. Wooden door  
(n.6 in Figure 139)

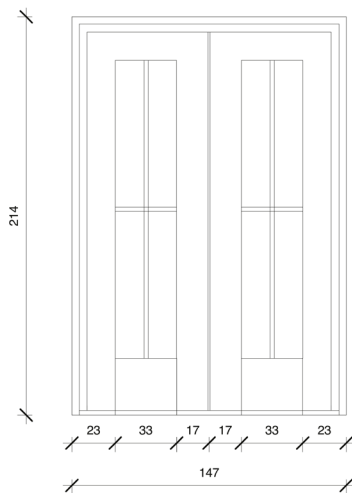


Figure 146. Wooden door with glass panels  
(n.7 in Figure 139)

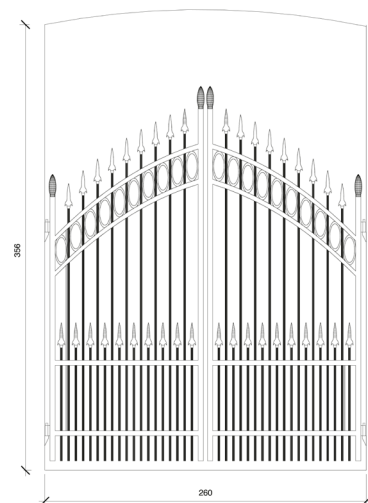


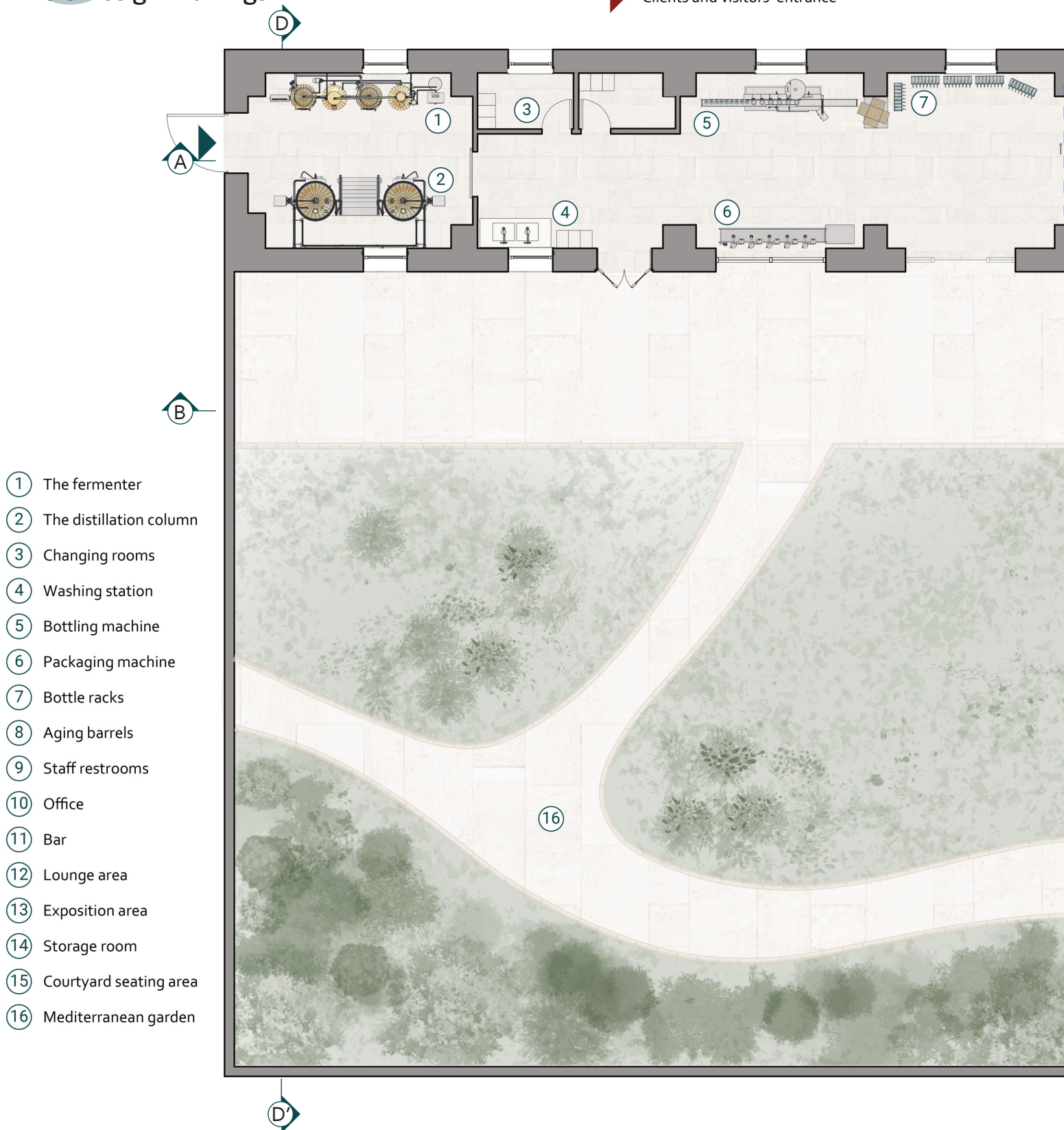


Figure 147. Main entrance gate - actual  
(n.8 in Figure 139)

# Masseria Aia Nuova

## 6.3 Design Drawings

-  Employees and workers' entrance
-  Clients and visitors' entrance

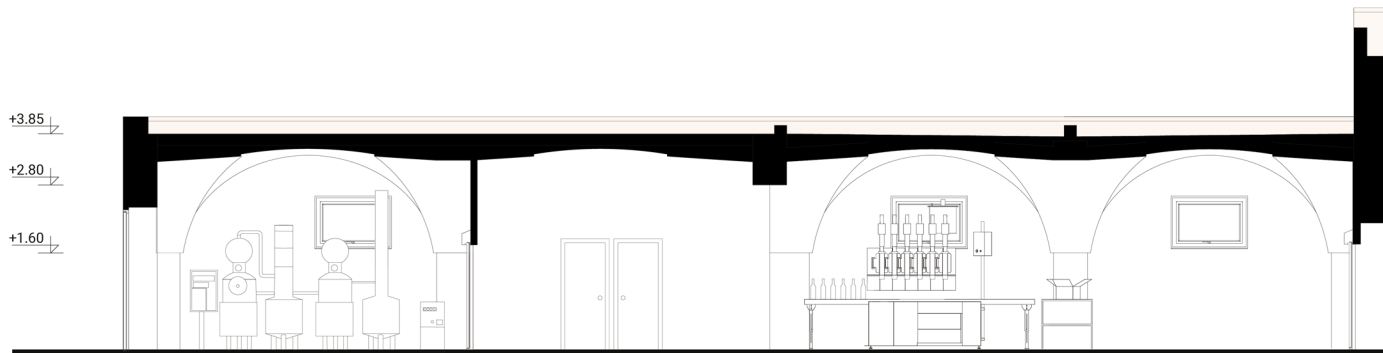
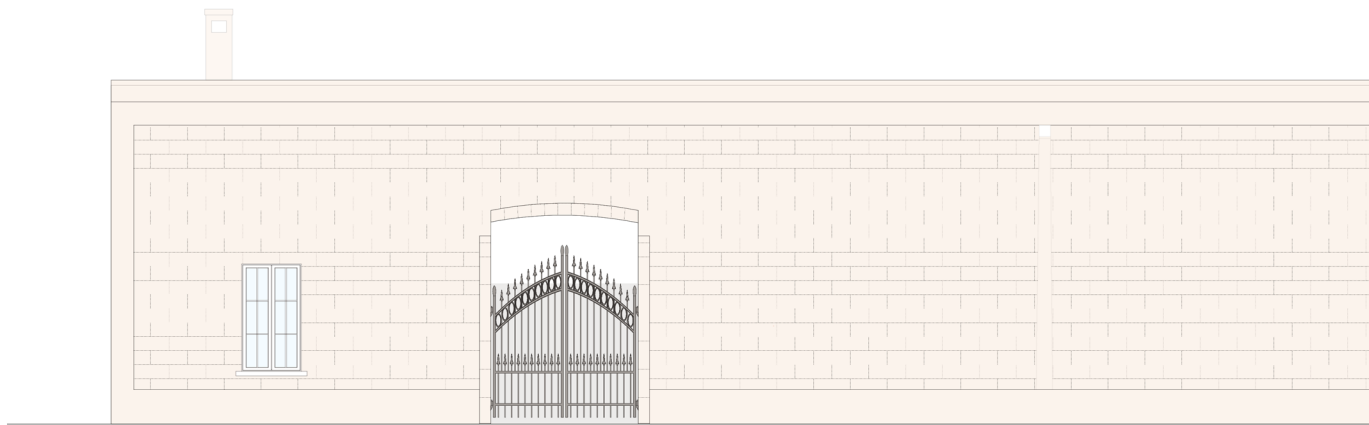


- ① The fermenter
- ② The distillation column
- ③ Changing rooms
- ④ Washing station
- ⑤ Bottling machine
- ⑥ Packaging machine
- ⑦ Bottle racks
- ⑧ Aging barrels
- ⑨ Staff restrooms
- ⑩ Office
- ⑪ Bar
- ⑫ Lounge area
- ⑬ Exposition area
- ⑭ Storage room
- ⑮ Courtyard seating area
- ⑯ Mediterranean garden

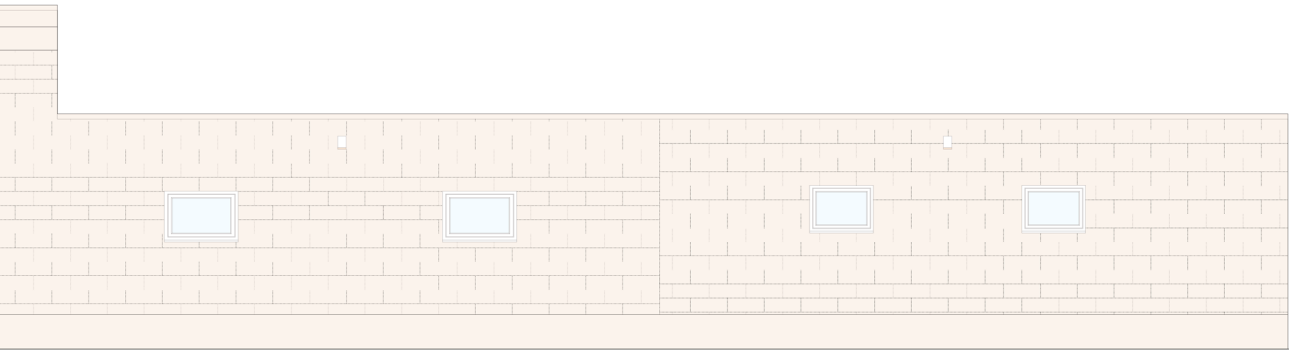




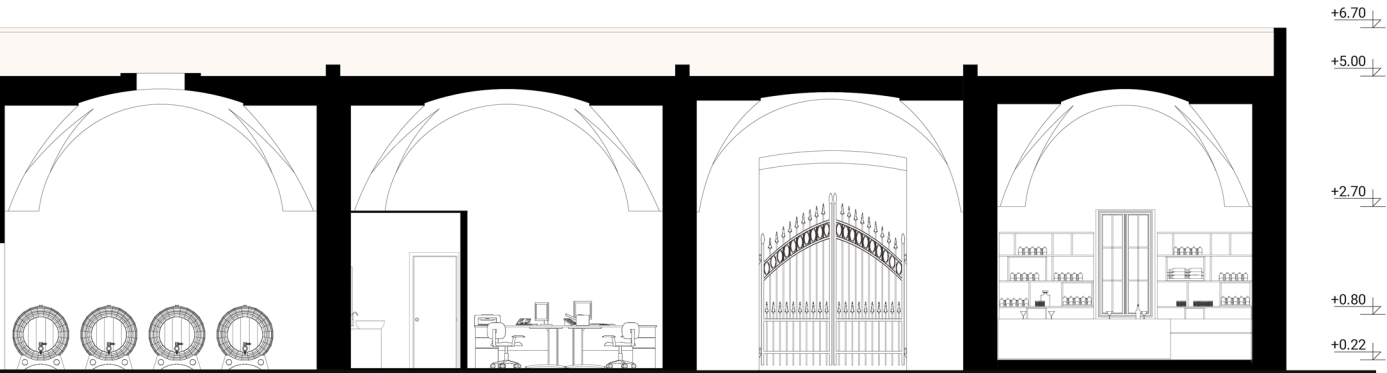
PLAN

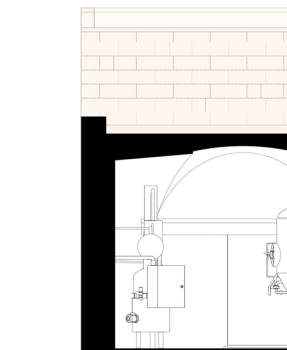
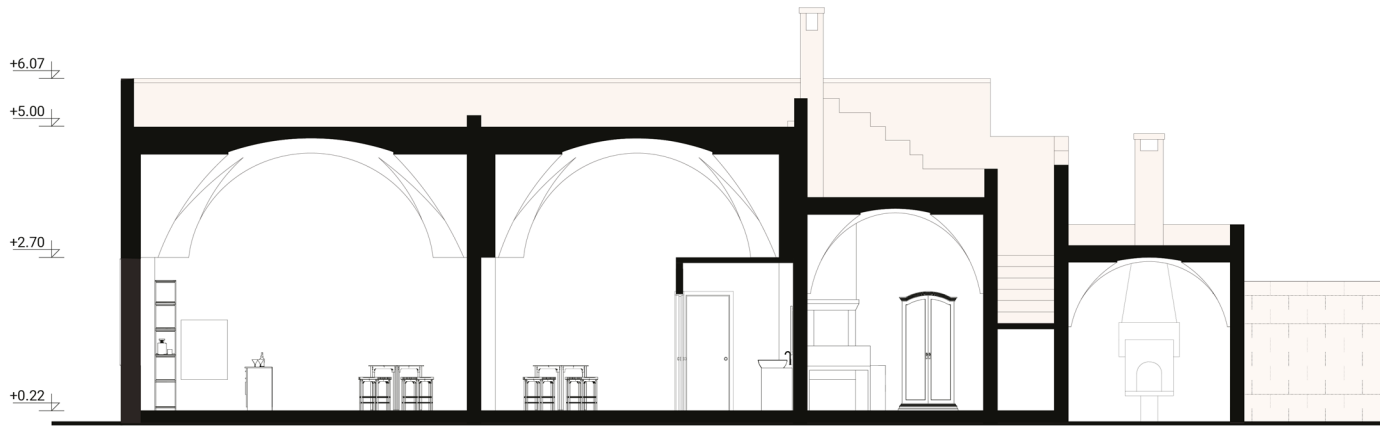


ELEVATION WEST



ELEVATION AA'



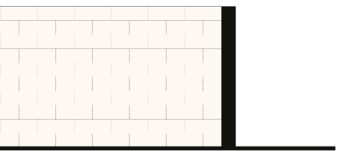




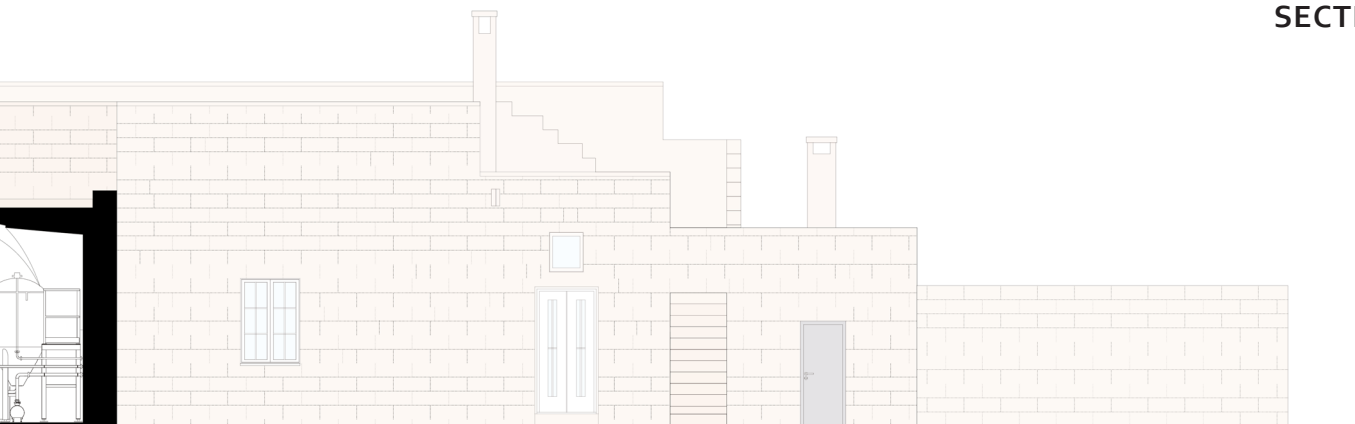
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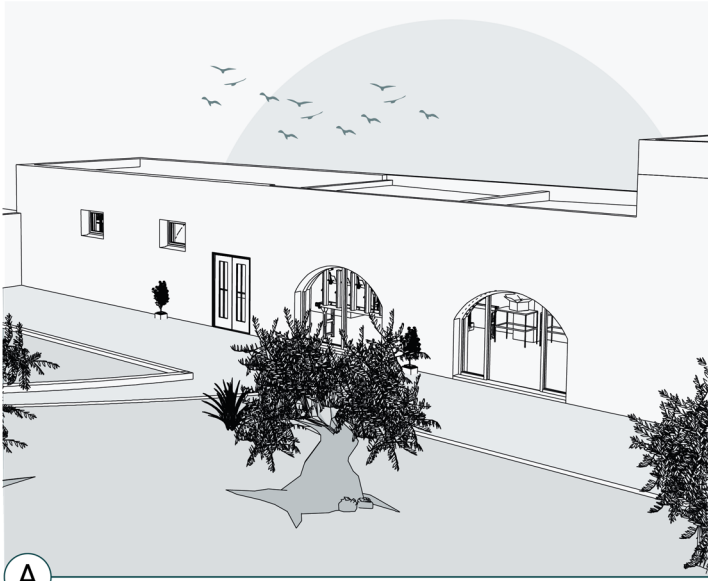


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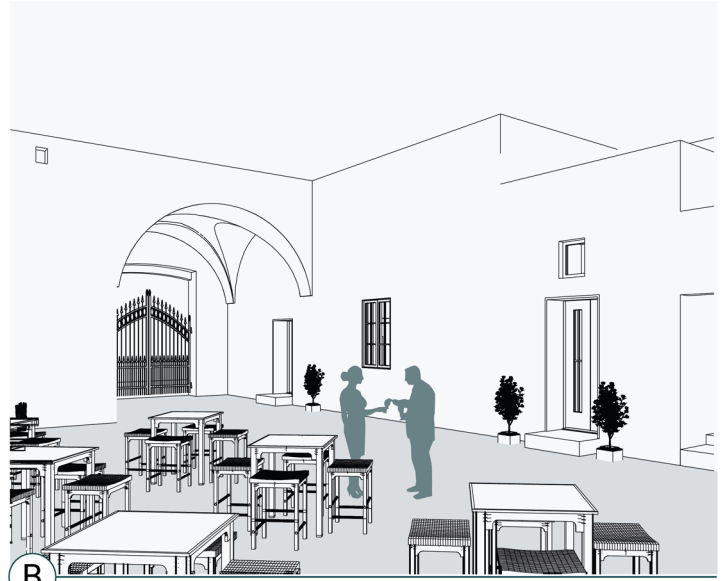


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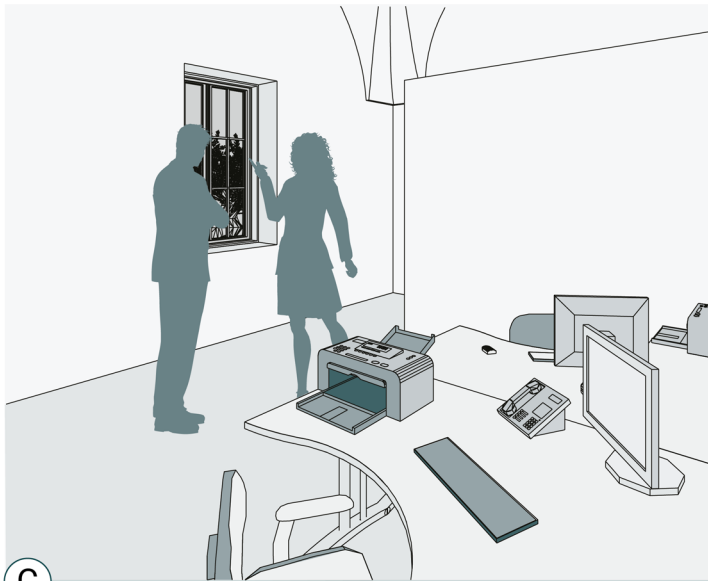




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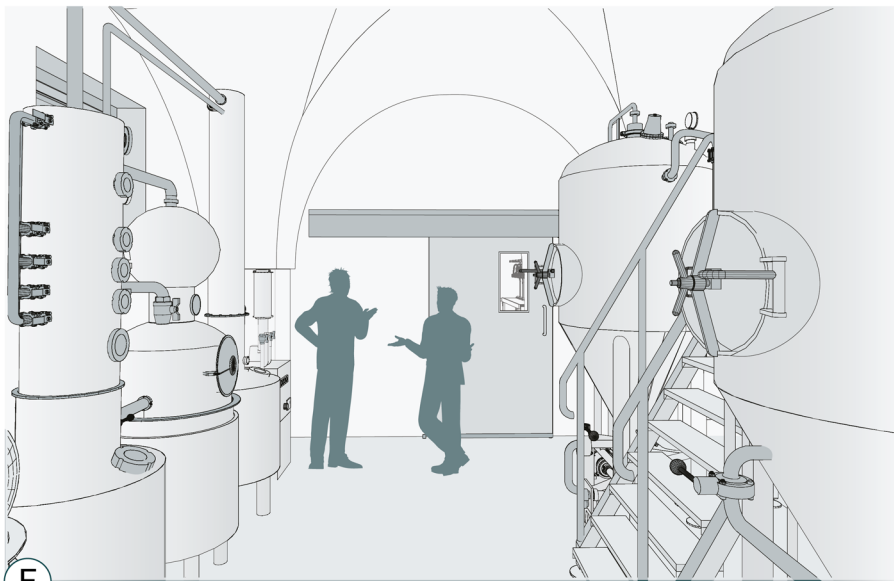
B



C



D



E

- A Mediterranean garden
- B Outdoor seating
- C Office
- D Tasting bar and lounge
- E Distillery



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