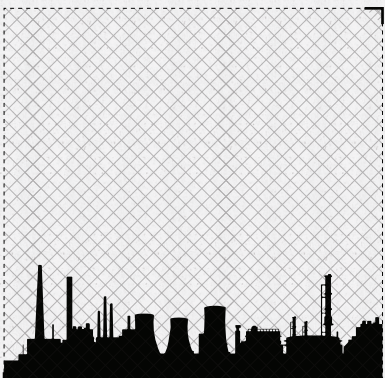


Unesco Listing: Spatial dynamics of conservation and transformation in Biella, Como and Ivrea





Corso di Laurea magistrale in
Architettura Costruzione Città

A.A 2018/2019

Unesco Listing: Spatial dynamics of conservation and transformation in Biella, Como and Ivrea

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Abstract:

Industrial buildings are the testimony of the progress of human civilization which involved technical, social and economic development. However, it can not be denied that there is plenty of obsolete industrial buildings around cities, due to the industrial restructuring processes. Many industrial sites progressively lose their focuses, even if the industry played a vital role in the economic development of cities, and it profoundly influenced in terms of culture, social formation, and urban development. This part of the story is frequently forgotten by the public, as many industrial buildings are left abandoned or being a shelter for wanderers, the “wilderness” area of a city. Alternatively, demolishing old industrial buildings breaks a city’s cultural continuity and makes a city gradually weakening part of its own specific culture. The study considers what happens to the industrial legacy of cities when it is reconceived as cultural heritage. The work is based on the framework of UCCN (UNESCO Creative City Network), which is aimed at facilitating sustainable urban development, to revive the industrial culture with creativity and innovation. Although the spatial dynamics of such overlapping of preservation and transformative approaches is never made explicit, the case studies unfold the spatial transformation in three medium-size towns, Biella, Como, and Ivrea, that approached industrial heritage as a physical medium to promote and preserve the industrial culture in the name of “creative city”.

Keywords:

Industrial legacy, Urban transformation,
Building reuse, Creative city

Location

Ivrea

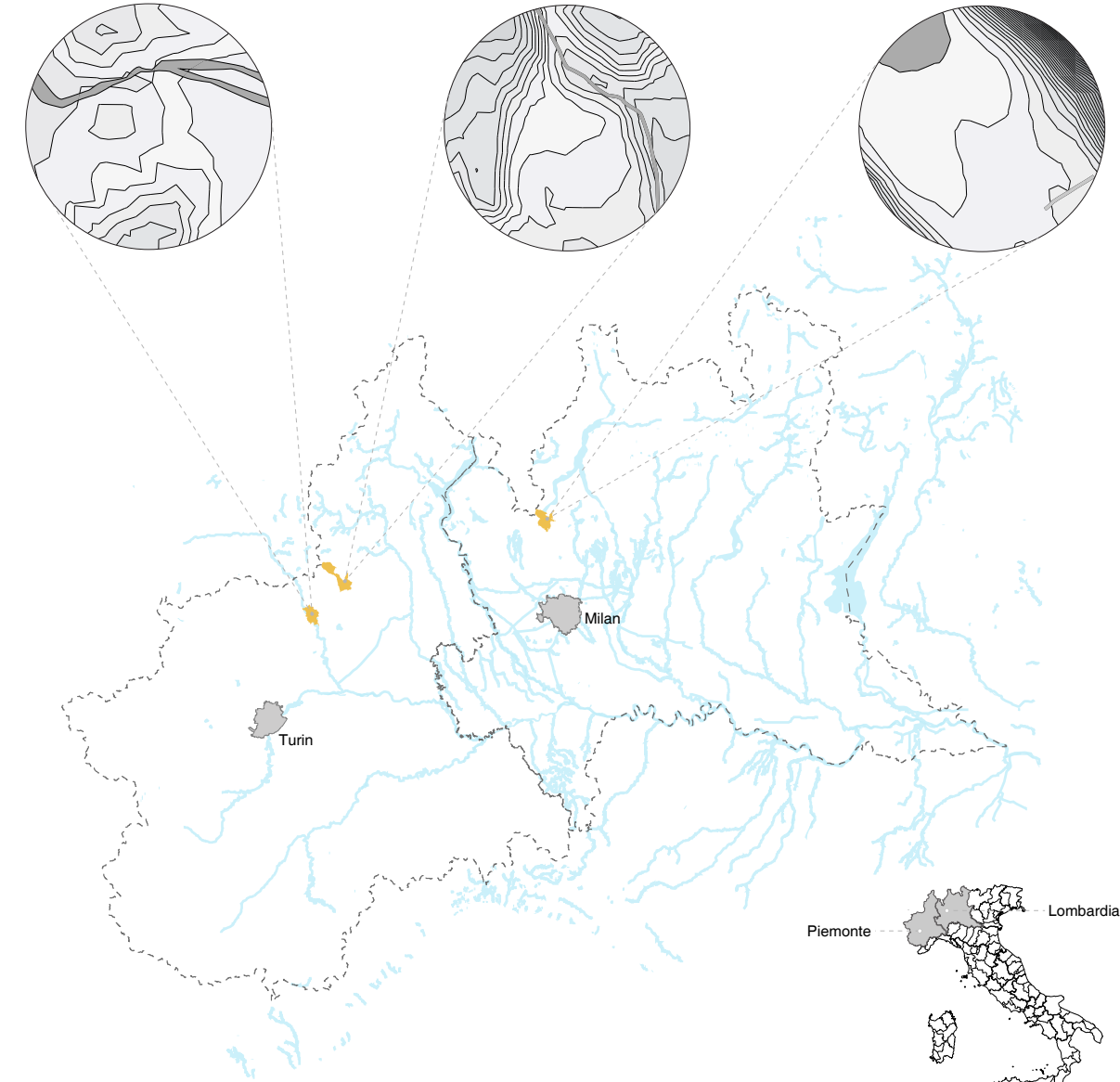
Population:29.152 (1971)
23.637 (2018)
Area:30,11 km²
Density:790 inh/km²
Height above sea level:253 m
Industrial workers:5.094

Biella

Population:48.324 (1991)
44.324 (2018)
Area:46,69 km²
Density:950 inh/km²
Height above sea level:420 m
Industrial workers:5.457

Como

Population:87.059 (1991)
83.320 (2018)
Area:37,12km²
Density:2.220 inh/km²
Height above sea level:201 m
Industrial workers:8.374



— Water bodies

Sources:
<http://italia.indettaglio.it/eng/piemonte/biella.html>
<http://italia.indettaglio.it/eng/lombardia/como.html>
<http://italia.indettaglio.it/eng/lombardia/ivrea.html>

Introduction

There is no doubt that the industrial revolution marked a significant change in human civilization. It profoundly impacts people's daily life even before manufacture turned into mass production. Industrial heritage is the precious asset of cities and represents an important nexus between the present and the past. Industrial heritage has its own cultural value and it also innovatively promotes the development of new programs or cultivating new constituencies. (Alfrey and Putnam, 2005). Industrial heritage roots in the conceptualization as 'cultural heritage' of selected aspects of industrial legacy. In 2003 the Nizhny Tagil Charter provided an authoritative definition for the Industrial Heritage "Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value." This reveals the part of the hidden history of cities which still needs to be exploited. The most evident remains that we can find in our cities are derelict industrial sites and industrial buildings or factories in small scale. Those are tangible assets that represent the history of the city and contributes to forming the city's identity. In this sense, it is crucial to recognize the importance of safeguarding the industrial heritage.

As the increasing acknowledgment of the value of industrial heritage and the growing demand for new forms of cultural consumption, urban planners and policymakers turn their attention to transforming the post-industrial building and industrial sites. (Lusiani and Panozzo 2017) The creative reuse of industrial buildings is thus intended as the means to enhance social, economic, and cultural value. Following on this line, yet with less explicit connections with buildings, UNESCO has promoted in recent years special initiatives targeting creative cities.

The UNESCO Creative City Network (UCCN), is a strategy, which promoted by UNESCO among the cities that are recognized by their own peculiar creativity, since 2004, as a driving force for sustainable development in terms of social,

economic, cultural and environmental aspects. The importance of cultural and creative industries in sustainable urban development is recognized by UNESCO and confirmed by the implementation of the Culture Conventions, the 2005 Convention on the Protection and Promotion of the Diversity of Cultural Expressions. The member cities of the UCCN work together towards a common mission: "placing creativity and cultural industries at the core of their urban development plan to make cities safe, resilient, inclusive and sustainable, in line with the United Nations 2030 Agenda for Sustainable Development."

Application guide. The designated cities, share their knowledge, their experience, and their resources to collaborate with each other in the international level, and to fulfill the objectives as presented in the document of MISSION STATEMENT:

- *strengthen international cooperation between cities that have recognized creativity as a strategic factor of their sustainable development;*
- *stimulate and enhance initiatives led by member cities to make creativity an essential component of urban development, notably through partnerships involving the public and private sectors and civil society.*
- *strengthen the creation, production, distribution and dissemination of cultural activities, goods, and services;*
- *develop hubs of creativity and innovation and broaden opportunities for creators and professionals in the cultural sector;*
- *improve access to and participation in cultural life as well as the enjoyment of cultural goods and services, notably for marginalized or vulnerable groups and individuals;*
- *fully integrate culture and creativity into local development strategies and plans.*

For being a member of UCCN, cities should firstly identify themselves among the seven creative fields (Crafts and Folk Arts, Design, Film,

Gastronomy, Literature, Media Arts, and Music) and demonstrate the existing or potential synergies between them if cities involve in several fields.

Candidate Cities should commit the implementation of all the objectives as aforementioned and meet the criteria presented in the 2019 UCCN Application Guide and form.

(1) Motivation for the application and the primary development opportunities and challenges to be met.

The explanation of the culture and creativity in the creative field concerned that act as a driver for identifying opportunities and challenges. Proposing the city's global development strategies in line with the international development agenda.

(2) Process for preparing the application

Demonstration the involvement of the Municipality and stakeholders in the creative field concerned, ranging from the public and private sectors, academia, and civil society and the participation of the local creative sector concerned.

(3) Comparative assets that the candidate city would bring to the Network

Demonstration of the main cultural assets — especially those in the field of the creative field concerned, that promote locally and internationally the fulfillment of the objectives creativities

(4) Contributions to achieving the objectives of the Network

The presentation of a medium-term (four-years) action plan is required in which demonstrate the initiative that the city contributes to the Network's objectives: creativity as an impetus for sustainable development at both local and international levels.

By joining the network, cities can share the experience in the practice of creativity and facilitate the international collaboration between cities that make creativity and cultural industries involve in the process of sustainable urban development. The UCCN is beneficial to the designated city, not only in the development of the creative field concerned but also

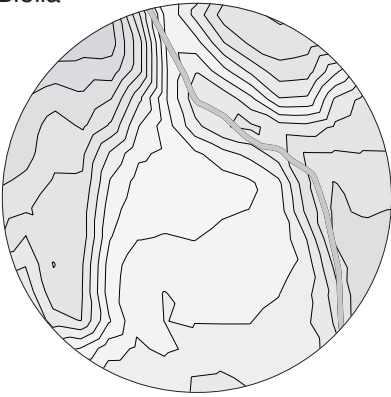
in the development of urban economy, local culture, cultural society and the recognition of cities at international levels.

The study concentrates on analyzing one square kilometer area around the industrial heritage of three medium-size Italian towns, Biella, Como, Ivrea, studying the impact of the transformation of industrial legacy in urban development. The analysis follows the main structure: the history of industrial development, the infrastructure system (road system, plot system) and urban fabric analysis. In the infrastructure system, analyzing the location of an industrial building in the city. And then in the plot system, the study focuses on understanding the relationship between the industrial zone and other zones through cartographies. Subsequently, in the urban fabric section, analyzing the urban patterns through the investigation on the fact that whether space is accessible to the public, according to which classifies different types of urban pattern and thus comprehending the relationship between the urban spatial transformation and the transformation of industrial legacy.

More specifically, the three cases were studied with some specific questions in mind:

1. Is there any specific issue in a project of reusing industrial building that overlaps with heritage preservation rules and building codes?
2. Is the relationship between new and old emphasized- new in terms of function or noticeable replacement, old in terms of existing appearances or structure?
3. How to creatively reuse the space of industrial building through which the former industrial building can keep the memory of its past or better expose its value?
4. How is creativity presented in industrial buildings transformation?

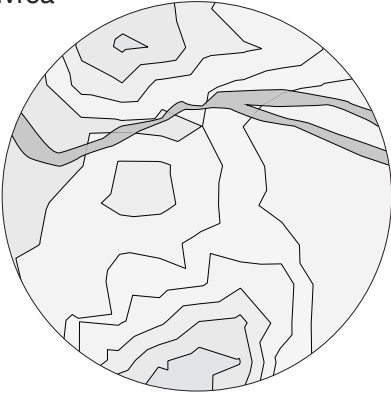
Biella



Natural space

The topography is germane to the development of the industry. The presence of water and mountains are common features in these three case studies. These three medium-size towns are not far from the two capital of the Piemonte and the Lombardia region. Biella and Ivrea are approximately eighty and fifty kilometers away from Turin respectively. Como is around forty-eight kilometers away from Milan.

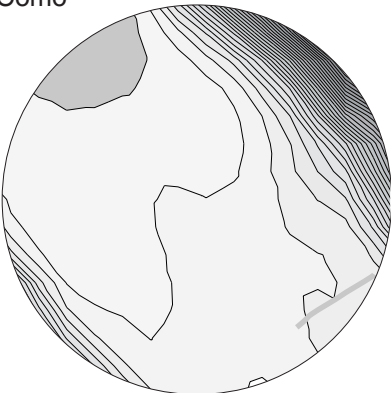
Ivrea



Biella is located in the north-east part of the region Piemonte. The city is encompassed by mountains, hills natural parks and protected areas which are the Burcina special nature reserve, the Baragge nature reserve, the Zumaglia Brich and so forth. It also crosses the Cervo creek which nurtures the world-known wool industry. The high quality of wool production makes the area of Biella an important textile district in Italy, also well-known internationally.

Approximately twenty kilometers from the south-western of Biella, it is located the city of Ivrea, a town and the municipality of the Metropolitan city of Turin. The River Dora Baltea that runs through the Canavese region, divides the city into two main areas: the historic city and the industrial city. The historic city was found on the Roman colony and developed. The industrial city is where located the headquarters of the first Italian typewriter factory built by Camillo Olivetti. The city is surrounded by the long horizontal ridge of the “Morenic Serra of Ivrea”. The natural landscape plays a critical role in the urban development of the industrial city since the 1930s.

Como



The city of Como is situated in the south shores of Lake Como and had flourished for silk manufacture since the 18th century until the 19th century. During the period of the industrial revolution, many twisting and spinning machines were built with plenty of watercourses run from the mountains towards the Lake of Como, which is the cornerstone of the development of the silk industry in Como.

Biella



Photo: author

Wool History in Biella

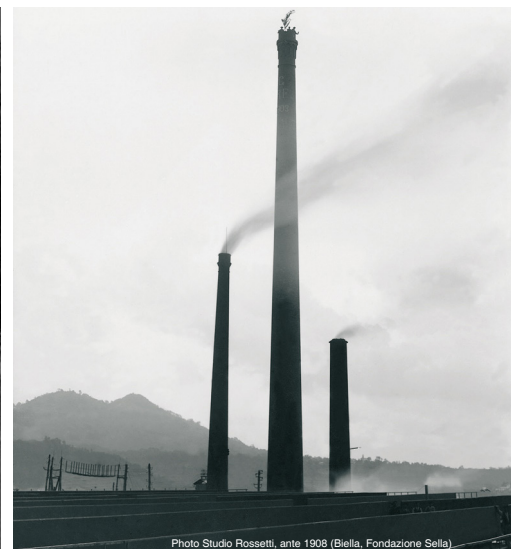
Biella, a city famous for its wool production, is regarded as the capital of cloth. Its world-class wool history has to trace back to the period that people start to live in the area. The mountain area around the Biella brought some living difficulties for early inhabitants. The crop yield was not sufficient to sell so that the locals change into raising sheep on the land. They discovered the site befitted their flocks, consequently, the locals earned a living by spinning and weaving wool. Another factor that should be mention is that the water resource which was crucial to wool productions with high quality. The water comes from the Alpine and runs to the city of Biella, which produced the hard water that is an advantage for making finishing fabric. This was indubitable significant to identify the local fabrics and promoted Biella lead to the wool of the world. Subsequently, the wool manufacture took the center place of the economy in Biella. By 1887, the wool manufacture entered into its boom time. There were 18 manufacturing plants, 126 mechanical looms, 714 manual looms and 1700 employees in the wool trade in Biella.

Although wool manufacturing identifies with Biella,

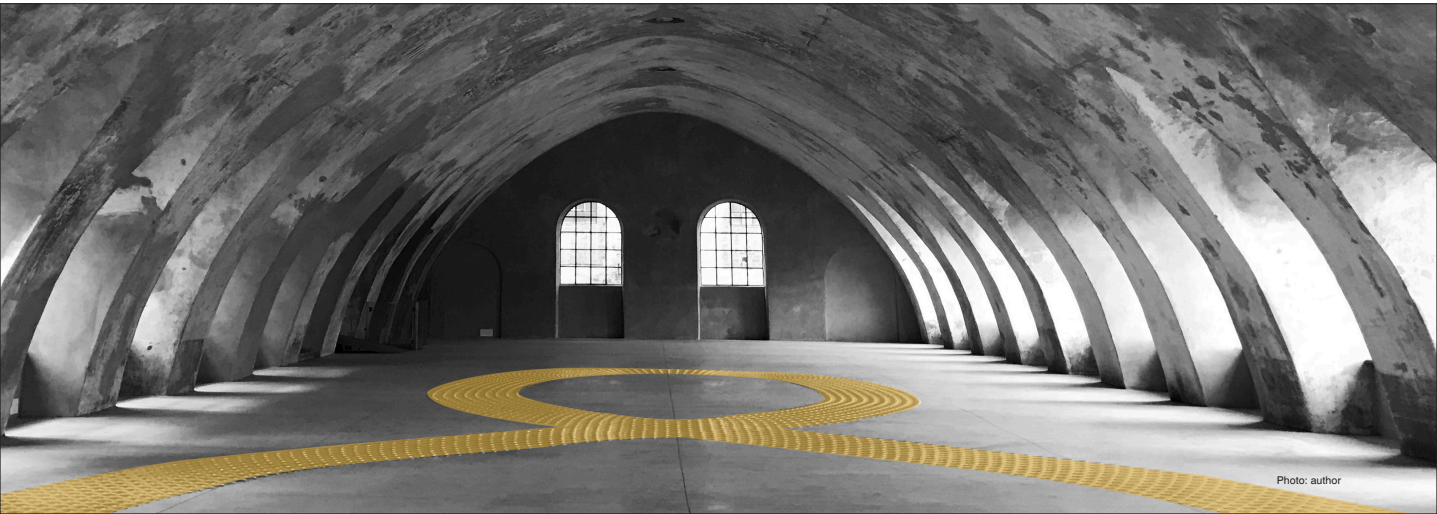
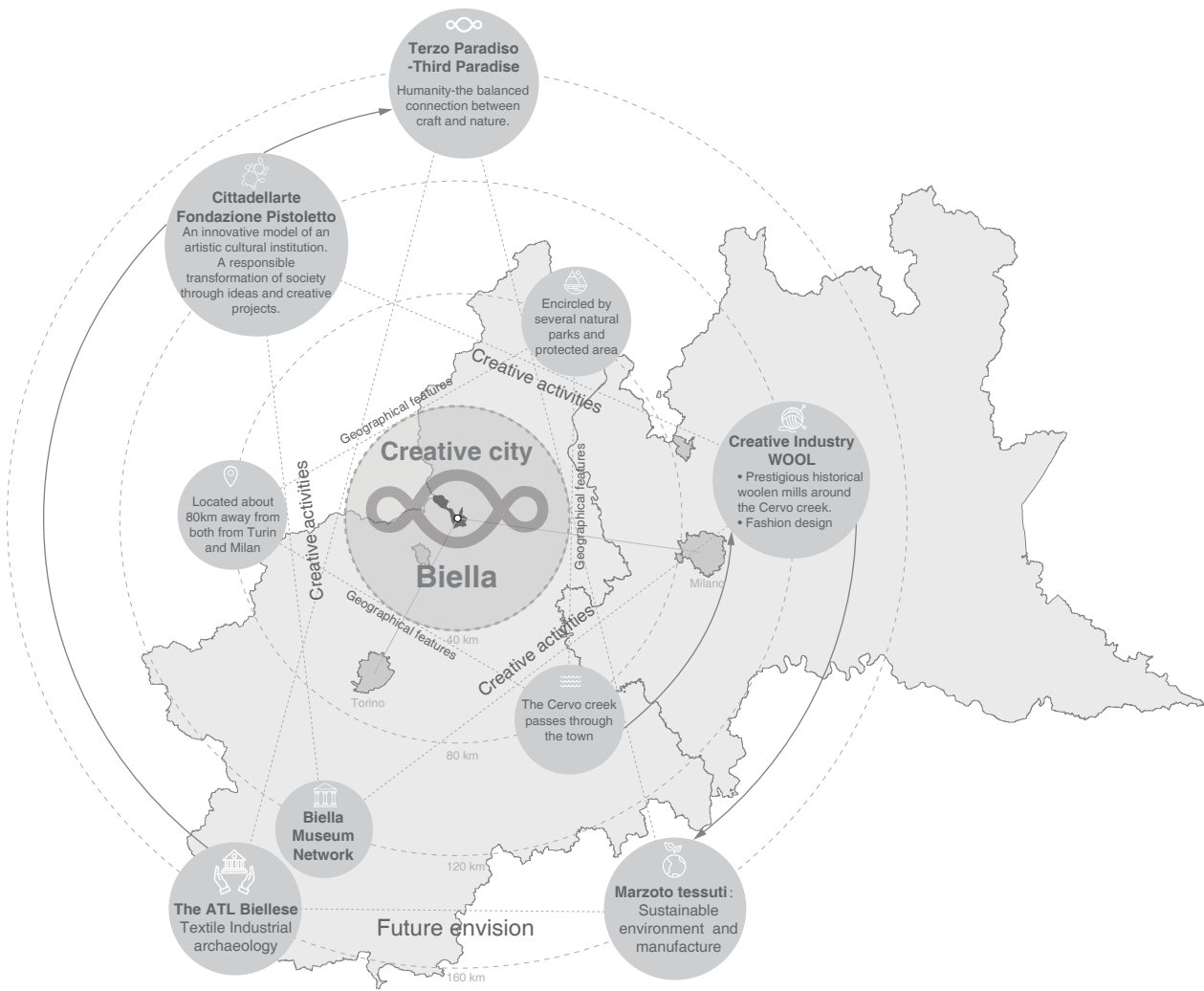
an entire constellation of smaller settlements was indeed contributing to the major productions. They are now reunited in “La strada della lana”(the wool road), fifty kilometers long, which connects Biella to Borgosesia. Along the way, a number of industrial sites have transformed the image between the Valle Strona and Valsessera forming a reproduction of the city Manchester on small scale. For example, the Fabbrica della Ruota, a permanent exhibition place for the history of the textile sector, is a typical Biella’s industrial heritage, whose former was the Zignone wool factory.

With the first introduction of wool machines in the family wool mill in Vallemosso by Pietro Sella, the textile manufacturing stepped into the stage of the industry after 1817. In Biella, the former Trombetta wool mill which now is the Cittadellarte, founded by an international artist Michelangelo Pistoletto, the Maurizio Sella wool mill which is the Sella Foundation, the Pria woolen mill which preserves the archive of Italian textile industry with many sample of fabrics, are considered as industrial archaeology, which defined by the ATL (Azienda Turistica Locale) Biellese

- blacklapel.com/thecompass/biella-became-wool-capital-world/
- www.docbi.it/modules/smartsection/item.php?itemid=94



Creative city - Biella



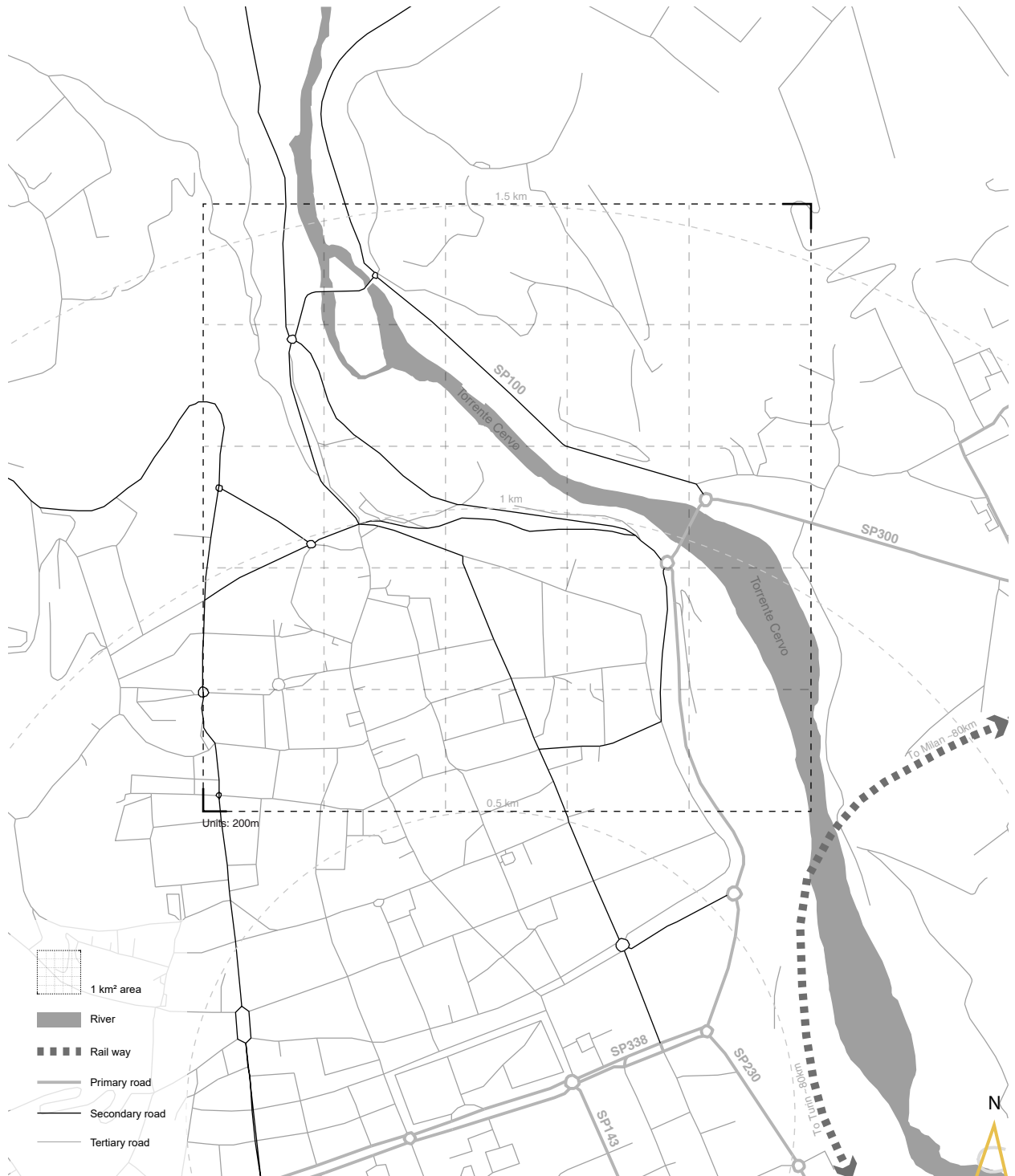
Since 2018, Biella is a candidate to join the UNESCO Creative City Network for craft; in June 2019, the application got the support of the Italian National Commission for UNESCO together with other 3 Italian cities: Como, also applying for craft, Bergamo and Trieste. Above all, what should be noticed is its location which surrounded by many protected areas and crosses the limpid Cervo creek that fosters its creative wool industry. With the introduction of the first wool machines by Pietro Sella, the manufacturing activity turned into the industry after 1871. Consequently, many woolen mills were built along the bank of the Cervo. Presently, the high quality and wool production originated from Biella is still used by many famous brands in the fashion sector due to its know-how and advanced technology which makes wool production in Biella outstanding. With a long history of manufacturing, Biella gained worldwide fame. At the end of 2018, Biella applied its candidacy to the UNESCO Creative city.(Artknit Studios) One of the most important support for its candidacy is that the idea of a creative, responsible transformation of society from the international artist Michelangelo Pistoletto. The intervention on the ex lanificio Trombetta that is nowadays Cittadellarte, both cognitively and physically preserve the industrial heritage. The Cittadellarte also enters into the museum network of Biella province, which collaborates with the Piemonte museum system. It is not merely a museum, it also an innovative model of a cultural institution that integrated with the Third Paradise whose aim is to develop a humane society- a balanced connection between craft and nature. The textile industry in Biella never ceases to pursue creativity. Creativity not only shows in textile production but also its process, as the Marzoto group company implements sustainable manufacturing. All those factors contribute to forming the city of Biella as a creative city based on its long history of the wool industry.

- www.biellacittacreativa.it/en/
- www.artknit-studios.com/biella-textile-district/

BIELLA
 **CANDIDATA 2019
CRAFTS & FOLK ART
UNESCO CREATIVE
CITIES NETWORK**

The infrastructure of the creative city

- Road system

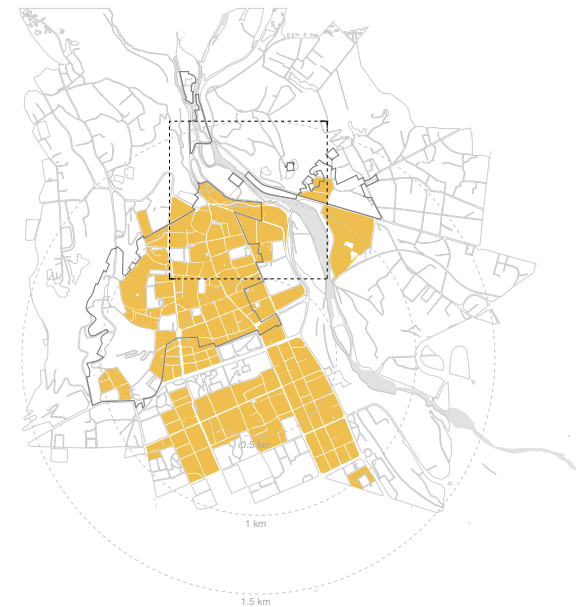


The infrastructure of the creative city

- Plot system



Mostly residential area



Industrial area

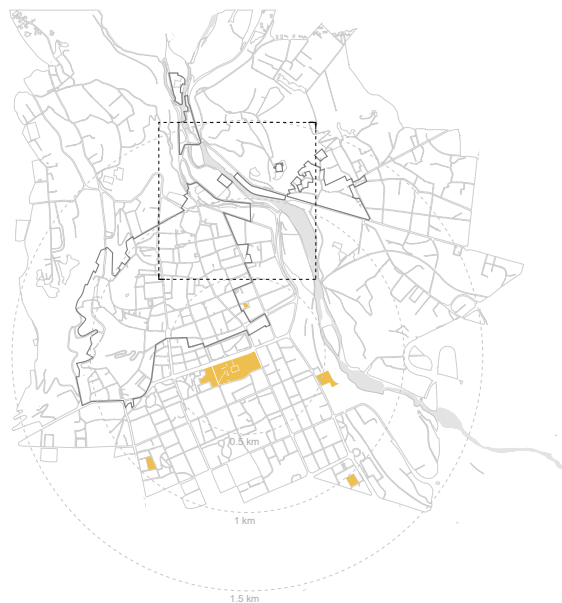


Natural area

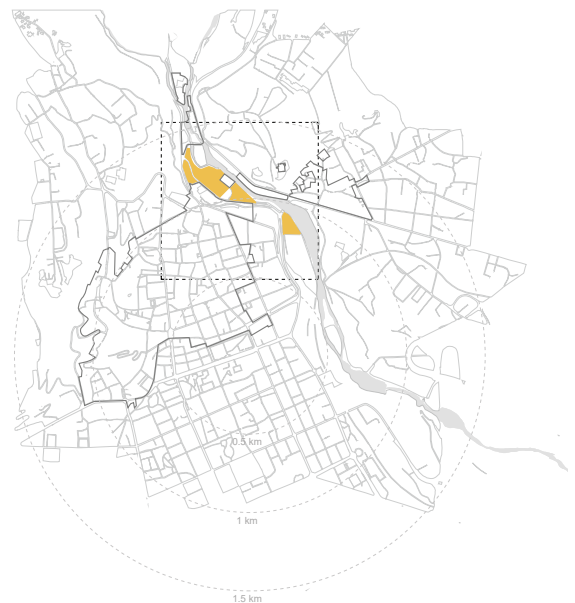


The whole territory of Biella is prevalently dedicated to the residence. The main industrial area is located on 1 kilometer away from the main shopping center on the principal road SP 338 which is the main axis of the city of Biella and is also the confine between historic city and modernity. The industrial zone is neighboring the zone of mix economic activity that defined by the land-use plan, P.R.G - Azzonamento, is located at the periphery of the historic city. The peculiar location of industrial sites is beneficial to its redevelopment.

Main commercial area

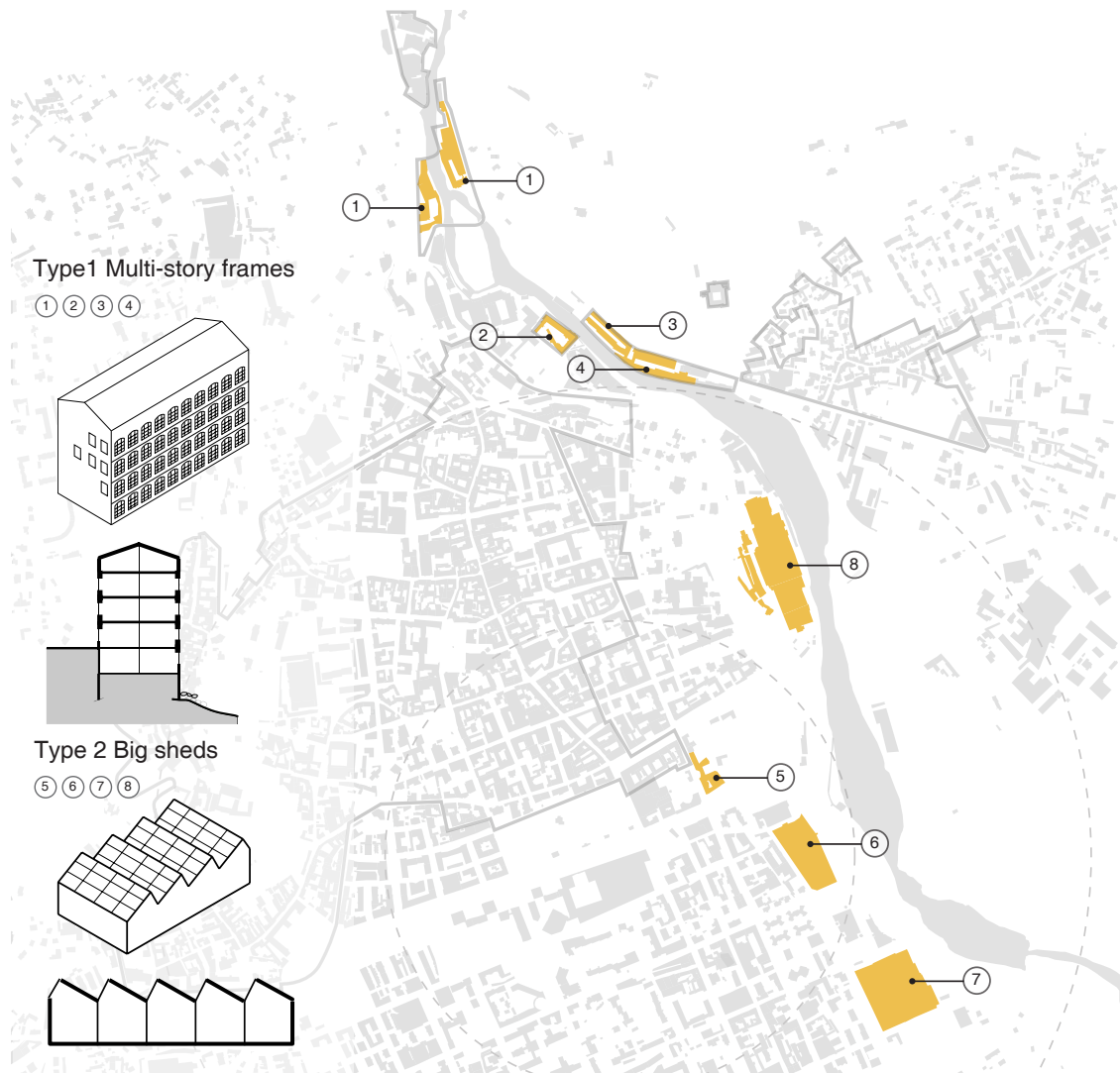


Mix economic activities area



Reference:
P.R.G - Azzonamento
sit2.comune.biella.it/maps/sitbiella.php?m=bi_prg&w=ks&o=0.8#

Wool mills in Biella



1. Ex Lanificio Pria
2. Ex Lanificio Trombetta - Fondazione Pistoletto
3. Ex Lanificio Maurizio Sella
4. Sellalab - Biella
5. Ex Rivetti area
6. Ex Lanificio Rivetti
7. Ex Lanificio Rivetti Pettinature
8. Lanificio Fratelli Cerruti

Studying the industrial spaces in Biella, two recurrent types of buildings can be identified. One is multiple stories and the other one is big sheds. Both of them provide flexible and continuous space without disruption. The internal layout was defined by different industrial activities, for example spinning machines and weaving machines. Both ample spaces give a great possibility for re-defining their transformation.

Cultural spots - Private



Museums:

1. ZAION Gallery - galleria d'arte
2. Cittadellarte - Fondazione Pistoletto
3. M.A.C.I.S.T
4. Terzo Paradiso
5. Museo Della Birra Menabrea
6. Fondazione FILA Museum

Libraries:

7. Biblioteca della Fondazione Sella

Cultural associations:

8. Circolo Sardo SU NURAGHE
9. Alliance Française Biella
10. DocBi - Centro Studi Biellesi
11. Opificiodellarte - expressive products
12. ARS Teatrando

In Biella, several cultural spots can be detected, most of which are linked to the private enterprise. Yet some of them are open to public use. For instance, the showroom of the symbol “Terzo Paradiso” is accessible to any citizen. Furthermore, Cittadellarte, where the ex-Trombetta woolen mill was located, joined in the museum network of the province of Biella. Similarly, the analogous intervention can be found in the library of Foundation Sella, where the ex Maurizio Sella woolen mill was situated. Except for the library, co-working spaces for semi-public use are also inserted into the former factory building. These interventions, on one the hand, reactivate the fade industrial zone and on the other hand, facilitate visitors who live in other cities to come and visit Biella.

1. ZAION Gallery - galleria d'arte

A place where the exhibition of contemporary art is held.

2.Cittadellarte - Fondazione Pistoletto

It is a place where artists, scientists, activists, entrepreneurs and institutional representatives could meet, an actual home for art. A personal exhibition place of international artist Michelangelo Pistoletto.

3. M.A.C.I.S.T

An art gallery, organized by Fondazione Edo ed Elvo Tempia exhibits the artworks of some famous artists.

4.Terzo Paradiso

The showroom of the symbol "Terzo Paradiso" and a place for cultural events.

5.Museo Della Birra Menabrea

A museum of ancient beer making factory of "Menabrea".

6. Fondazione FILA Museum

The museum is funded by the foundation of FILA focusing on its own historical heritage.

7. Biblioteca della Fondazione Sella

A non-profit organization including more than 2,000 pamphlets and books.

8.Circolo Sardo SU NURAGHE

An institution organizes several cultural events in the city of Biella.

9.Alliance Française Biella

An institution founded 1947 with the aim of establishing the cultural link between France and Italy after the Second World War. It collaborates with educational institutions, department of culture, Civic library, Museum of Territory and other cultural institutions organizing different kinds of cultural events.

10. The Centro per la Documentazione e Tutela della Cultura Biellese ("DocBi")

An association with the initiative of preserving the Biella's identity and culture from different perspectives. DocBi has partnered with local administrations, superintendents of cultural heritage and also with research centers and Universities. Industrial heritage is one of the main fields of research of DocBi.

11.Opificiodellarte

A dynamic and creative institution with the intention of reusing the abandoned industrial building, l'ex Maglificio Boglietti. It focuses on producing "creative products" in the sphere of music, dance and theatre.

12. ARS Teatrando

L'Associazione Ricerca e Spettacolo Teatrando founded in March 1988 with the intention of promoting the culture of theatrical performances and shows.

References:
<http://www.macist.it/>
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<http://birramenabrea.com.it/>
<http://www.opificiodellarte.it/>
<http://www.zaiongallery.com/>
<http://teatrando.biella.it/default.htm>
<http://www.fondazione.sella.org/biblioteca/>
<http://www.alliancefrancaise.biella.it/chi-siamo/a-biella/>
<http://www.cittadellarte.it/attivita/il-terzo-paradiso>
<http://filamuseum.altervista.org/museo-cosa-facciamo/>
<https://www.docbi.it/modules/smartsection/item.php?itemid=250>

Cultural spots - Public



Museums:

1. Casa Museo dell'Alta Valle del Cervo
2. Museo del Territorio Biellese
3. Ecomuseo del Biellese

Libraries:

4. Biblioteca Civica
5. Biblioteca Civica. Sezione Ragazzi Rosalia Aglietta Anderi

Cultural associations:

6. Teatro sociale Villani

Comparing to the private cultural spots, the geographical location of the public one is around the town hall, most of which are common function that can be found everywhere, such as museums and library. It rarely can be found around industrial zone. Hence, the industrial zone gets obsolete once industries are no longer active in that area.

1. Casa Museo dell'Alta Valle del Cervo

A place that talks about Bursch identity. Research and spreading knowledge of the local culture. A group of volunteers alongside Gianni Valz Blin

2. Museo del Territorio Biellese

An ex cloister from the Medieval ages, owned by the city of Biella since the end of the 19th century.

3. Ecomuseo del Biellese

The Biellese Ecomuseum consists of 15 cells and numerous local cultural institutions and it promoted by the province of Biella. Routes to discover local traditions and ancient crafts, educational activities, events, guided tours, research, collections, archives and photographs, natural and reconstructed environments.

4. Biblioteca Civica

A public library system network that connects different library sections together.

5. Biblioteca Civica. Sezione Ragazzi Rosalia Aglietta Anderi

A public library within the library system network.

6. Teatro sociale Villani

It is the expansion of the former theatre, a private property of Villani family, where took place the theatrical performance under the desire of the Villani brothers. In 1997, teatro sociale Villani is owned by the Municipality of Biella and hosts several important Italian theatrical performances.

References :
<http://www.museodelterritorio.biella.it/>
<http://www.atl.biella.it/ecomuseo-del-biellese>
http://www.teatrosocialevillani.it/ita/informazioni_teatro/storia.html
<http://www.comune.biella.it/web/strutturaorganizzativa/biblioteca-civica>
<http://www.casamuseo-altavalledelcervo.it/casa-museo-alta-valle-cervophp?lang=en>

Listed historical Buildings



Building categories



Zone A

Category 1 -

Definition:

Buildings have great historical and artistic value under the concern of the Legislative Decree.490/1999 and those buildings which indicated directly by P.R.G (Piano regolatore generale) in a degraded condition. The documentary value of these buildings is referred to the Art.15, point 3) of the present regulation.

General principle:

Interventions should be aimed at the conservation, recovery and enhancement of the value of historical-artistic buildings and the environment.

Types of intervention allowed:

Ordinary maintenance:

According to the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione), interventions should comply with the regulation of Conservative Restoration (Restauro conservativo) and the preservation of the facade (Conservazione di facciata).

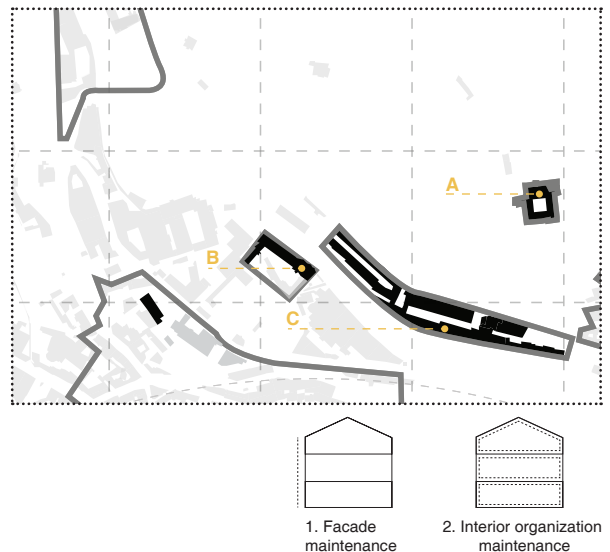
Special maintenance:

According to the Art.10 of the present N.T.A(Norme urbanistiche edilizie di attuazione), the interventions should comply with the regulation of Conservative Restoration and the preservation of the facade.

Conservative restoration:

According to the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione), the projects, buildings included in this category but not concerned by the Legislative Decree. 42/2004 must be submitted to the Reginal Commission for Environmental Assets for acquiring the advice within the consideration of the Art. 49 last paragraph of the L.R. 56/77.

Category 1



Zone A

Building categories

A. Monastero di San Gerolamo

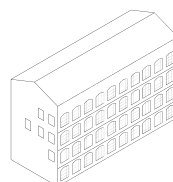
One of a typical example of the Renaissance church founded between 1512 and 1517 by Giovanni Gromo.

It composed of a cloister with loggia and a church where preserves the 16th-century wooden choir and fresco from Vercelli school. In 1864, the Sella family purchased the complex and transformed the hill into the park and the monastery into Villa Sella. The considerable value is that the church preserves the wooden choir, the best carving in the 16th century in Piemonte.



B. Ex Lanificio Trombetta Biella-CoWorking Cittadellarte

In the beginning, the carding factory was built by Giuseppe Trombetta in 1848. After his death in 1854, the factory was taken over by his son Emilio, who extend the building with a completed process cycle which included spinning, dyeing, weaving, and finishing. In 1866, Emilio Trombetta rented the factory and the house for workers to Maurizio Sella. In the early 1900s, the decline began with the death of Emilio Trombetta. The heritage was passed to his son Alfredo, who rentes the factory to the company Mosca & Ramella and Giacomo Tamariglio. In 1910, the factory was closed for maintenance due to some damages on the two floors which rented to other companies. With the death of Emilio Trombetta, the factory declined and his son Alfredo began to sell the factory and machines. Nowadays, it is sharing space work areas shared by professionals with different skills willing to exchange, learn, contaminate each other's work. The Co-working space opened in 2014. Several activities, workshops, and events took place here. The successful transformation of Ex Lanificio Trombetta thanks the creative concept of "a responsible transformation of society through ideas and creative projects".



Art center



Restaurant

C. Ex Lanificio Maurizio Sella

After the death of Pietro Sella, who turned the textile manufacturer into the industry, his brother Giovanni Battista set up a woolen mill in the Strona valley. Subsequently, due to the limited water resources, Battista's brother, Maurizio, moved the factory to Biella. In 1835, Maurizio Sella cooperated with industrialist Giovanni Agostino Crolle, bought the spinning wheel and the woolen mill. Afterward, the whole family of Maurizio Sella moved to Biella and extended the woolen mill for the whole production process.

In 1845, after the death of Maurizio Sella, his sons (Francesco, Gaudenzio, Giuseppe Venazio and Quintino) took over the management of the factory. The woolen mill was expanded during the nineteenth century. Due to the death of Francesco and Gaudenzio, Giuseppe Venazio took over the management of the factory.

In 1865, Giuseppe Venazio built a multiple-story woolen mill building, similar to the textile building in Manchester, which made the Lanificio Maurizio Sella as the most modern factory. There are five floors. Washing, carding, dyeing activities were carried out on the first floor while spinning, combing, and finishing was implanted on the second floor; the third floor for spinning of fine textile. Then, weaving was carried out in the fourth and fifth floor.

Under the management of Quintino, the Sella family was living inside the factory on the top floor. Subsequently, the Sella family purchased the sixteenth-century monastery of San Gerolamo, located on the hill, for residential use and the whole family of Giuseppe Venazio moved to there.

Sella family also found the bank "Gaudenzio Sella e C", which is nowadays Banca Sella. At the beginning of the twentieth century, the expensive cost of the energy promoted the wool mill started to produce the electric energy automatically. Subsequently, the hydroelectric Company of Maurizio Sella was established.

Originally, the building had four chimneys, which marked the industrialization of Biella, yet, two of them were lower and one was destroyed.

The whole complex was listed as cultural heritage by "Ministero per i beni e le attività culturali" in 1988.



Zone A

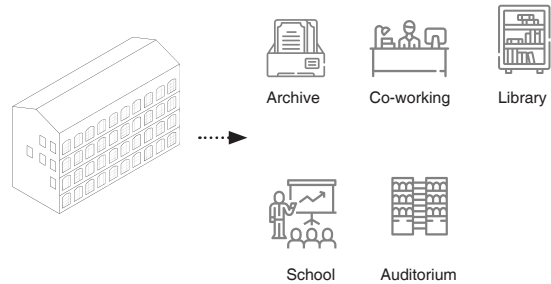
Nowadays, it revived with multiple functions: the archive of Fondazione Sella, Banca Sella Group's corporate University, the Data Processing Center of the Banca Sella, SellaLab, and FabLab. (Violetto Ingegneria studio)

SellaLab:

An extraordinary coworking campus where people can work and develop a certain business. It is also a place where some courses and cultural events are held. The flexibility of the space for multi-function activities revive the existing abandoned silk factories. A new place where people can meet and work.

Fablab:

Space where people can fulfill their design and carry out their projects with the latest technical assistance and machinery available. A place for cultivating creativity and a place for sharing. The dynamic space makes the Fablab suitable for diverse users who come from different sectors, such as school, companies and individual users.



- Gentile, Sara. (2017). *La casa nella fabbrica: ipotesi di restauro e musealizzazione degli spazi domestici di Quintino Sella nell'antico lanificio a Biella*
 - 50sfumaturedibiella.com/tag/lanificio-maurizio-sella/
 - www.violettoingegneria.com/index.php/campi-di-attivita/edifici-storici/lanificio-m-sella

Category 2 -

Definition:

Buildings have great historical and artistic value, bounded by the Legislative Decree.490/1999 and those buildings which indicated directly by P.R.G (Piano regolatore generale). Buildings, specific parts of which have particular values, are also considered in this category.

General principle:

The interventions must principally focus on the sanitary facilities restoration and the functional recovery of the building for which the modification of structural elements for consolidation and the internal distribution is necessary, with different materials and technics that are congruent with the original building.

Types of intervention allowed:

Ordinary maintenance:

According to the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione), interventions should comply with the regulation of Conservative consolidation (Risanamento conservativo) and the preservation of the facade (Conservazione di facciata).

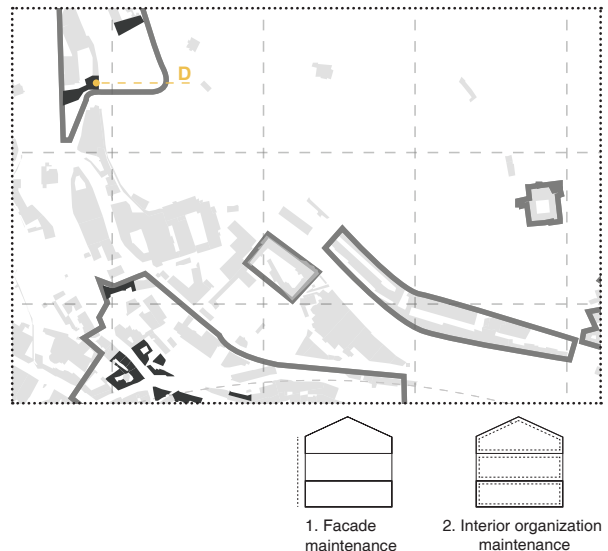
Special maintenance:

According to the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione), the interventions should comply with the regulation of Conservative consolidation and the preservation of the facade.

Conservative renovation:

According to the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione), the projects, buildings included in this category but not subjected to the Legislative Decree. 42/2004 must be submitted to the Reginal Commission for Environmental Assets for acquiring the advice within the consideration of the Art. 49 last paragraph of the L.R. 56/77.

Category 2



D. Ex Lanificio Pria -Terra di lane S.R.L

It is a tailoring shop in Biella, coming from the prestigious textile and sartorial tradition of the city of Biella. The traditional excellent textile making with the wisdom of skillful craftsmen characteries Biella's local culture and exposes the creativity in the wool industry which leads Biella to the frontier position in the textile industry.



Category 3.1 -

Definition:

Buildings with the evident or potential value referred to the historical, architectural, urban and environmental aspects, are not in the state of degradation; not subject to the Legislative Decree.490/1999.

Recent buildings with particular documentary or architectural value, are not in bad condition of maintenance.

General principle:

The interventions must principally focus on transforming the existing building with adaptive use to safeguard the valuable typologies and characteristics and maintain its original dimensions.

Types of intervention allowed:

Ordinary maintenance:

According to the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione), interventions should comply with the regulation of the Reconstruction of building Type A (Ristrutturazione Edilizia di tipo A) and the preservation of the facade(conservazione di facciata).

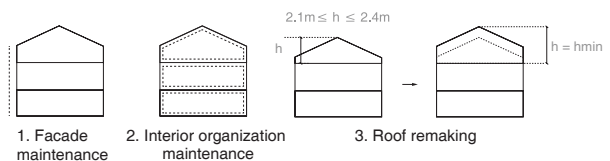
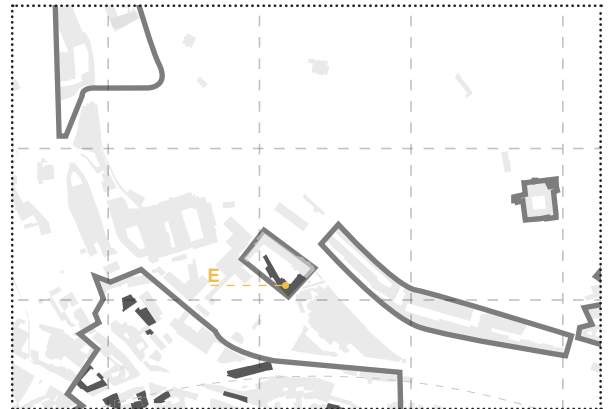
Special maintenance:

According to the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione), the interventions should comply with the regulation of Reconstruction of building Type A and the preservation of the facade.

Conservative renovation :

According to the specification in the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione)
Reconstruction of building Type A, is pursuant

Category 3.1



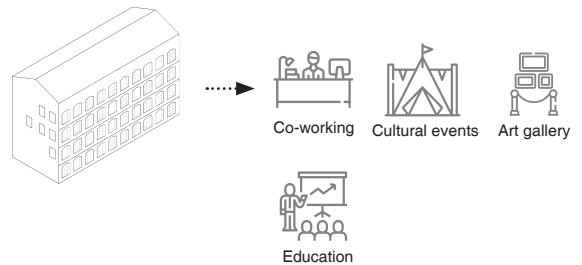
to the specification indicated in the Art.5 of the present N.T.A.

The Intervention aimed at the renovation of attics:

For the renovation of the attics, provided by Art.6, in the cases that the internal average height lower than the minimum height that prescribed by Regional law 6 August 1998 n.21, and it equals or is higher than 2.1 meters, it is allowed to increase the height of ridge until reaching the prescribed minimum height with remaining the same slop of the roof. Remaking the roof can be realized by using similar characteristics form and materials as the existing one. Any modification should respect the prescription in the Regional law 6 August 1998 n.2, Art.3, paragraphs 3, 4, 5 and 6.

E. Ex Lanificio Trombetta Biella Cittadellarte – Fondazione Pistoletto

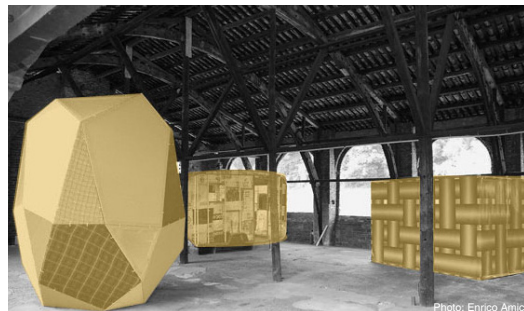
It is a place where artists, scientists, activists, entrepreneurs and institutional representatives could meet, an actual home for art. Art is seen as an instrument for responsible social transformation. The new transformation of the Ex Lanificio Trombetta made the city of Biella more open to the public reflecting the idea of openness and interaction with the world.

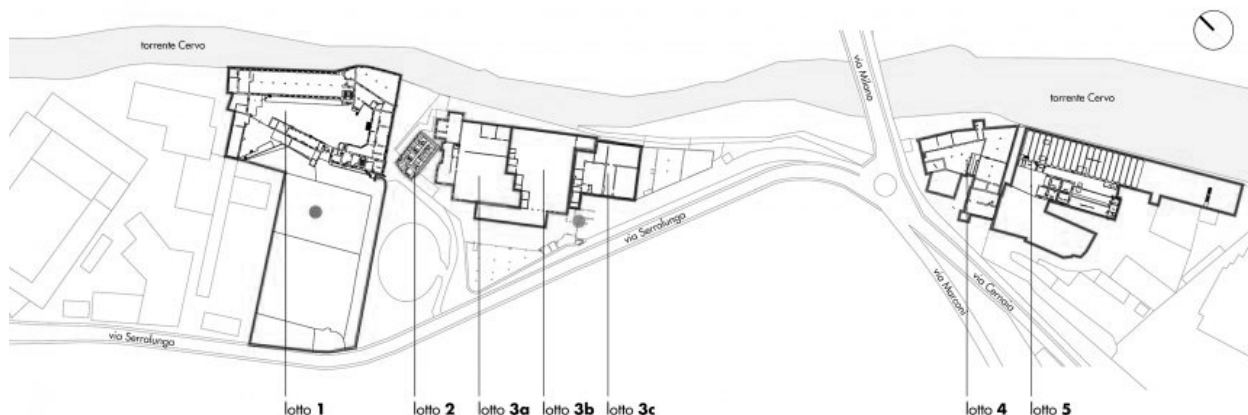


Before



After





Legenda

lotto 1	nucleo originario	lotto 3a	museo del passato	lotto 4	centro educazione per la formazione continua	● Padiglione di Svolta
lotto 2	foresteria e residence	lotto 3b	museo del presente	lotto 5	centro per l'arte e l'interculturalità	● abitazione privata
		lotto 3c	museo del futuro			

www.coltivarelacitta.it/portfolio/cittadellarte/ Tiziana Monterisi Architetto

Cittadellarte

The transformation of the Cittadellarte unfolded on five different parts whose area covers around 27,000 square meters. It is conceived as industrial archeology, which protected by Soprintendenza per i Beni Architettonici e per il paesaggio del Piemonte.

Lot 1:

The former Emilio Trombetta Wool, built in the mid of 1800s, was transformed into the original core of Cittadellarte, which covers 7,000 square meters with four floors, and where exhibitions and activities, and conferences are hosted. It is also the location of the store and restaurant.

Lot 2:

This area originally was the residence of the employees of the industrial complex Maurizio Sella. The existing layout was modified to increase the residential capacity of the Cittadellarte. The transformation preserved the original structure and facades with some interior intervention which made the space more adaptable to the current needs. The function is still the same as the original function, which reflects its authenticity.

Lot 3:

The existing building was the Canova wool mill, erected in the early 1900s. The building will be transformed into a museum which is divided into three parts. The first part will be dedicated to the museum of the past, which will be the place for the collection of Michelangelo Pistoletto and other artists of Arte Povera; the museum of the present is followed by the first one and it will be the exhibition hall for young contemporary artists; the last part will be the museum of the future, which now is for activities which organize by Architecture Office, n.o.v.a.civitas Nuovi Organismi di Vita Abitativa s.r.l. and the Fashion Office of Cittadellarte.

Lot4:

It was the place of Angelino Foundation, which covered approximately around 3,000 square meters. Now, the place is under the management of the Scuola Libera Maria Montessori-Cittadellarte for educational and training activities and for creative recycling ReMidaBiella.

Lot5:

It was the earliest built building of the Emilio Trombetta Wool Mill, which was built around 1840. It is protected under the Italian Ministry for Cultural heritage. This area will be the Center for Art and Cross-cultural Activities.

Category 3.2 -

Definition:

Buildings located in the historical centre and ancient formation core, are not in the state of particular degradation; not subject to the Legislative Decree.490/1999.

General principle:

The interventions must principally focus on transforming the existing building with adaptive use to safeguard the possible values.

Types of intervention allowed:

Ordinary maintenance:

According to the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione), interventions should comply with the regulation of the Reconstruction of building Type B (Ristrutturazione Edilizia di tipo B) and the preservation of the facade(conservazione di facciata).

Special maintenance:

According to the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione), the interventions should comply with the regulation of Reconstruction of building Type B and the preservation of the facade.

Conservative renovation:

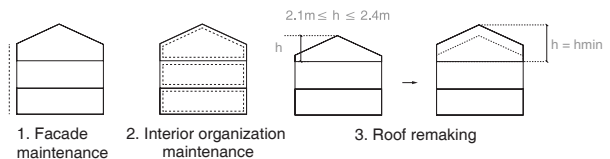
According to the specification in the Art.5 of the present N.T.A(Norme urbanistiche edilizie di attuazione)

Reconstruction of building Type B, is pursuant to the specification indicated in the Art.5 of the present N.T.A.

The intervention aimed at the renovation of attics:

For the renovation of the attics, provided by Art.6, in the cases that the internal average height lower than the minimum height 2.4 meters, and

Category 3.2



it equals or is higher than 2 meters, it is allowed to increase the height of ridge until reaching the prescribed minimum height with remaining the same slop of the roof. Remaking the roof can be realized by using similar characteristics form and materials as the existing one. Any modification should respect to the prescription which presents in the Regional law 6 August 1998 n.2, Art.3, paragraphs 3, 4, 5 and 6.

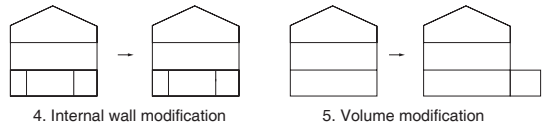
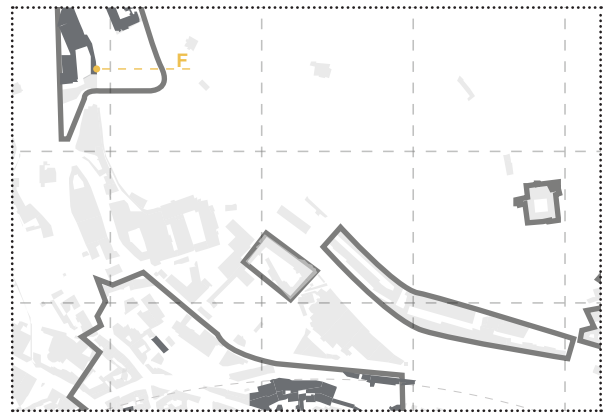
The accessory space with at least one side closed, which are not located in the basement, not included the area from canopy and latter addition structure, can be renovated into an inhabitable place with the interventions for renovation building type B in accordance with the detachments from the Municipal Building (Art.72), provided that its internal average height is not lower than that prescribed in the building regulation for inhabitable place and its load-bearing structure are in masonry or in concrete.

The interventions should respect the following prescription :

- the opening can be made on the vertical wall with the aim at enhancing the value of structural, typologic and constructive elements. These interventions should use the materials and techniques which are compatible with the building in which the additional room is permitted.
- it must maintain the perimeter, the height of the roof and the gutter and the slop of the pitched roof in accordance with the same typology of roof covering.

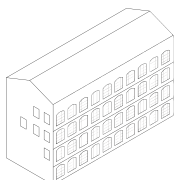
If the minimum private parking areas do not meet the requirements provided by the current laws, the volumetric expansion of 1 m² in every 10 m² is allowed. It is compulsory to have at least one parking space and accessory room on the existing ground floor within the same area or within the adjacent building which belongs to the same owner. The accessory spaces in the basement or ground are allowed to transform into a garage with the specification indicated in paragraph 16.5 private garage.

Category 3.2



F: Ex Lanificio Pria

The factory is located at the bank of the Cervo creek. The existing building was a paper mill owned by Amosso. It was abandoned after the looting in 1797. The great location for textile production was recognized by the French entrepreneur Luigi Benedetto Boussu who moved to Biella when he obtained the authority for textile manufacturing. He transferred and enlarged the building with modern style at that time, the modular repetition of rectangular windows which is one of the architectural characteristics of silk factories in the nineteenth century. At the end of the nineteenth century, the son of Boussu involved in the company with Alfredo Pria and then took over the whole company. In the middle of the nineteenth century, the lanificio Pria had over one thousand employees and soon became one of the leading producers for woolen textiles which were popular to the famous brands in the international fashion sector. On the other side of the river, it set up another part of the factory. Two parts of the factory were connected by a cord that decorated with blue penguins. Nowadays, the buildings have been transformed into a gallery and theatre.



Commerce



Art gallery

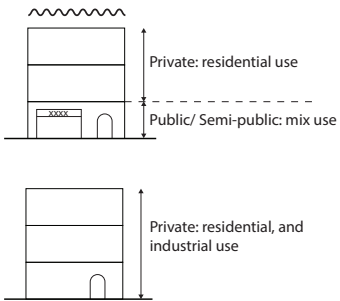


Theater

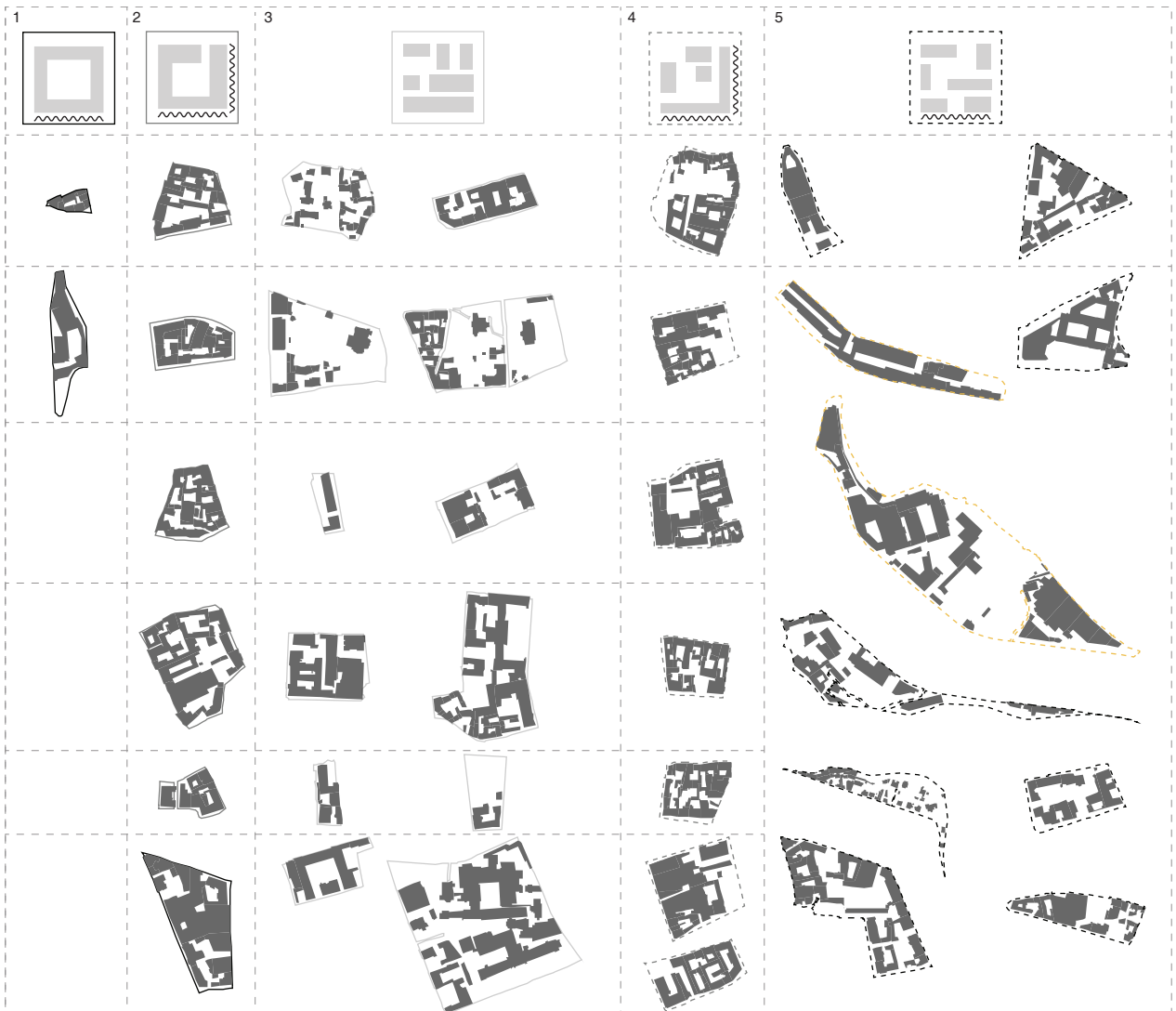
Urban fabric



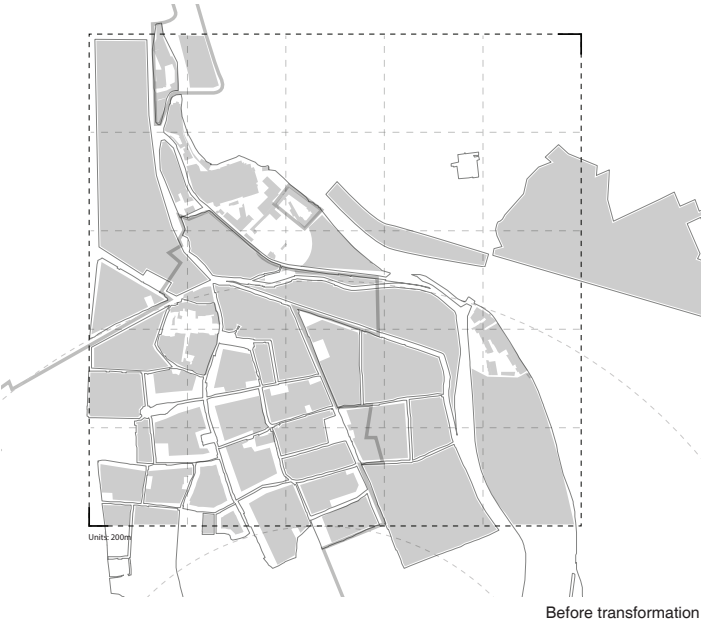
Urban patterns



The plot where industrial buildings located belongs to type 5 with a small portion of ground floor space which opens to the public. The great uniform industrial space has the potential to transform the dismissed industrial building as an indoor “open public space”, changing the permeability of the industrial zone and enhancing the accessibility of industrial culture of the public.



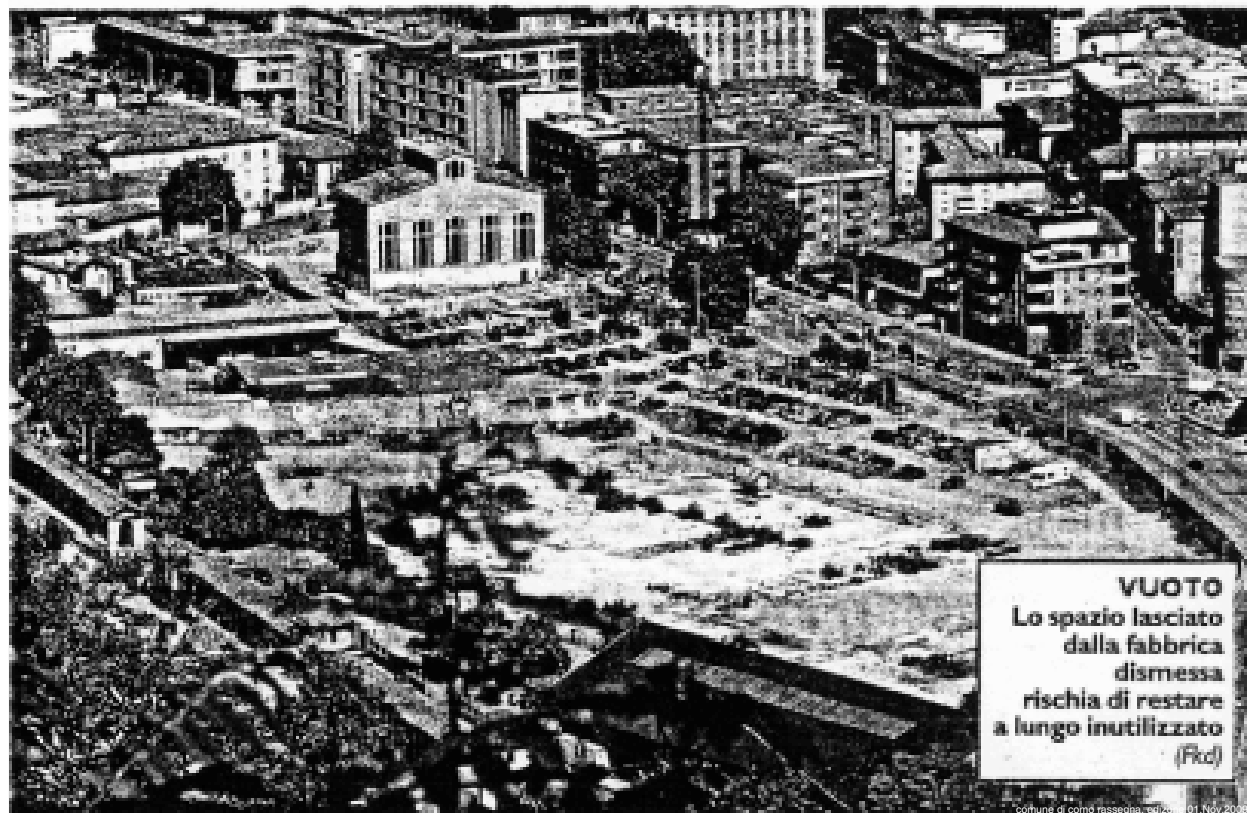
Urban spatial transformation



inaccessible areas to the public

This mapping represents the changes in the accessible area to the public. Transformed industrial spaces play a major role in broadening the public spaces in the urban scale. It is clear that most areas inside the historic city are private. Through the investigation, the main use of the building located inside the historical center is residence. Some of the buildings are combined with commercial use on the ground floor. Most of the public spaces are concentrated on the streets. With the transformation of a former industrial building, people are able to access to the industrial zone, which changes the circulation route of inhabitants as a physical way to approach the industrial heritage. On the other hand, the injection of the creative activities makes old industrial buildings “relive” as its past.

Como



Comune di Como rassegna ed. 01 Nov 2009

The history of silk industry

According to the information posted on Lake Como Travel, the silk history of Como could date back to the idea proposed by Duke of Milan, Ludovico Sforza, to plant the mulberry trees around the lake of Como. Since then, it began the growth of Como's silk industry. Many factories were set up and led to the rapid economic growth of the city of Como, meanwhile, it also posed the impacts on the society and the landscape of the area.

Between the 1700s and the early 1800s, the agricultural land turned into planting mulberry trees whose leaves feed to silkworm larvae. In the 18th century, silk production was the main exported item. After 1855, the silk industry underwent a crisis due to the pebrine and atrophy of silkworm and the competitiveness of England and Germany, since mechanical looms had been widely used by producers. However, the Como employees found a way to surmount the crisis by importing the silkworm eggs from Japan. Subsequently, the other factor which obstructed the Como's silk industry was low price competitiveness from China. Nevertheless, the local silk industry still succeeded to overcome the crisis under the help of the foundation of "Setificio Paolo Carcano" in 1869. Setificio Paolo Carcano is a school with the aim to train the most talented silk masters.

After 1929, the silk industry experienced a slow decline due to the fact that Lecco, another town of Lombardy which mainly focuses on twisting, had introduced the new technology and electric engines. Nevertheless, the production of silk was the protagon-

ist of the economy of the Como.

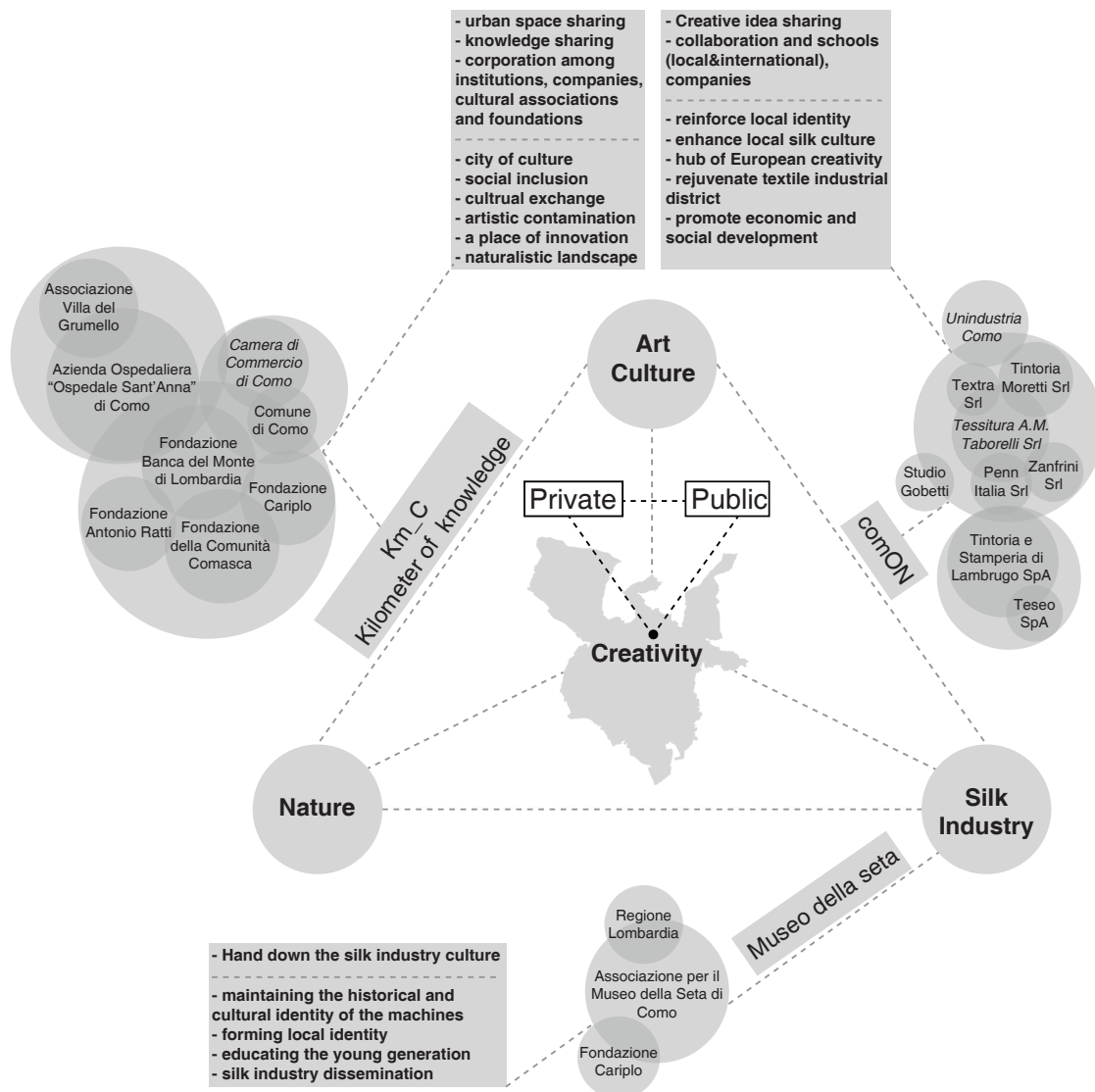
Until the 20th century, the silk industry of Como is still well-known and become a center for learning fabric design, which attracts many students from all over the world. Along the bank of the lake of Como, there are numbers of historic Villas, which were built for escaping the heat by rich Milanese during the 18th century and the 19th century. The creative project, originated from Como, one-kilometer route of knowledge, "chilometro della conoscenza", allow locals and tourist to perceive the history of the city and the breathtaking natural landscape.

In the city center, we can find narrow streets, building materials, and typical courtyard houses. The southern part of Como, near Porta Torre, was a commercial district transformed into a mostly residential neighborhood to house workers in the manufacturing industry. However, because of the development of the manufacturing industry, the area emerged to convert into the residential area. Via Milano is the only street that maintains traits of the old town with various commercial activities. The silk industry had significant impacts on socio-economic society in Como. The precious cultural value of silk was recognized by some organizations, for example, the silk educational museum and the foundation of Antonio Ratti. The machines used for producing silk were bequeathed by industries and kept in the silk educational museum.



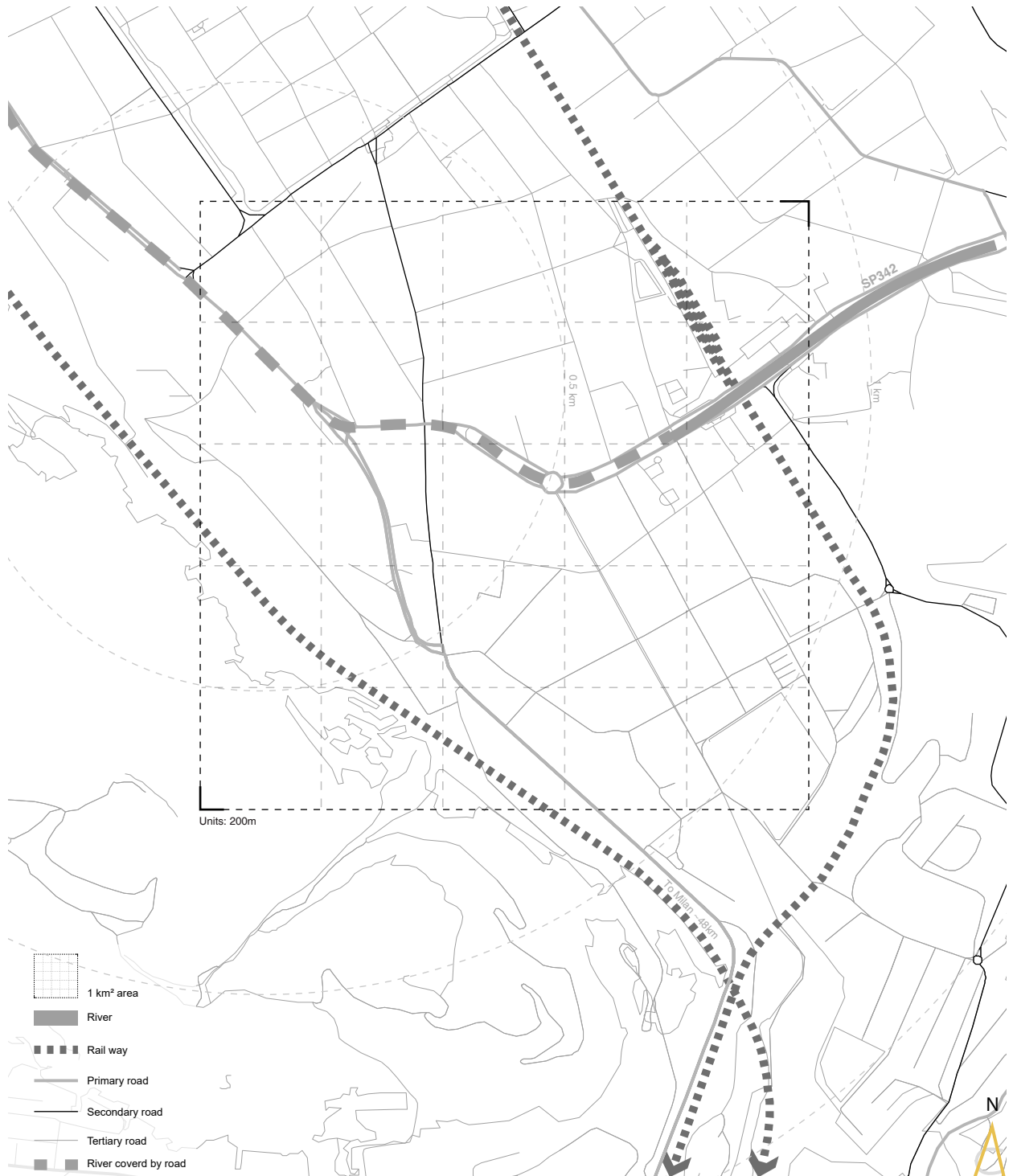
Como, is characterised by its spectacular natural setting, for example, the protected regional park, Spina Verde and many watercourses that nurture its long history of the silk industry. It is also a city with extraordinary architectural heritage from different historical eras, such as neoclassical villas (Villa Olmo, Villa del Grumello, Villa Sucota) and rational architecture. A city itinerary, an open-air city museum, is dedicated to discovery the rationalism which leads by the architect Giuseppe Terragni. The city of Como represents a city of culture with the aim of enhancing the public consumption of its local culture, especially for the

silk industrial culture. Kilometer of Knowledge and ComOn, projects originated from Como, give evidence of its creativity in facilitating its local culture development and bringing the social, economic, environmental values to the city itself. Through the implementation of these two projects, the city of Como creatively integrated the urban space with culture and constantly stimulate its local cultural development through the strong interaction among public sector and private sector, local level and international level and business and culture, which promote it toward the development of a creative city.



The infrastructure

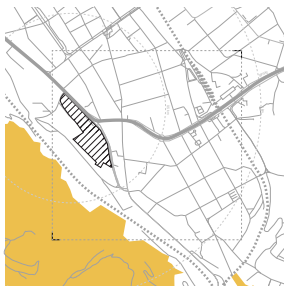
- Road system



The infrastructure - Plot system



According to the zoning code defined by the municipality of Como, it can easily read that the Ticosa is located in a specific area. It is surrounded by the Spina verde park, a protected area and historic city. Despite that, the Ticosa area is partially protected. In the protected area, the only remaining building, the former thermal plant Santarella, is considered as a historic building according to the document "Tavola_03.3_Struttura_insediativa_storica_e_sistema_infrastrutturale". Furthermore, the whole area remains in bad condition. The redevelopment of the Ticosa area is necessary as it indicated on the document "Tavola_02.3_Indirizzi_valorizzazione_paesaggio".



Spina Verde Park- protected area

Aree tutelate per legge ai sensi del D.Lgs 42/2004, art. 142, comma 1, lettera "f", Parchi e riserve (Parco Spina Verde L.R. 10/93) ex L. 431/1985



Protected area

Aree tutelate per legge ai sensi del D.Lgs 42/2004, art. 142, comma 1, lettera "c", Argine fiumi ex L. 431/1985



Historic city



Areas for redevelopment

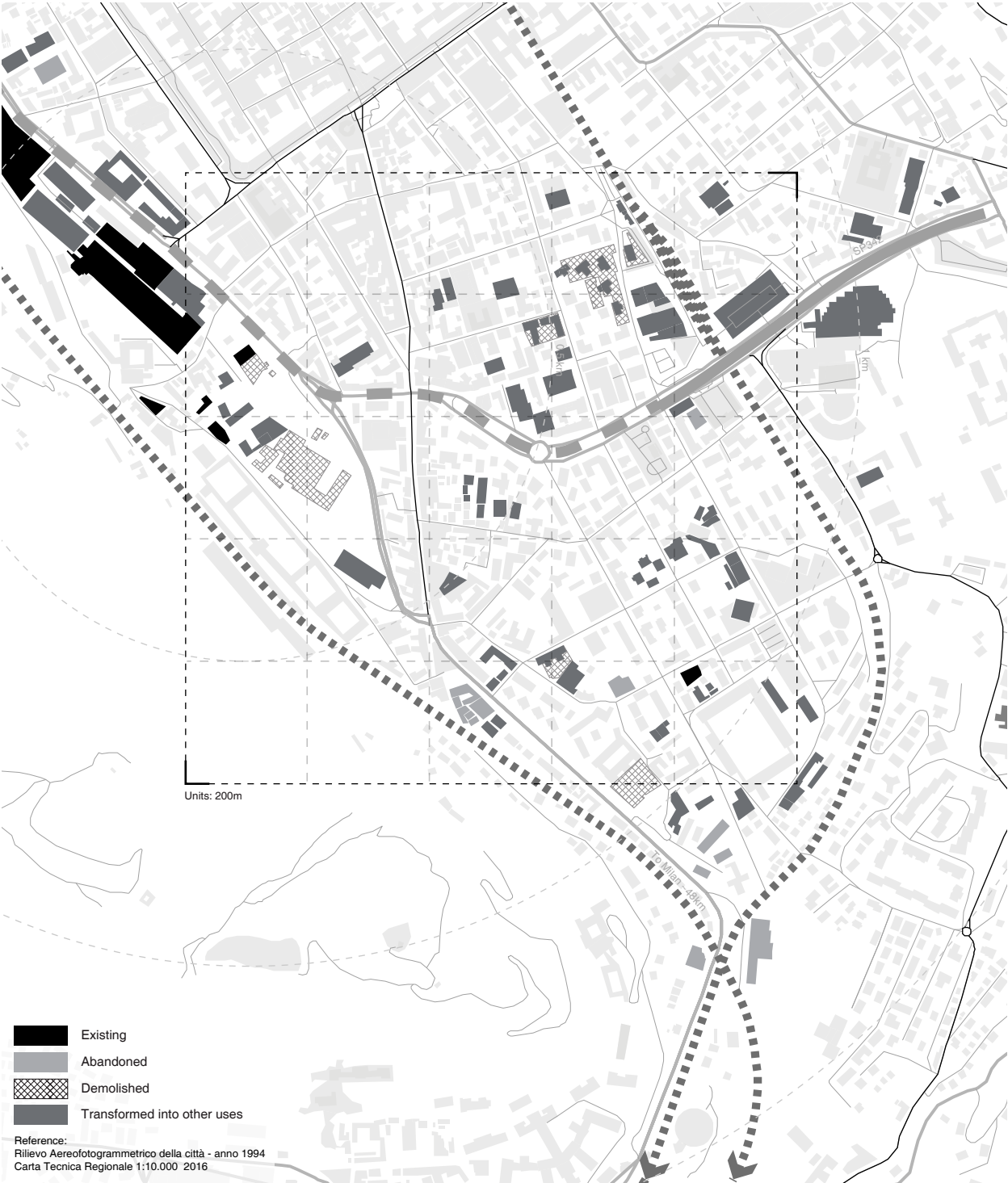


Reference:
DdP_Tavola_07_Carta_dei_valori_simbolici
DdP_Tavola_02.3_Indirizzi_valorizzazione_paesaggio
Ddp_Tavola_19.1_Carta_ambiti_assoggettati_a_specifica_tutela_paesaggistica

Buildings in different time periods

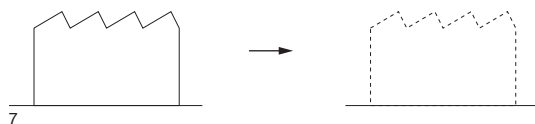
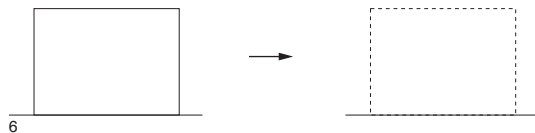
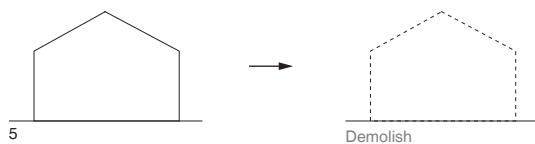
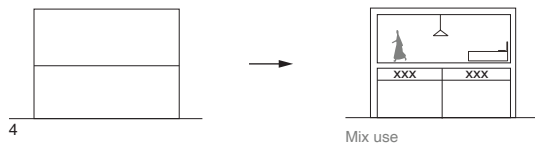
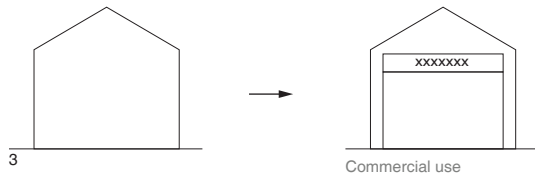
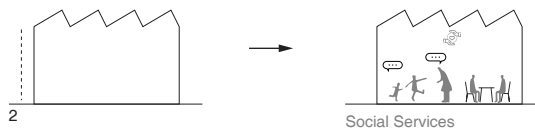
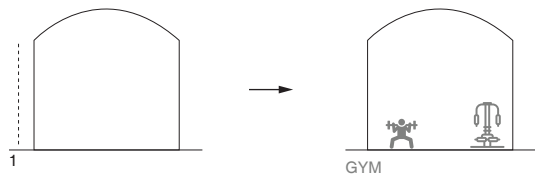


Industrial buildings

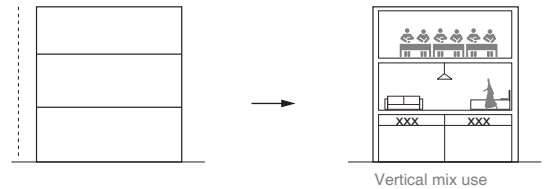


Type of transformation

Existing transformation



Possible transformation



In Como, the transformation of the former industrial building can be listed in seven conditions, which can be classified into three types. The first one is to transform the functionality of old industrial buildings with keeping the existing facade. The second one is simply to demolish, which is not the favorable treatment for the old building. The third one is to replace the old building with the purpose of residential use or public service. However, there is another type of transformation, which did not find in Como - bring back the factory to the city and vertically mixing with other use. This kind of vertical transformation mixes the industrial, residential, and commercial uses in the industrial legacy. Bring industries close to the community, promote the communication between local industries and the community.

Abandoned Ticosa Area- Ex tintostamperia - Ex thermal plant Santarella



The Ticosa (Tintoria Comense Società Anonima), a big textile company mainly specialized in the field of silk, was founded in 1871. It surrounded by the regional park "Spina Verde" and extremely approached the historical city. An aqueduct was dug to bring the water to the dyeing factory. In 1899, the factory had 600 workers and reached its peak with 1250 workers, under the management of Augusto Brunner, who was a researcher in the fabric laboratory, in 1950. Its prosperity did not last so long. It underwent a crisis during the 1960s and 1970s and the factory eventually closed in 1982. The building was left abandoned and demolished in 2007.

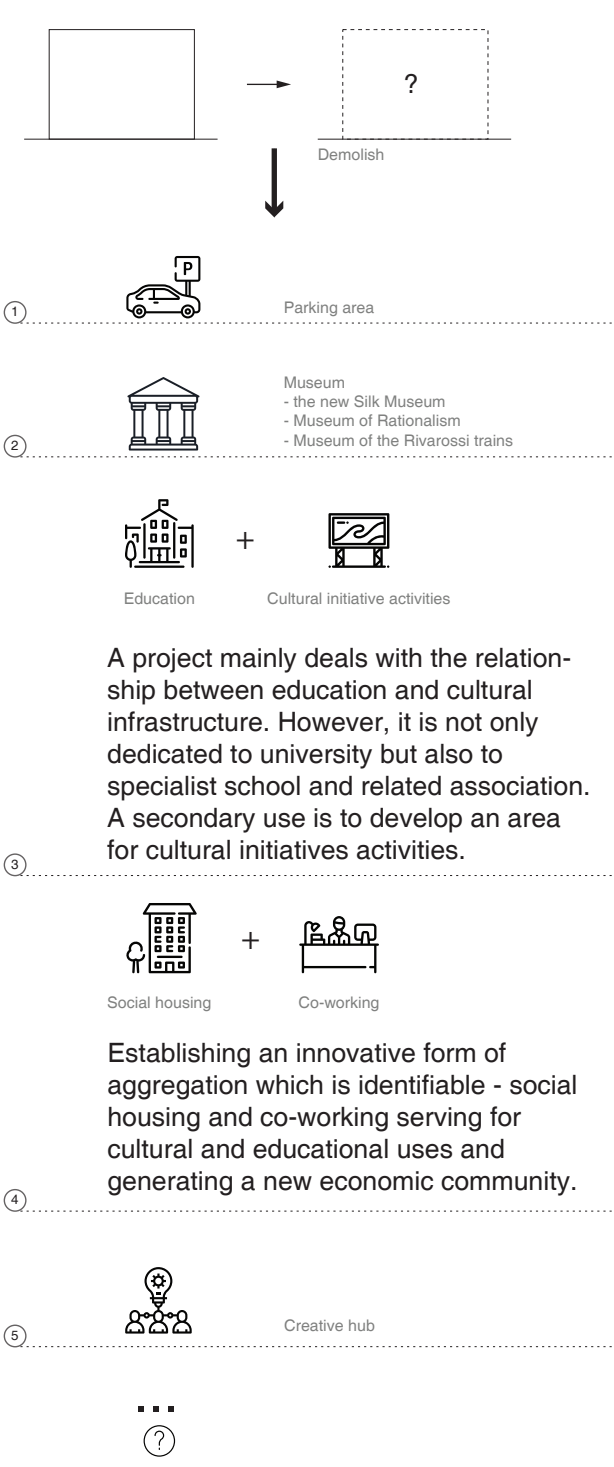
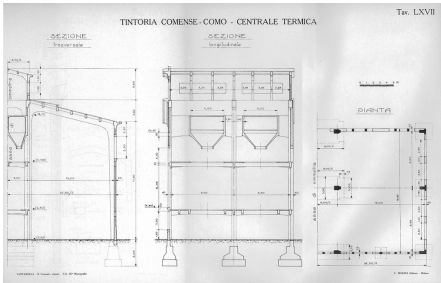
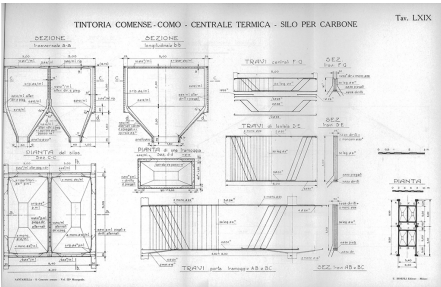
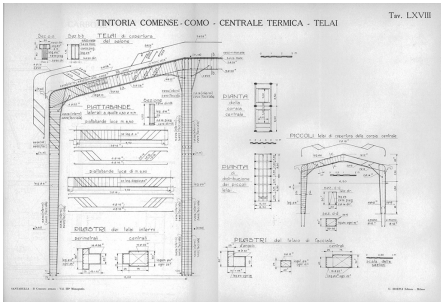
Nowadays, the area is owned by the municipality of Como and occupied by wanderers. The only building left in the Ticosa area is the former thermal plant which provided the energy resources for the dyeing factory. The area was characterized by a parking lot neighbor on one side and an industrial area on the other side. However, the future of the area remains controversial. How to deal with the former thermal plant? As reported by Dario Campione "Ticosa, slittano ancora i tempi per il progetto di bonifica: 18 mesi per trovare un futuro" in *Corriere di Como*, it is still questionable that developing the area as the parking neighbor, a quicker way to put the area in to use, or promoting it with other projects.



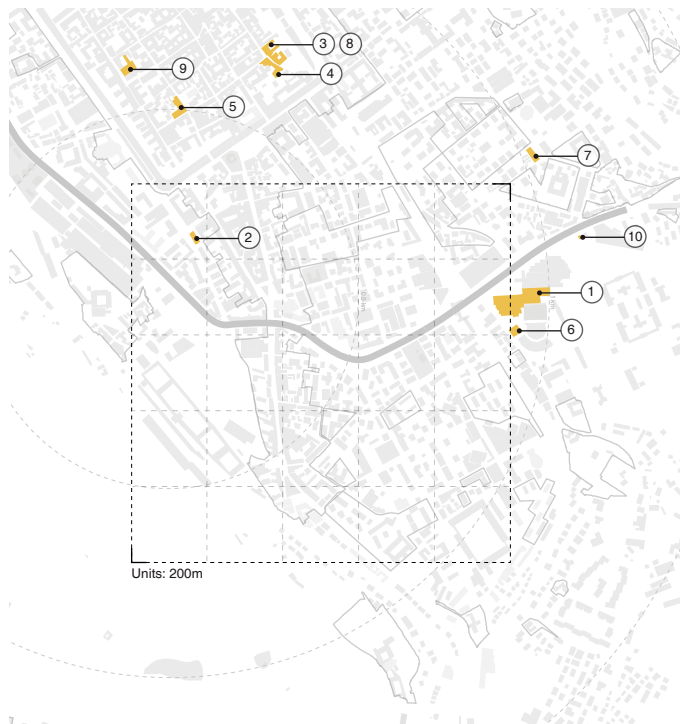
www.comozero.it/attualita/santarella-eco-lo-splendido-sogno-di-tre-architetti-comaschi-una-palestra-per-larte/
www.corrieredicomo.it/ticosa-slittano-ancora-i-tempi-per-il-progetto-di-bonifica-18-mesi-per-trovare-un-futuro/

Abandoned Ticosa Area- Ex tintostamperia - Ex thermal plant Santarella

The future of Ticosa area is indecisive. It is an area with great potentiality where is located the protected historical building designed by the inventor of the theory of reinforced concrete, Italian engineer Luigi Santarella. The prominent design of the structure and building techniques are precious, which need to preserve and it is the only building left from the Ex tintostaperia. It is crucial to retrace the history of former tintostamperia and the industrial history of Como. The preservation of the former thermal plant Santarella together with a vast available space around it has great potential value to create and form a new identity for the city base on cultural enhancement.



Cultural spots



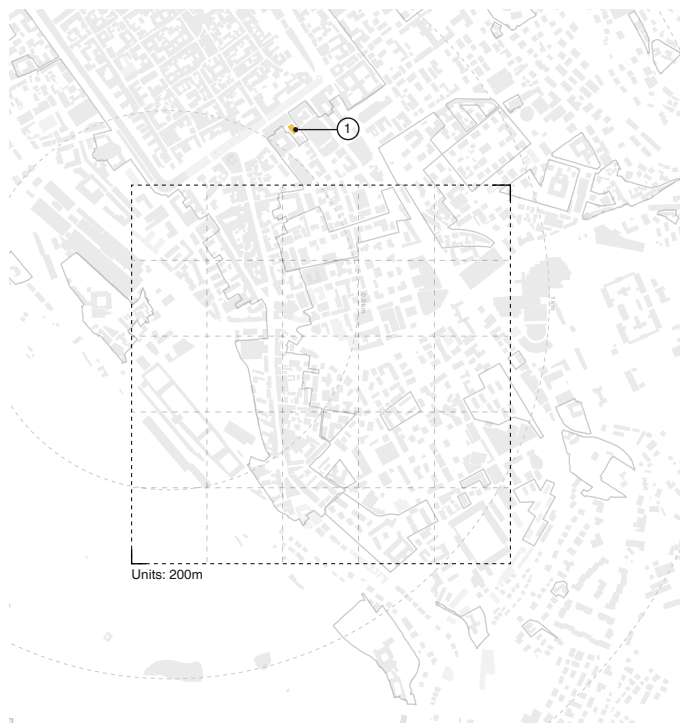
Public

Museums

1. Museo didattico della Seta
2. MuRAC - Museo Rifugi Antiaerei Como
3. Museo archeologico Paolo Giovio
4. Museo Storico Giuseppe Garibaldi
5. Pinacoteca Civica

Libraries

6. Biblioteca del Polo Territoriale di Como
7. Archivio di Stato
8. Biblioteca dei Musei Civici Giovio e Garibaldi
9. Biblioteca Comunale di Como
10. Biblioteca dell'Istituto Tecnico-Industriale Statale di Setificio Paolo Carcano



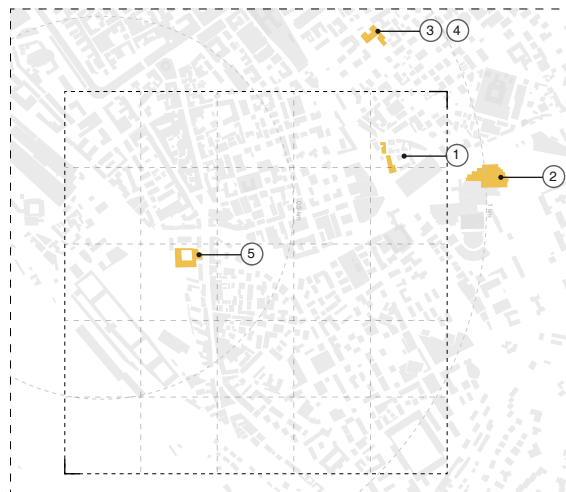
Private

- 1: Spazio Culturale Antonio Ratti

In this piece of the land, most cultural activities take place in the historic city, behind the city gate. At the range of half kilometer walkable distance, cultural activities barely can found. One thing should be noticed is that the silk factory Paolo Carcano istituto di Setificio. It was a school for employees in 1869. In 1903, it turned into the National state institute by comonese senator Paolo Carcano. In 1963, it transformed into an industrial technic institute with three directions: chemical dyeing, textile design, weaving. In 1975, the institute moved to a new location, the center of technological textile. (nowadays: Via Castelnuovo, 5). It played a significant role during the period when the Como silk industry was suffering the crisis from the low-cost products from China.

Cultural spots -Design schools

As the significant role of the silk industry in the development of the city of Como, it never ceases to consolidate and promote the development of the local silk culture. ComON, a creativity sharing project promoted by textile entrepreneurs with the support of Unindustria Como, thoroughly depicts and stimulates the development of its creative silk industry. As it describes itself, it is a true "hub of European creativity" that convenes the best talent from the most famous local design schools, sharing their creative ideas and stimulating the contamination of local silk culture.



Private:

1. Centro studi casnati
2. Setificio - Isis Paolo Carcano
3. Enaip Como
4. Accademia di Belle Arti Aldo Galli Como - IED Network

Public:

5. Scuola superiore professionale Gaetano Pessina

Selected young designers are allowed to practice at leading companies in the textile district of Como for two months discovering the realities. It is an interdisciplinary platform. Several events, contest, exhibitions are held during the creativity week to propel the cultural communication nationally and internationally. It established intimate cooperation among local and international textile companies, fabric design education sector and young talented designers.

Lugano

Private:

STA Scuola specializzata superiore di tecnica dell'abbigliamento e della moda di Lugano

Lecco

Private:

Istituto Sup. Grafica Moda Design srl

Cantu'

Public:

LICEO ARTISTICO STATALE "FAUSTO MELOTTI" di CANTU'

Milan

Private:

Accademia del Lusso
Istituto Marangoni
NABA Nuova Accademia di Belle Arti

Public:

Istituto di Istruzione Superiore E. Marelli - M. Dudovich
IIS MARELLI DUDOVICH

Brescia

Private:

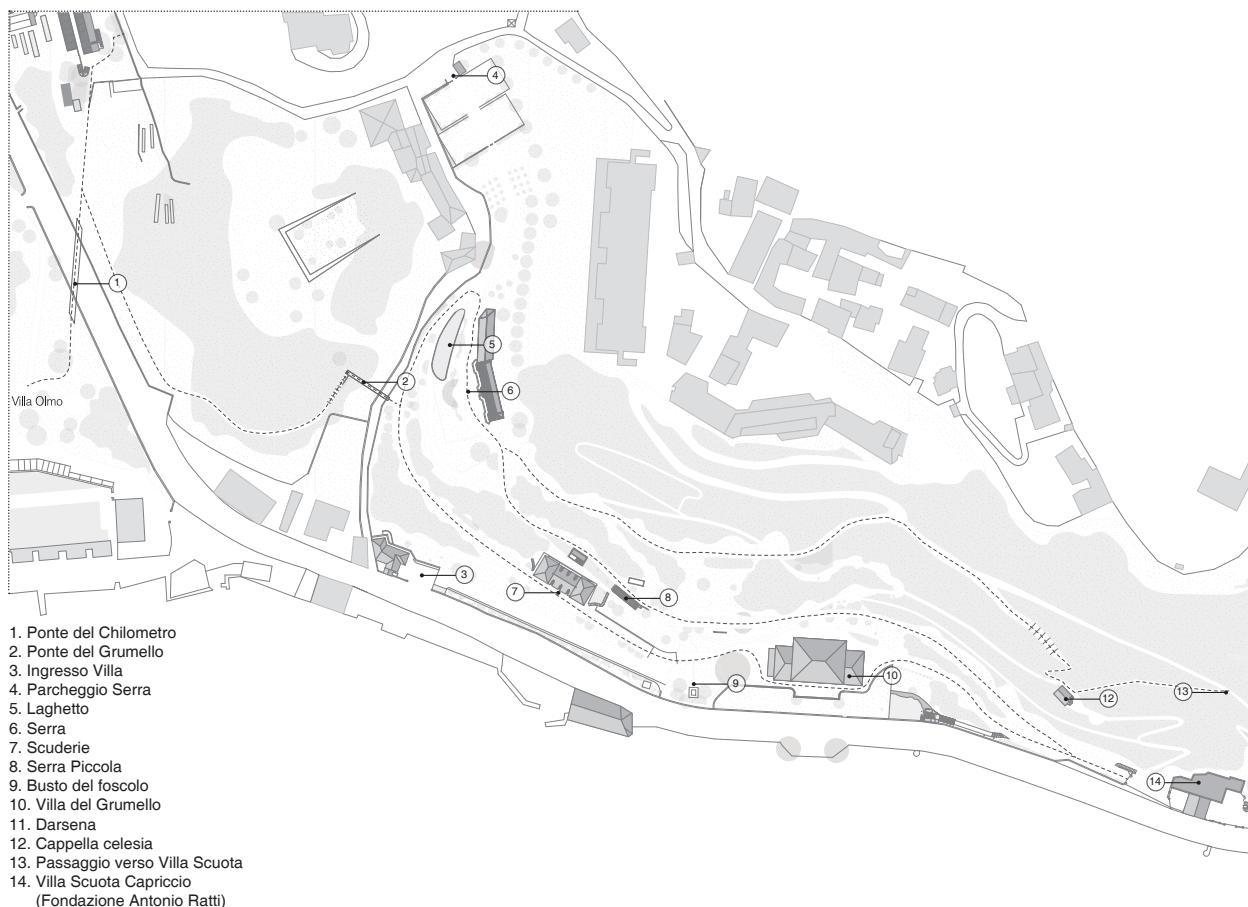
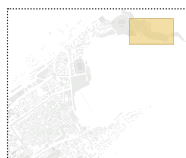
ITS Machina Lonati

Schools involved in comON creativity sharing

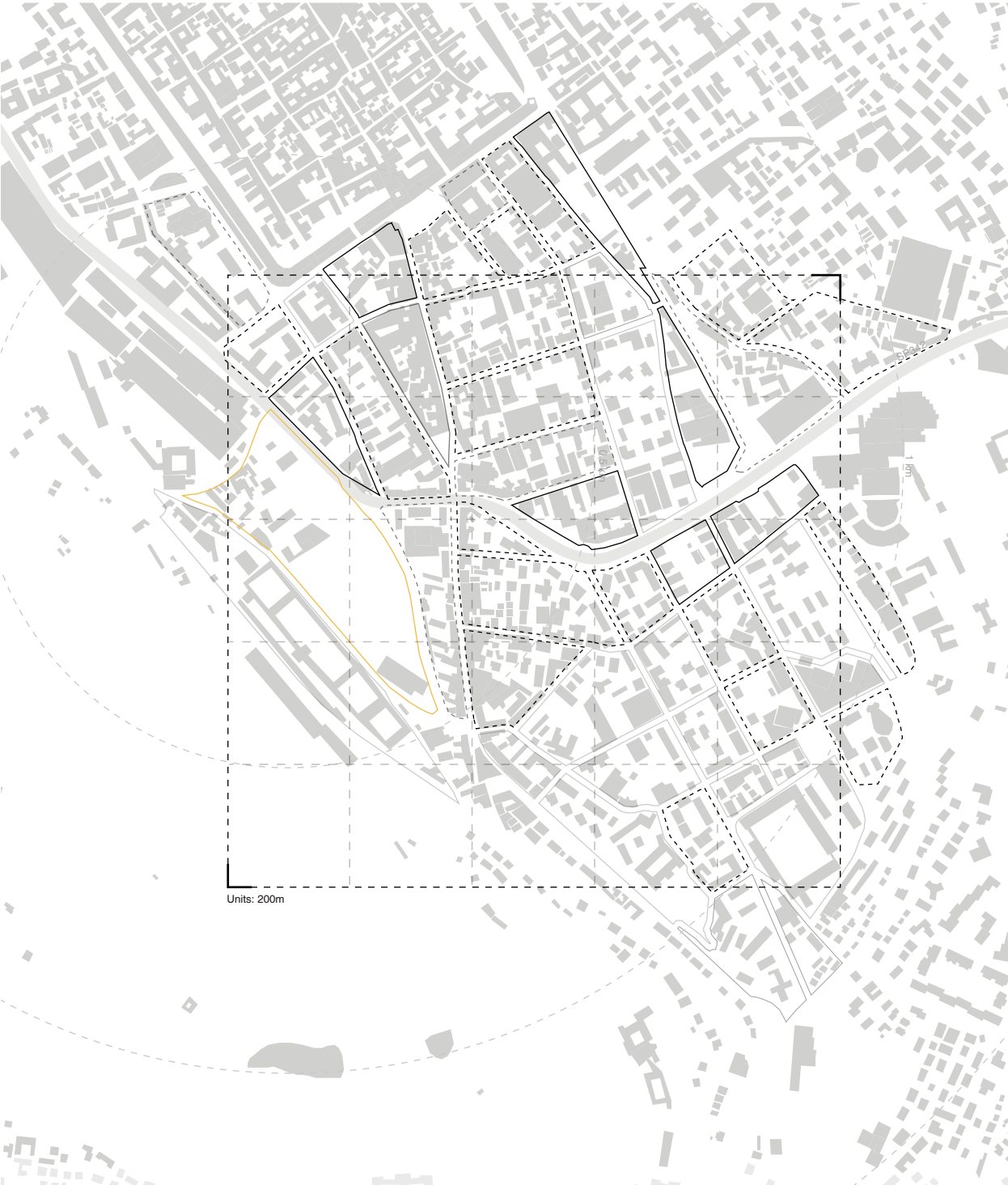
Cultural spots- Kilometer of knowledge (Km_C)

The city of Como has its own special tone to demonstrate its cultural creativity. Along the western shore of the lake of Como, “a kilometer of knowledge”, the road of knowledge composed by an extraordinary green path with works of art, through which three historic Como Villas with respective gardens - Villa Olmo, Villa del Grumello and Villa Scuota are connected. A trace to explore both the

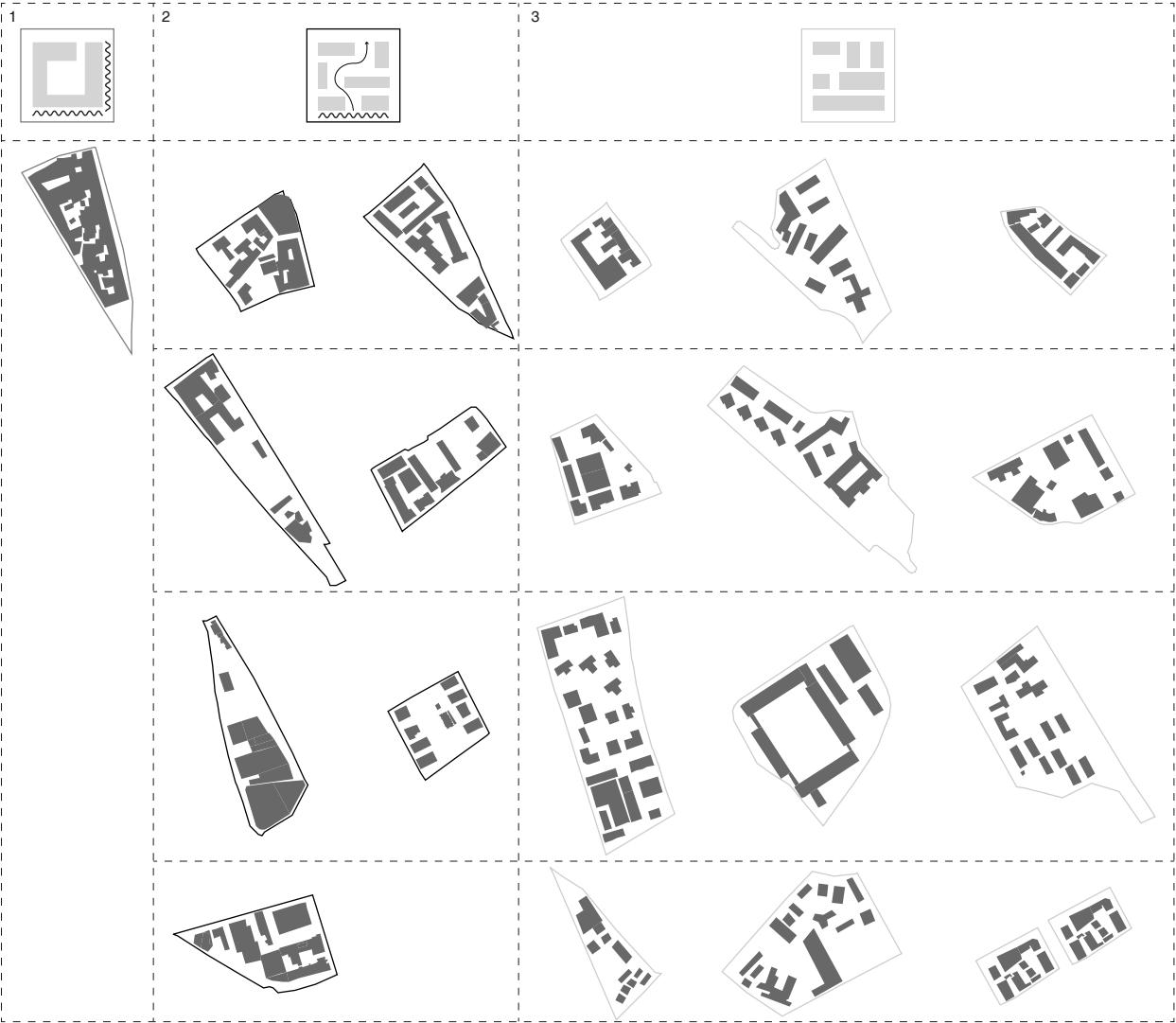
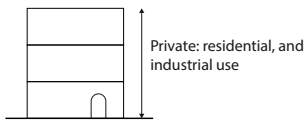
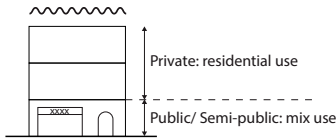
landscape value and cultural value of Como. through space sharing. A space for cultural exchange, creative production and experimentation. It is a cultural journey combined with the natural scenics, with the aim to exhibit its identity and to promote the development of the city's cultural and social life.

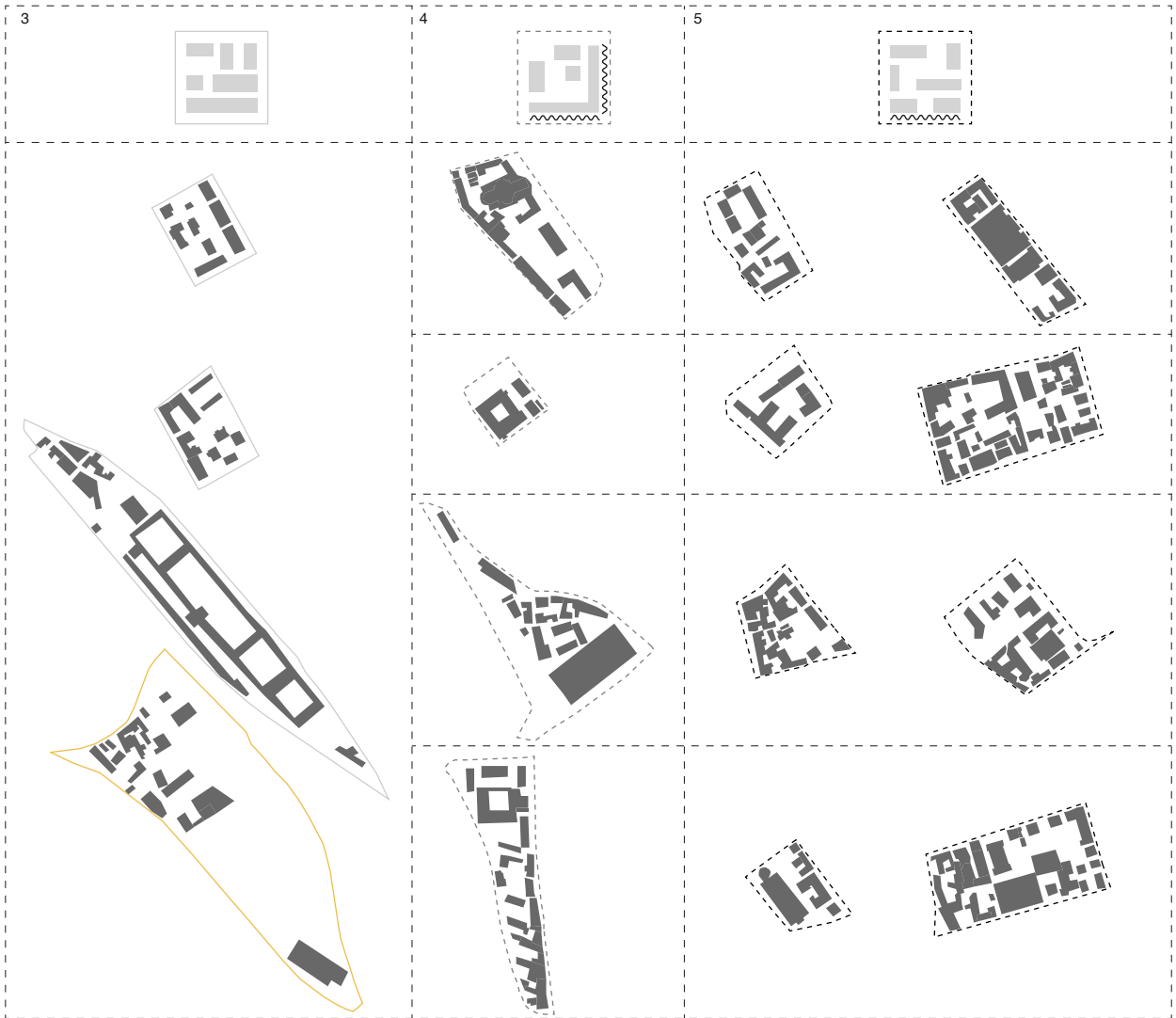
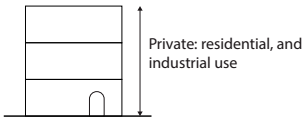
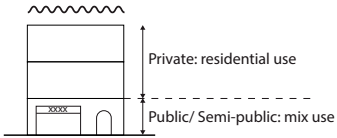


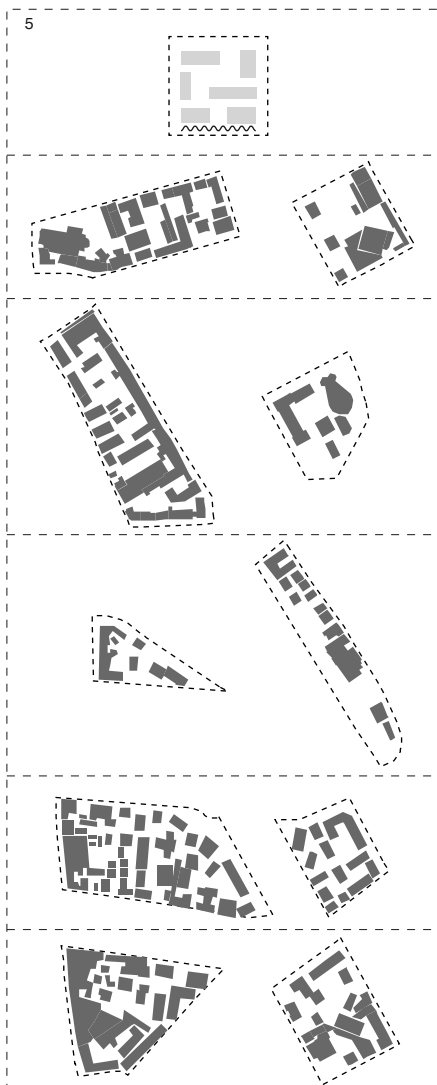
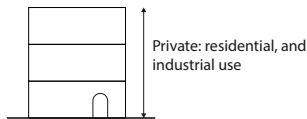
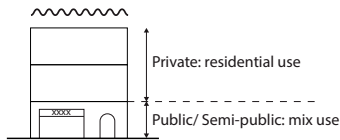
Urban Fabric



Urban Patterns







In the selected area, it can easily find that the biggest plot is where the industrial building located, while there are still some small scale factories emerge in the residential zone and some of them have already transformed. Thus, the industrial urban pattern integrated with the residential one. In the large industrial plot, the building density is low and quite fragmented, rather than the case in the city of Biella, where industrial buildings continuously expanded along the river bank.

Urban spatial transformation



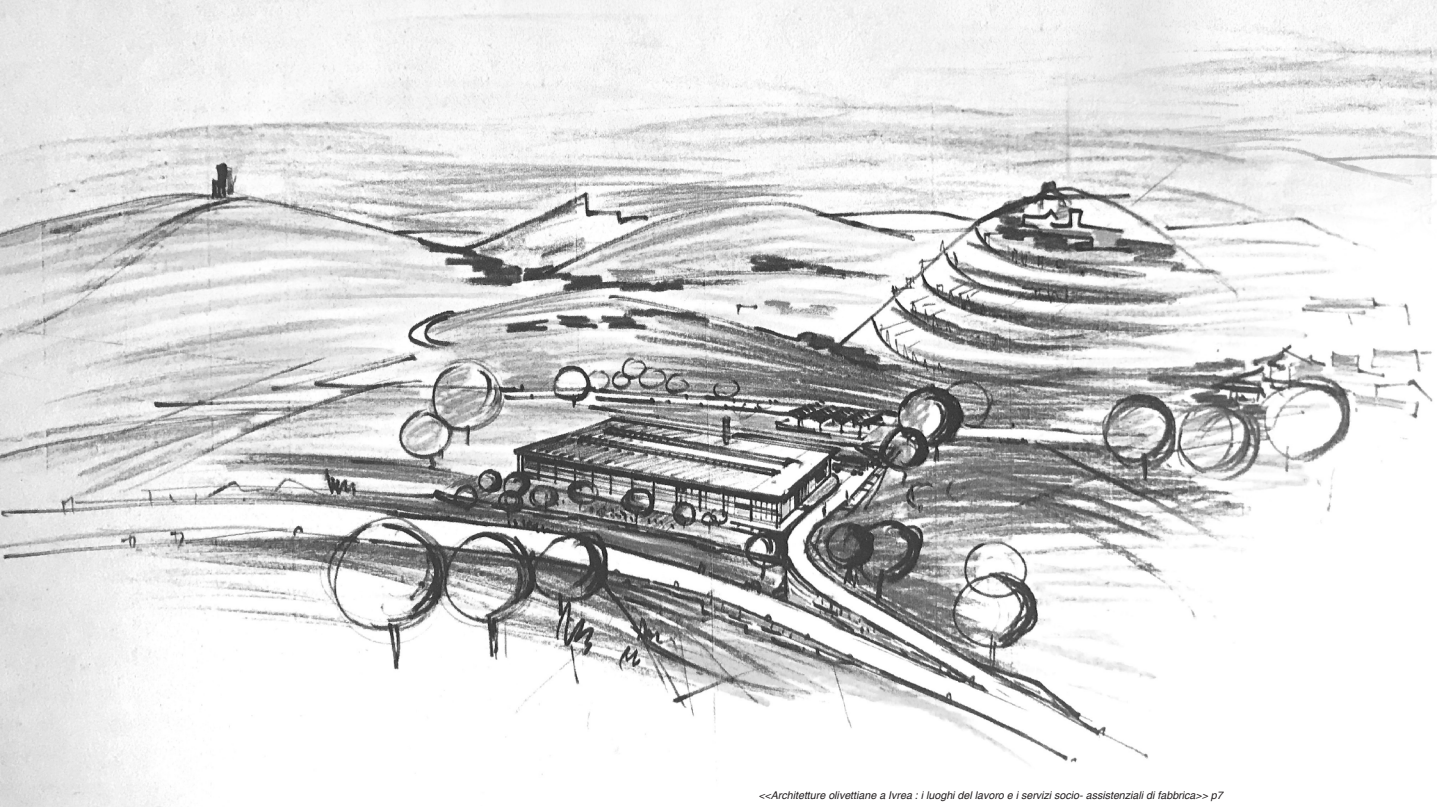
In the case of Como, physical accessibility of former industrial place seems remaining the same as the condition before they have been transformed. This is the result that many industrial buildings are transformed into private use, such as residence, company, rather than public use. Most of the accessible area to the public area still concentrated on the historical pedestrian, which is characterised by mix-use, commercial shops on the ground floor and residence on the upper floor.



..... Historical pedestrian
inaccessible areas to the public

Ivrea





<<Architetture olivettiane a Ivrea : i luoghi del lavoro e i servizi socio- assistenziali di fabbrica>> p7

Ivrea, the 54th Italian Unesco site, is named as Industrial City of the Twentieth Century for its creative idea that based on the political "Manifesto" of the Movimento comunità which found by his son The industrial city of Ivrea was founded in 1908 by Camillo Olivetti and later developed into the industrial city by his son Andriano Olivetti who founded "Community movement", an Italian political organization, in 1947. It represents a model industrial city that put experimental theories into practices for the new formation of a town. The city becomes a testing site for theories and debates of the 20th century and materialized the community proposal through the renewed organization structure inside the factory and other buildings.

The buildings were designed by the 20th century great Italian architects and technicians. All the nominated properties can be classified into four functions which are Industrial services, social services, production building and residence.

These buildings were developed along the road Via Jervis, which is considered as the main artery of the industrial city. Under the community model built by Adriano, the factory is not merely a place for production and work, it is also responsible for the economic, social, cultural development. The form of the building does not only show the aesthetic criteria but also corresponding to the idea of Andriano Olivetti. The expansion of the factory aimed to optimize the production cycle by constantly improving the quality of life of the workers.

Since the 1960s, the city was left to host its office and workshops and the production facilities were moved out of the Ivrea. During 2000-2004, the change of ownership from Olivetti to Telecom and various property funds resulted in the abandonment of several production and service buildings and igniting the functional transformations.

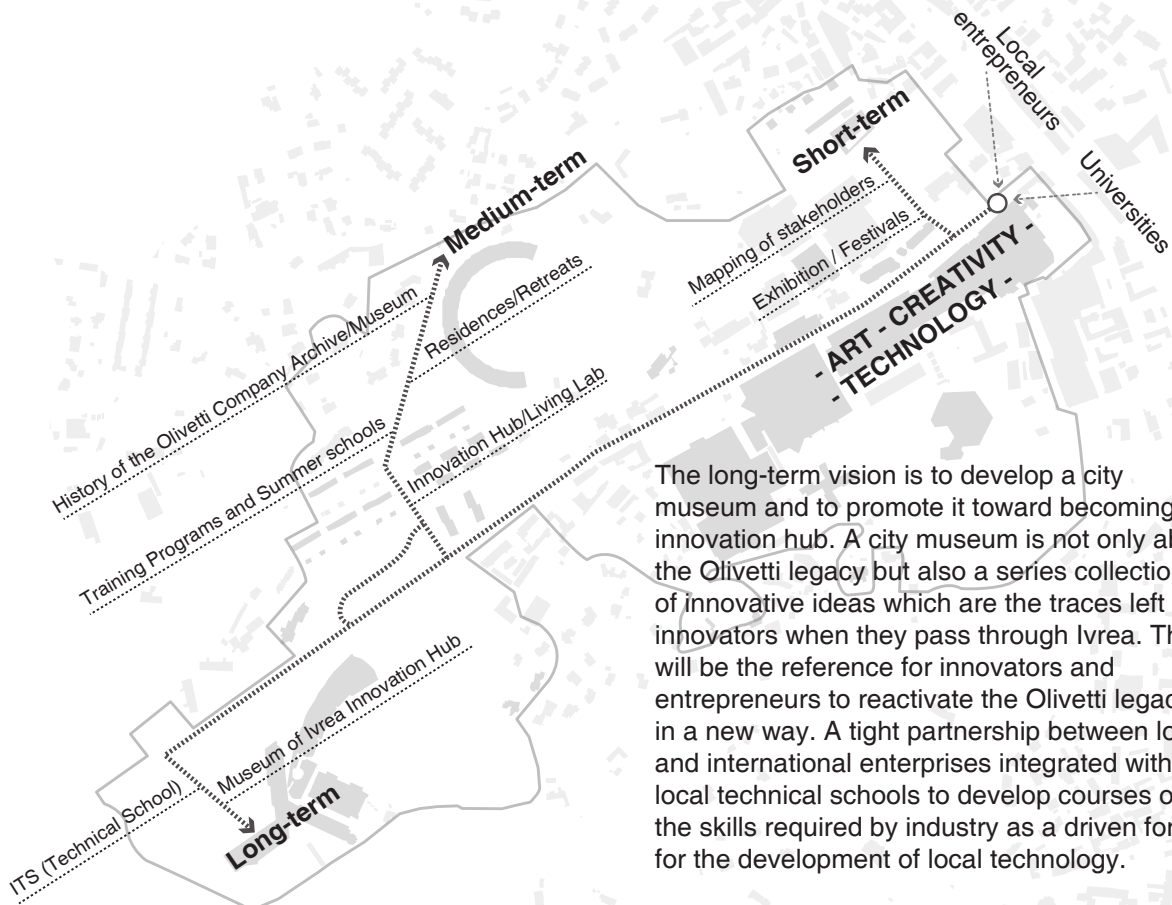
Creative industrial City

Ivrea, the 20th-century industrial city is gradually obtaining more attention from local entrepreneurs under its nomination as UNESCO listing world heritage. A workshop organized by local private entrepreneurs, ICONA srl and Base Engineering and PlusValue, and the Zurich University of the Arts, which embarked on harness the creative industrial legacy of the Olivetti, exploring an innovative way to express its cultural, social, economic value. It is a workshop that exploits the topic of “art, creativity, and technology for Olivetti” for the sake of bringing the outstanding universal value of

Olivetti’s legacy to the future development of the city of Ivrea. The short, medium, long term vision remarkably express the potential creativity of the city of Ivrea, contaminated by the Olivetti’s industrial legacy. In the short - term stage, the main focus is on the identification of local clusters and activities in order to better use the local resources. On the other hand, an array of cultural events or exhibitions, summer schools can be organized in order to promote the development of local cultural vitality.

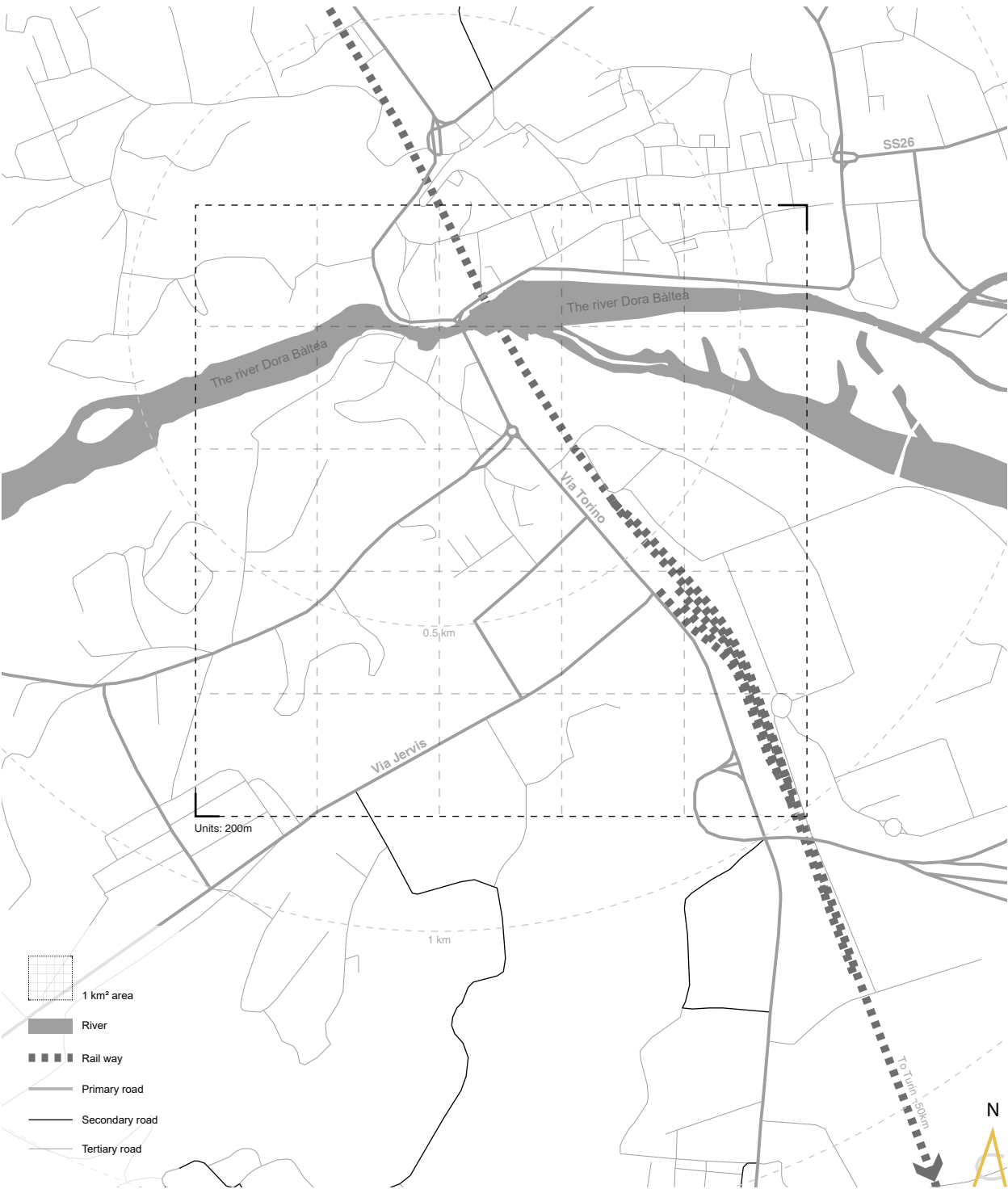
Innovation focus - the medium

term. The city of Ivrea is conceived as a life-long learning center and a regional and international center for Innovation which included in a wide range of fields, for instance, art, architecture, agriculture, to name a few. In the process of being an innovation center, a functional reconfiguration of space will be carried out to serve for an innovator who temporarily locates in Ivrea. Presenting the innovation of the Olivetti company regarding both products and business models to enlighten the new generation.



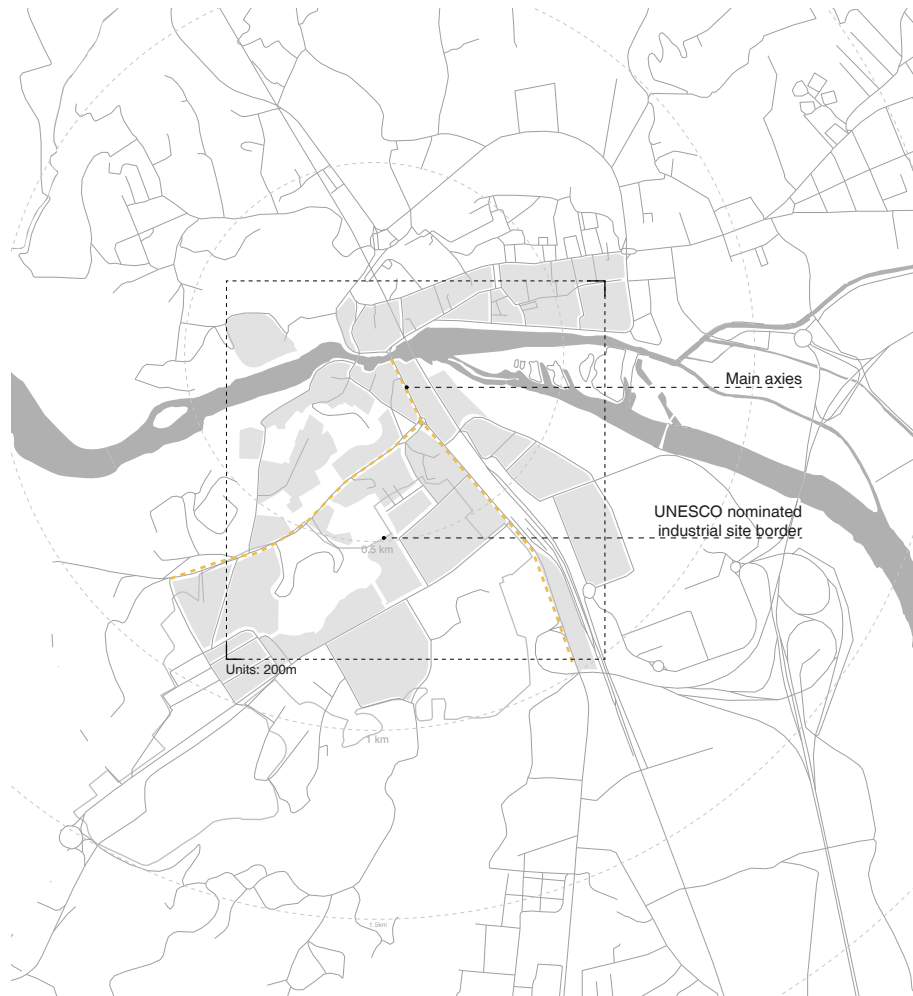
The long-term vision is to develop a city museum and to promote it toward becoming an innovation hub. A city museum is not only about the Olivetti legacy but also a series collection of innovative ideas which are the traces left by innovators when they pass through Ivrea. This will be the reference for innovators and entrepreneurs to reactivate the Olivetti legacy in a new way. A tight partnership between local and international enterprises integrated with the local technical schools to develop courses on the skills required by industry as a driven force for the development of local technology.

The infrastructure of 20th industrial city
- Road system

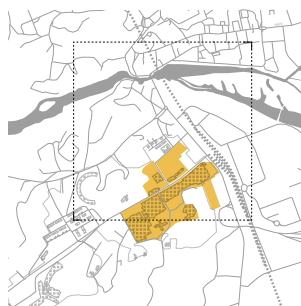


The infrastructure of 20th industrial city

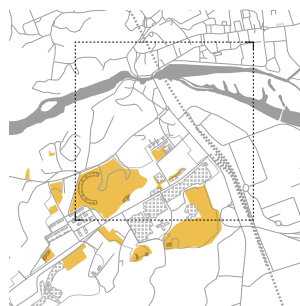
- Plot system



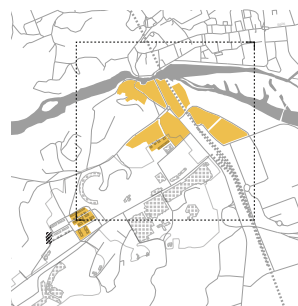
The Olivetti industrial site is situated around 250 meters away from “the boundary”- the Dora Báltea. It built an other image of the city of Ivrea, which is distinctively different from the image of the historic city. An unique industrial landscape emerged from a group of high quality modern buildings that designed by most famous italian architects and enjoyable green areas. The MaAM(open-air museum of modern Olivetti architecture) is open to the public. It is around 2km, along the road Via Jervis and the adjacent area, which allow the public to enjoy the most significant architectural heritage of the 20th industrial city .



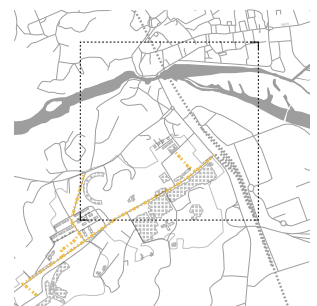
Olivettian multi-function sites



Valuable and relevant open space of historical buildings



Residential area



Open air museum route

 UNESCO nominated property

Reference:
Tav5_1_carta_qualita_nord

Cultural spots



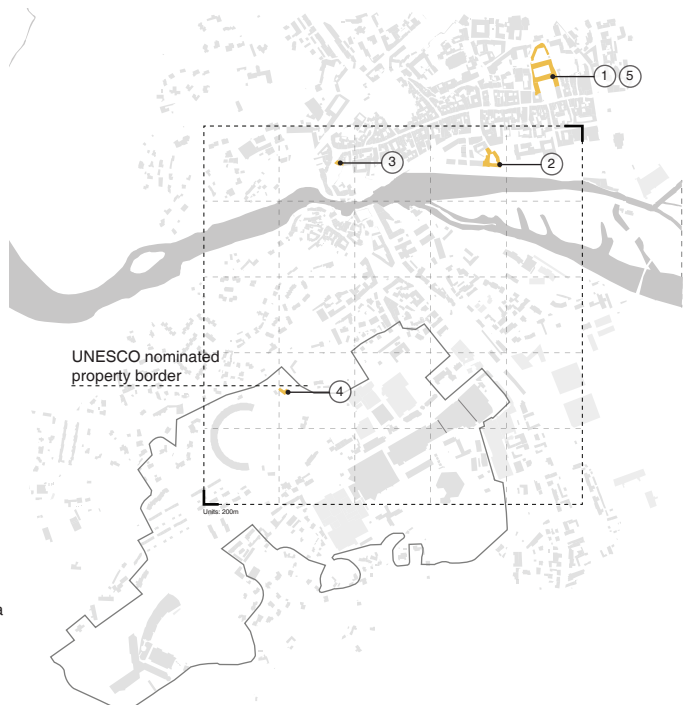
Private

Museums

1. Sede Olivetti
2. Museo della Carale

Libraries

3. Biblioteca Capitolare
4. Archivio - Biblioteca Diocesana



Public

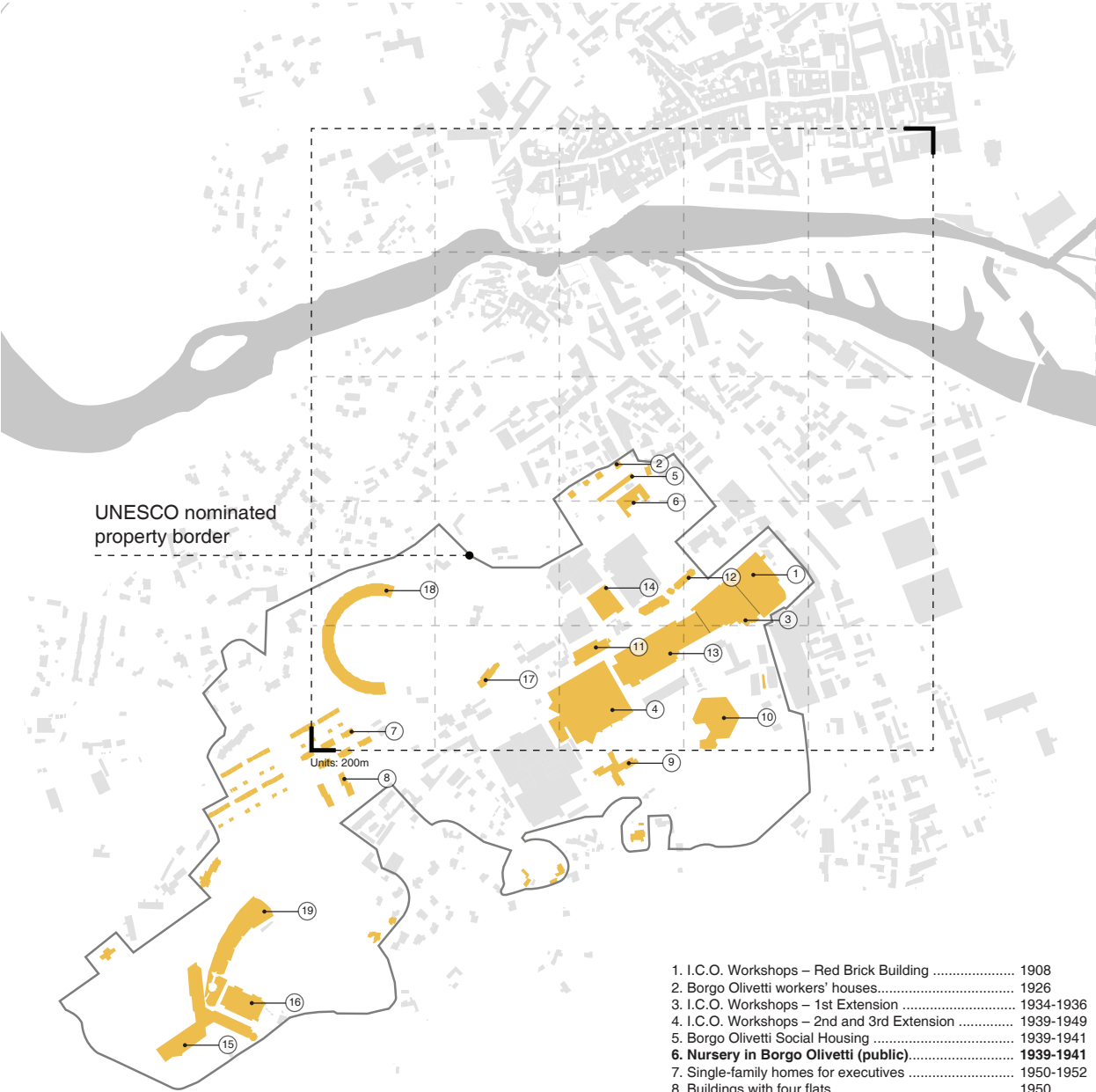
Museums

1. Museo Civico Pier Alessandro Garda
2. Laboratorio-Museo Tecnologic@mente
3. Associazione Museo dello Storico Carnevale di Ivrea
4. Associazione Archivio Storico Olivetti

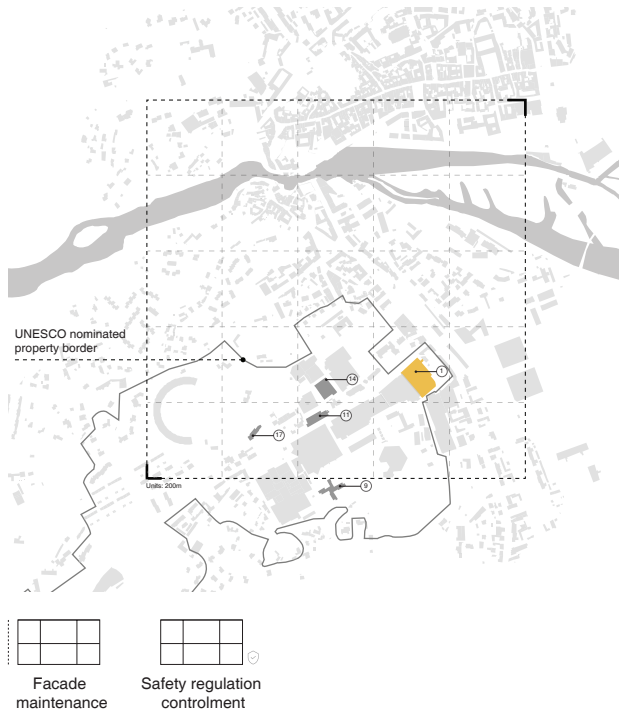
Libraries

5. Biblioteca Civica Costantino Nigra

UNESCO nominated property



Most of the UNESCO nominated property is privately owned (companies, private citizens, investment funds). Only the Nursery in Borgo Olivetti and the Former Joinery are publicly owned by the municipality and the regional authority, respectively.



Abandoned building

1. I.C.O. Workshops-Red Brick building 1908

Address: Corso Jervis 11

Gross floor area: 8.100m²

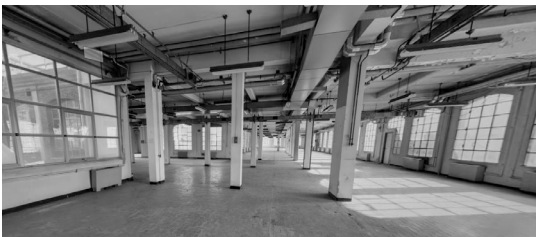
Architects: Luigi Figini, Gino Polini

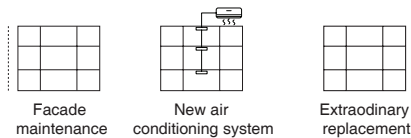
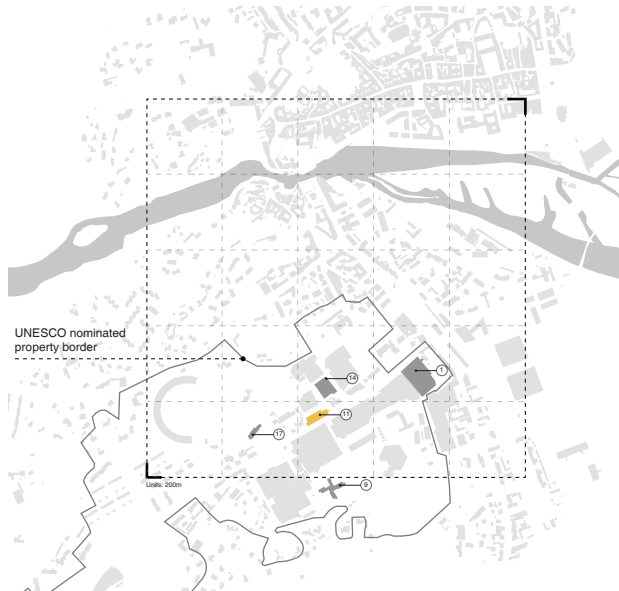
Original function: Production building

The building is known as the “First Red Brick Factory and adopted the Hennebique system as a load-bearing structure, which is used by many industrial buildings in the early 20th century. The building connected to the first expansion I.C.O workshop, which can be clearly discerned on the roof.

Main transformation:

- Maintenance of the external parts and internal structure of the building.
- Adaptation to the technical and safety regulations for promotion on the property market.
- No further transformations recorded. The building is currently empty.





Abandoned building

11. Brise-soleil, Former Joinery (now ARPA offices-façade) 1955

Address: Corso Jervis 26

Gross floor area: 3.756 m²

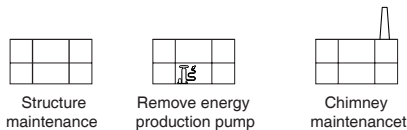
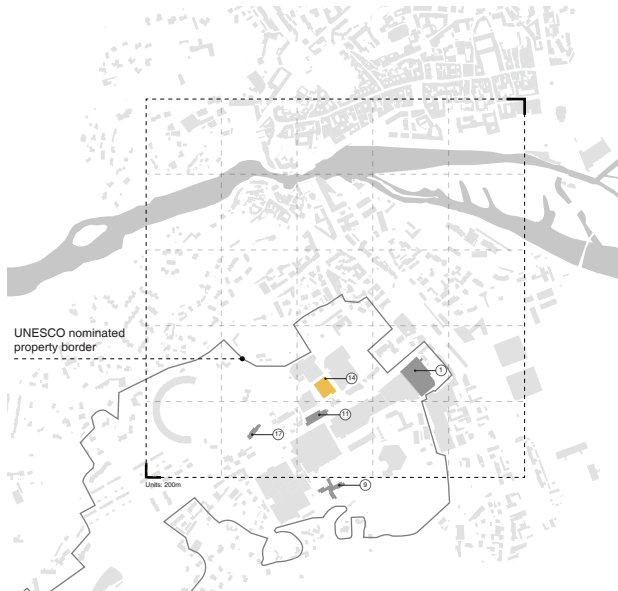
Architects: Ottavio Cascio

The colored brise-soleil facade was the trace of the original building. The facade is made by three rows of repeated vertical strip fiber cement with different orientation.

Main transformation:

- Ordinary maintenance
- The building with the brise-soleil was involved in the installation of new conditioning systems on the roof of the building.
- Project for the extraordinary replacement of the brise-soleil because of the asbestos.





Abandoned building

14. Central heating plant 1956-1959

Address: Via Di Vittorio

Gross floor area: 1.860 m²

Architects: Eduardo Vittoria

Original function: Industrial services

The building is located in a place where the former Olivetti joinery storage situated to exploit the Maritto tunnel. It composed of three blocks in a C shape with a central courtyard covered by a transparent lightweight shed roof where three burnished steel plate chimneys can be found. The exterior facade uses the same language as the other production building designed by Vittoria. It is worth to notice that the choice of covering material, the modular system of the facade and the arrange of ower boxes depicted Vittoria's creative concern of industrial building.

Main transformation:

- Maintenance of the structure, fully operative until 2003.
- Removal of the energy production pumps with the maintenance of the vapor release chimneys on the façade, seen as elements distinguishing the building; clearance of asbestos in the coatings and structural works.
- No further transformations recorded. Materials and structures are badly damaged by negligence.



Abandoned building

17. Former Sertec Building 1968

Address: Corso Jervis 60

Gross floor area: 1.399 m²

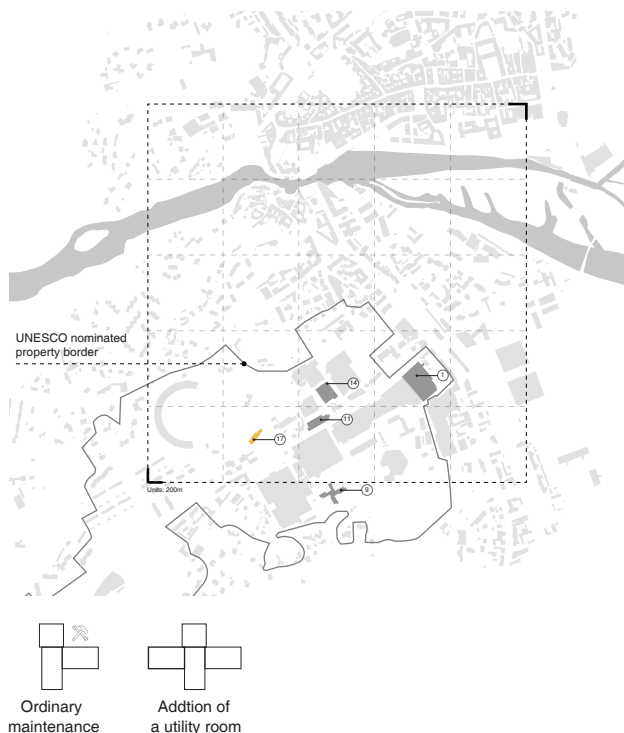
Architects: Ezio Sgrella

Original function: Industrial services

The former Sertec building was found by Antonio Migliasso to locate the engineering of services for civil and industrial construction. The building is located on a hill. An eye-catching concrete lift tower connected to the entrance on the ground floor with an overhanging roof and the corridors of the first floor and second floor. The oval interior staircase respect to the contour line of the hill on which the building located. The east side of the building was designed by the same architect in 2007.

Main transformation:

- Ordinary maintenance of the building.
- Ordinary maintenance of the building; addition of a utility room, created by the architect who designed the original project.
- No further transformations recorded.

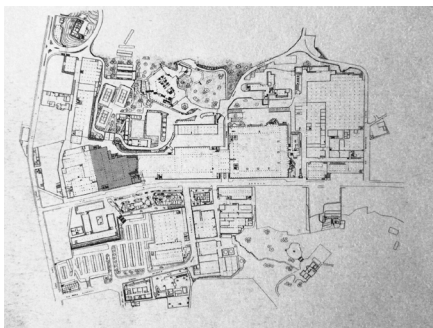
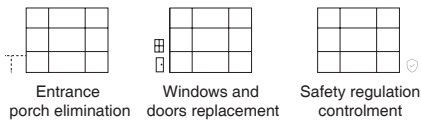


Reference:

<https://www.ivreacittaindustriale.it/the-properties/former-ex-sertec-offices/?lang=en>

"Architetture olivettiane a Ivrea : i luoghi del lavoro e i servizi socio- assistenziali di fabbrica" / Daniele Boltri, Giovanni Maggia, Enrico Papa, Pier Paride Vidari

Management plan description, key issues, vision, plan objectives and implementation.



<<Architetture olivettiane a Ivrea : i luoghi del lavoro e i servizi socio- assistenziali di fabbrica>> p24

Underused

3. I.C.O. Workshops – 1st Extension 1934-1936

Address: Corso Jervis 11

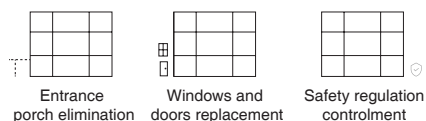
Architects: Luigi Figini and Gino Pollini and included the Ufficio Fabbricati Industriale of the company

Original function: Production building

A reinforced concrete beam was built to connect the concrete and glazed wall. A series of continuous windows on the facade represent the spatial connection between interior and exterior, which enriched the workers' visual experience. There is a glazed strip on the base of the building which provides the light for the basement.

Main transformation:

- Elimination of the entrance porch shown in the original design; additions and adaptations to the needs of the production requirements in the building; change of all the external windows and doors of the first extension in Corso Jervis and part of the façades on the corresponding rear of the building.
- Adaptation to the technical and safety regulations for promotion on the property market.
- No further transformations recorded. The building is currently empty. The maintenance of external coating materials requires special attention.



Underused

4. I.C.O. Workshops – 2nd Extension 1937-1949

Address: Corso Jervis 11

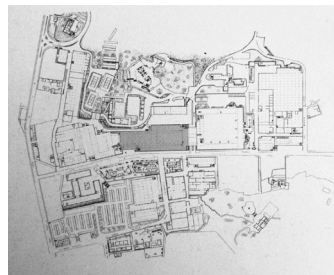
Architects: Luigi Figini and Gino Pollini, in collaboration with Annibale Fiocchi

Original function: Production building

Three floors factory block was built with a double glass facade which consists of two strips of a glazed wall covered by small ceramic grès tiles. The mezzanine area between two glazed facades is fifty centimeters which is a service area.

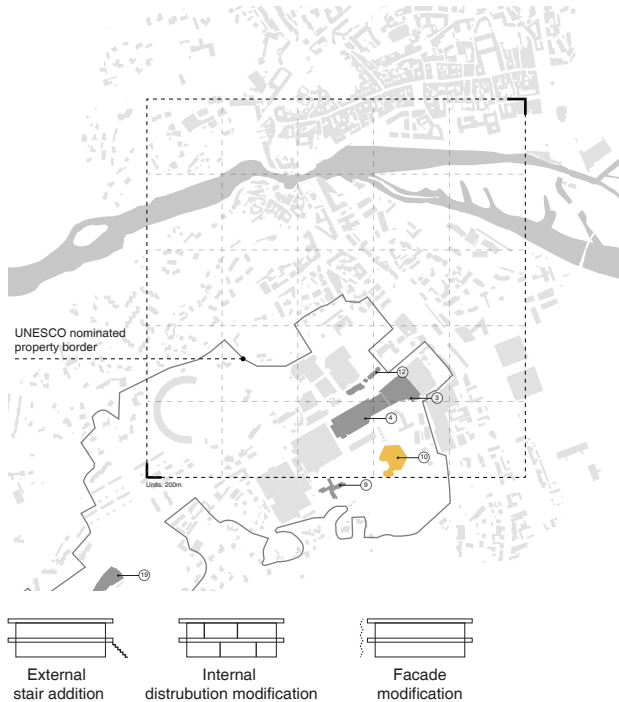
Main transformation:

- Elimination of the entrance porch shown in the original design; additions and adaptations to the needs of the production requirements in the building; change of all the external windows/doors of the first extension in Corso Jervis and part of the façades on the corresponding rear of the building.
 - Adaptation to the technical and safety regulations for promotion on the property market.
 - No further transformations recorded. The building is currently empty.
- The maintenance of external coating materials requires special attention, particularly in the building of the 2nd extension.



<<Architetture olivettiane a Ivrea : i luoghi del lavoro e i servizi socio- assistenziali di fabbrica>> p32

Reference:
<https://www.ivreacittaindustriale.it/the-properties/ico-workshops/?lang=en>
 Management plan description, key issues, vision, plan objectives and implementation.



Underused

10. Company Canteen and Leisure Center 1953-1961

Address: Corso Jervis 26

Gross floor area: 9000 m²

Architects: Ignazio Gardella, in collaboration with Roberto Guiducci

Original function: Social services and industrial services

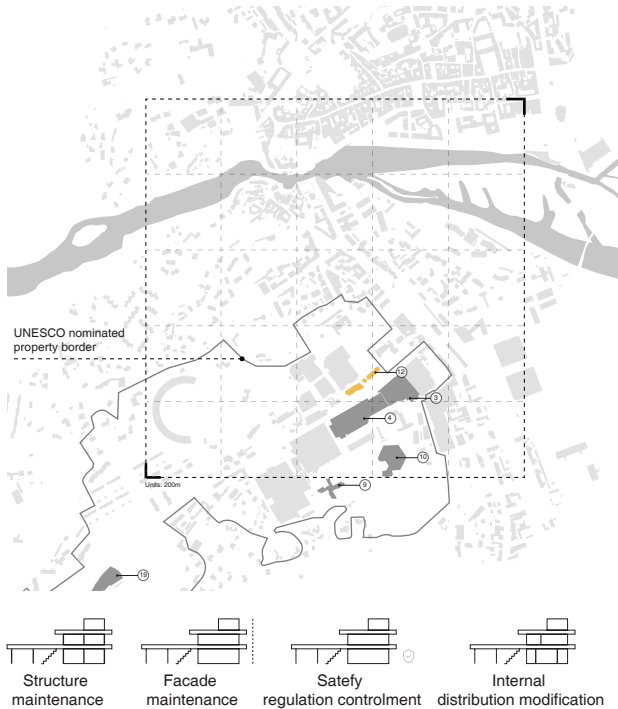
The building is designed to serve Olivetti's employees. It can serve up to 9.000 meals a day and 1.600 people. The common space on the atrium is destined for organizing some cultural and recreational activities. It is part of a worker's daily life. The upper floor provides workers with other relaxing space. The central block enclosed by a large walkable balcony that connects different levels of the building and actively respond to the environment.

Main transformation:

- Ordinary maintenance work; addition of an external staircase for direct access to the building required by safety regulations; adaptation to the regulations for architectural barriers.
- Change of intended use from collective to the tertiary building, division of the internal spaces and adaptation to the technical and safety regulations; clearance of asbestos and resulting elimination of the internal decorative elements and the ventilation systems with a functional and decorative value; replacement of some elements of external coating.
- No further transformations recorded; renewal of the external flooring distribution.



Reference:
<https://www.ivreacittainindustriale.it/the-properties/social-service-centre/?lang=en>
 Management plan description, key issues, vision, plan objectives and implementation.



Underused

12. Social Services Center 1955-1959

Address: Corso Jervis 26

Gross floor area: 3.210 m²

Architects: Luigi Figini and Gino Pollini, Roberto Guiducci and Paolo Radogna

Original function: social services

The building is located on the opposite side of the ICO workshop with three blocks. The hexagonal layout with the pillars in hexagonal form shapes the portico which connects to the sky by several light wells. The building also decorated with vegetation. All floors are accessible since it is designated to open to the public. The terrace on the first floor can be reached by a staircase or raised walkways on the ground floor. On the first floor, there is a stair ramp that links the terrace to the solarium.

This project shows the importance of Adriano Olivetti's community in the international architectural culture and the influence of industrial strategies on the construction of industrial architecture.

Main transformation:

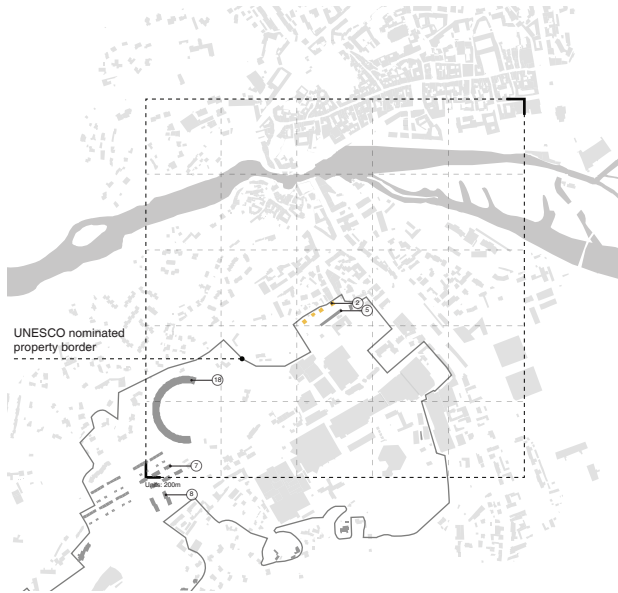
- Maintenance of the structure hosting collective activities for Olivetti workers.
- Change in the business carried out while remaining a collective use building; adaptation to the technical safety regulations for the activities hosted; architectural barriers.
- Installation of businesses and collective activities which led to the change of use of the building and required adaptation to the technical safety regulations; cleaning of façades and redoing the plastering, floors and coatings; change to the internal distribution.



Reference:

<https://www.ivreacittaindustriale.it/the-properties/social-service-centre/?lang=en>

Management plan description, key issues, vision, plan objectives and implementation.



Residence

2. Borgo Olivetti workers' houses 1926

Address: via Camillo Olivetti n. 7, 9, 12, 16, 18, 24

Gross floor area: 1.339,75 m²

Original function: Residence

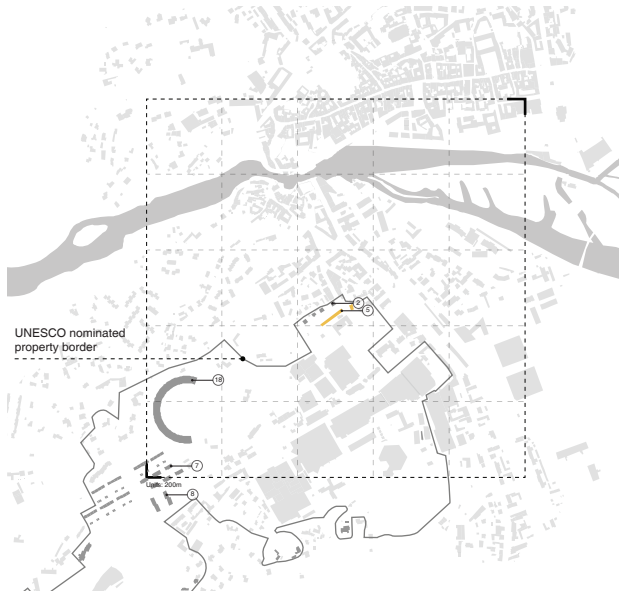
These six single-family houses are built with a vegetable garden and located near the production place. The traditional layout with symmetric openings is a typical workers' village in Europe and American. The buildings are parallel to the factory building.

Main transformation:

Overall, the buildings do not have external transformations which have changed the features of the original design.



Reference:
artsandculture.google.com/exhibit/GQLygt6QPoEhLQ
 Management plan description, key issues, vision, plan objectives and implementation.



Residence

5. Borgo Olivetti Social Housing 1939-1941

Address: via Camillo Olivetti n. 7, 9, 12, 16, 18, 24

Gross floor area: 1.740 m²

Architects: Luigi Figini e Gino Pollini

Original function: Residence

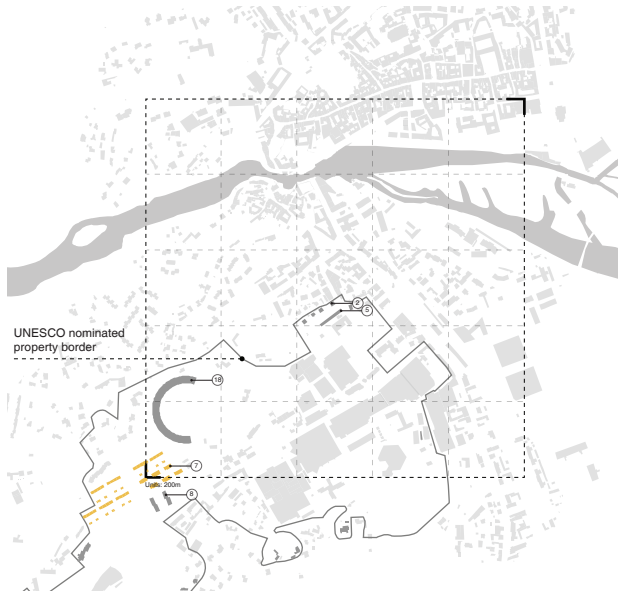
The building lies on the north-south axis with four floors which house 24 families of employees. The living room and bedrooms are located on the south side while the bathroom and staircase are located on the north side. Services area and the staircase for entering the upper floor are located on the ground floor.

Main transformation:

Overall, the buildings do not have external transformations which have changed the features of the original design.



Reference:
[HTTPS://WWW.IVREACITTAINDUSTRIALE.IT/I-BENI/CASA-POPOLARE-DI-BORGO-OLIVETTI/](https://www.ivreacittaindustriale.it/i-beni/casa-popolare-di-borgo-olivetti/)
 Management plan description, key issues, vision, plan objectives and implementation.



Residence

7. Single-family homes for executives 1950-1952

Address: Via Ranieri n. 2, 4, 6; Via Salvo D'A
quisto n. 1, 3, 5

Gross floor area: 1.380 m²

Architects: Marcello Nizzoli and Gian Mario
Oliveri

Original function: Residence

This small neighbor consists of six single-family houses. The internal spatial organization is designed according to functions with different orientations. For example, access to the living room and study room are located to the south. The exterior wall was alternated between stones and painted plasterworks.

Main transformation:

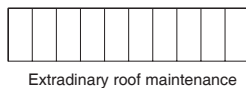
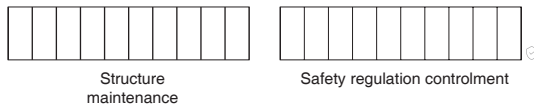
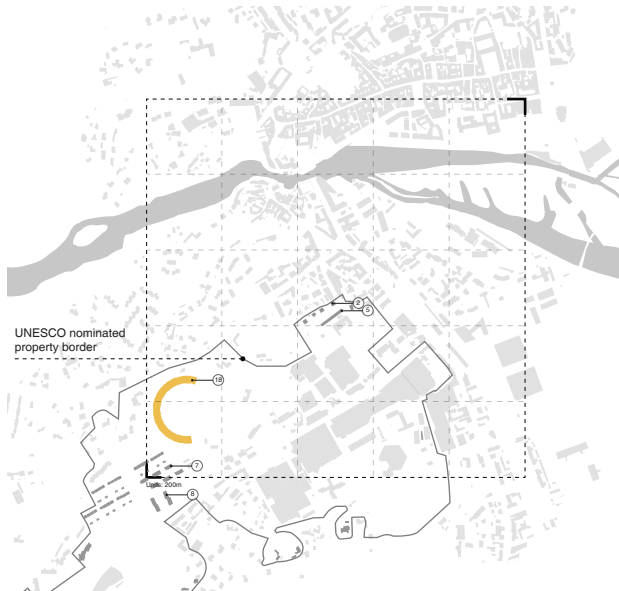
Overall, the buildings do not have external transformations which have changed the features of the original design. Given the permanence of the owners over time, some of the houses have not undergone internal transformations and the interior has also been kept in an excellent state of conservation.



Reference:

<https://www.ivreacittaindustriale.it/the-properties/homes-for-executives/?lang=en>

Management plan description, key issues, vision, plan objectives and implementation.



Residence

18. Western Residential Unit (Talponia) 1968-1971

Address: Via Carandini n. 6

Gross floor area: 6.816 m²

Architects: Roberto Gabetti and Aimaro Oreglia d'Isola

Original function: Industrial services

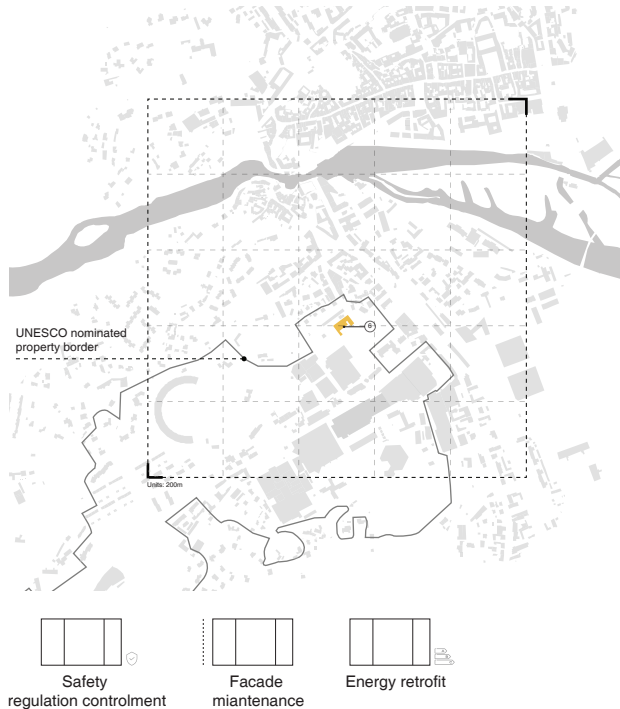
The building is characterised by the semicircular layout with a three hundred meters long of foundation. The building was residential accommodation for temporally housing Olivetti employees. The building divided into several apartments and covered by a road. This changes the image of an industrial city which is not only for production but also for services.

Main transformation:

- Maintenance of the external parts and internal structure of the building; transformations and technological adaptations for the safety regulations to set up a temporary residence for students of the Interaction Design Institute (a post-graduate school promoted by Olivetti-Telecom).
- Transformation of the structure to include a nursery in a unit of the building near its entrance; division of the whole building from collective to 81 private owners; adaptation to the technical safety regulations relating to the residential use of the building; maintenance work on parts of the structure of the building.
- Extraordinary maintenance to the external at the roof of the building with the replacement of some large concrete slabs which have completely deteriorated.

Reference:

<https://www.ivreacittaindustriale.it/the-properties/homes-for-executives/?lang=en>
Management plan description, key issues, vision, plan objectives and implementation.



Social services

6. Nursery in Borgo Olivetti 1939-1941

Address: Via Camillo Olivetti 34

Gross floor area: 1.160 m²

Architects: Luigi Figini, Gino Pollini

Interior designer: Ufficio Tecnico Olivetti (Gian Antonio Bernasconi)

Original function: Social services

Asilo Nido di Borgo Olivetti (Nursery in Borgo Olivetti), owned by the municipality of Ivrea, is still used for childcare services. The playground, surrounded by a hill with diorite rocks and Mediterranean vegetation, connects to the inner courtyard by a ramp.

Main transformation:

- Maintenance work for technical adaptations relating to safety and containing energy consumption.
- Fire prevention work; restoration work to the structure of the building;
- Conservation work because of the detachment of external coating materials and water leaks (ongoing); clearance of asbestos. Overall, the interior of the building has remained unchanged with respect to the original design.



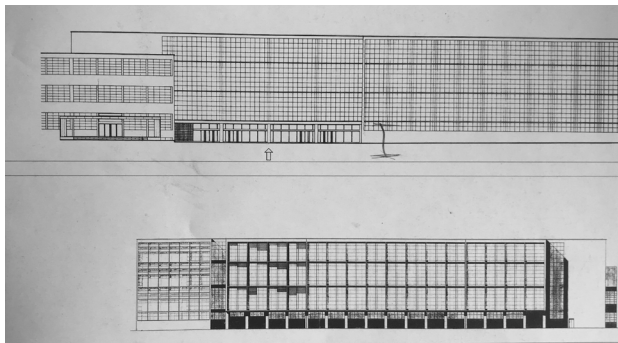
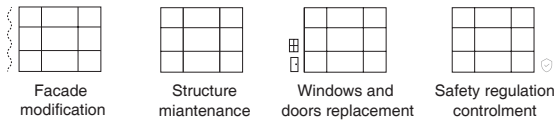
<<Architetture olivettiane a Ivrea : i luoghi del lavoro e i servizi socio- assistenziali di fabbrica>> p203

Reference:

<https://www.ivreacittaindustriale.it/i-beni/asilo-nido/>

"Architetture olivettiane a Ivrea : i luoghi del lavoro e i servizi socio- assistenziali di fabbrica"

Management plan description, key issues, vision, plan objectives and implementation.



<<Architetture olivettiane a Ivrea : i luoghi del lavoro e i servizi socio- assistenziali di fabbrica>> p33



Reference:
<https://www.ivreacittaindustriale.it/the-properties/ico-workshops/?lang=en>
 "Architetture olivettiane a Ivrea : i luoghi del lavoro e i servizi socio- assistenziali di fabbrica"
 Management plan description, key issues, vision, plan objectives and implementation.

Production building

4. I.C.O. Workshops – 3rd Extension 1947-1949

Address: Corso Jervis 11

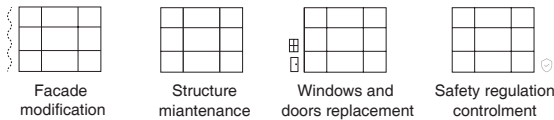
Architects: Luigi Figini, Gino Pollini, in collaboration with Annibale Fiocchi

Original function: Production building

A three floors factory blocks were built with a glazed facade and a quadrangular layout which solved the problem of the junction between the first and third extension by using a double ramp, depicting an intriguing spatial organization. It also met the criteria of transparency and luminosity.

Main transformation:

- Additions and adaptations to the needs of the production requirements in the building; maintenance work on the double glazed façade in Corso Jervis; replacement of the window frames and windows because of a fire and the resulting change to the double glazed wall in some points of the second floor of the building (1986); work arising from the safety regulations for industrial buildings.
- Conservative restoration of the structures of the building and thorough conservation of the glazed external wall in Corso Jervis; complete removal of the internal glass wall of the building with relative loss of the transpiration of the external wall; reconstruction of other glass walls in the internal courtyards of the building and adaptation to the new technical safety regulations (addition of two stairwells in the structure of the building) required by the particular new businesses carried out inside the building (call centre); thorough conservative restoration of the structural parts of the New I.C.O. building and the replacement of the whole glazed façade of the building, with loss of the definitive functions of the decorative elements of the over boxes applied to the glass walls.
- Implementation of technological elements linked to the use of the building (installation of radio stations for telephone companies).



Since 20th century, the courtyard was covered by a metal structure designed by Eduardo Vittoria in 1956, and used by University of Turin and as a place for organizing cultural events.



<<Architetture olivettiane a Ivrea : i luoghi del lavoro e i servizi socio- assistenziali di fabbrica>> p40

Reference:
<https://www.ivreacittaindustriale.it/the-properties/ico-workshops/?lang=en>
 "Architetture olivettiane a Ivrea : i luoghi del lavoro e i servizi socio- assistenziali di fabbrica"
 Management plan description, key issues, vision, plan objectives and implementation.

Production building

13. I.C.O. Workshops – 4th Extension 1955-1958

Address: Corso Jervis 11

Architects: Luigi Figini, Gino Pollini, in collaboration with Goffredo Boschetti

Original function: Production building

This new I.C.O. building has double glazed walls, with a wider opening than the previous extension. Concrete over boxes can be detected on the facade which links the yellow and white grès ceramic vertical services tower together. What makes the building an innovative example is the choice of building materials, colors, architectural composition.

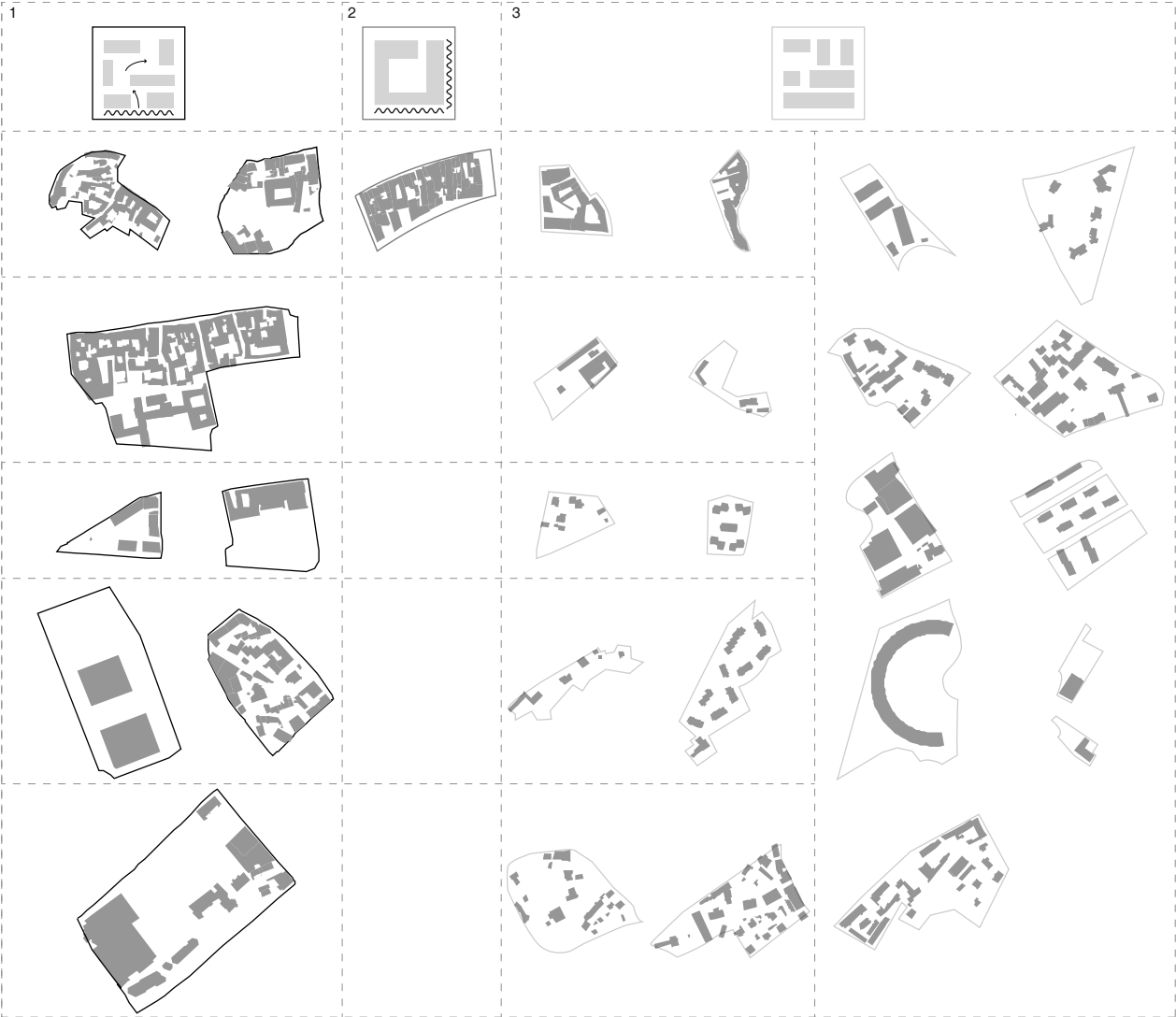
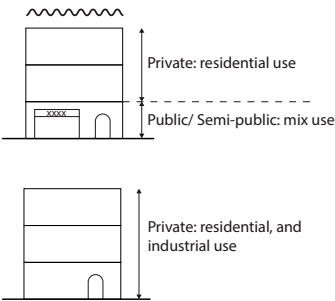
Main transformation:

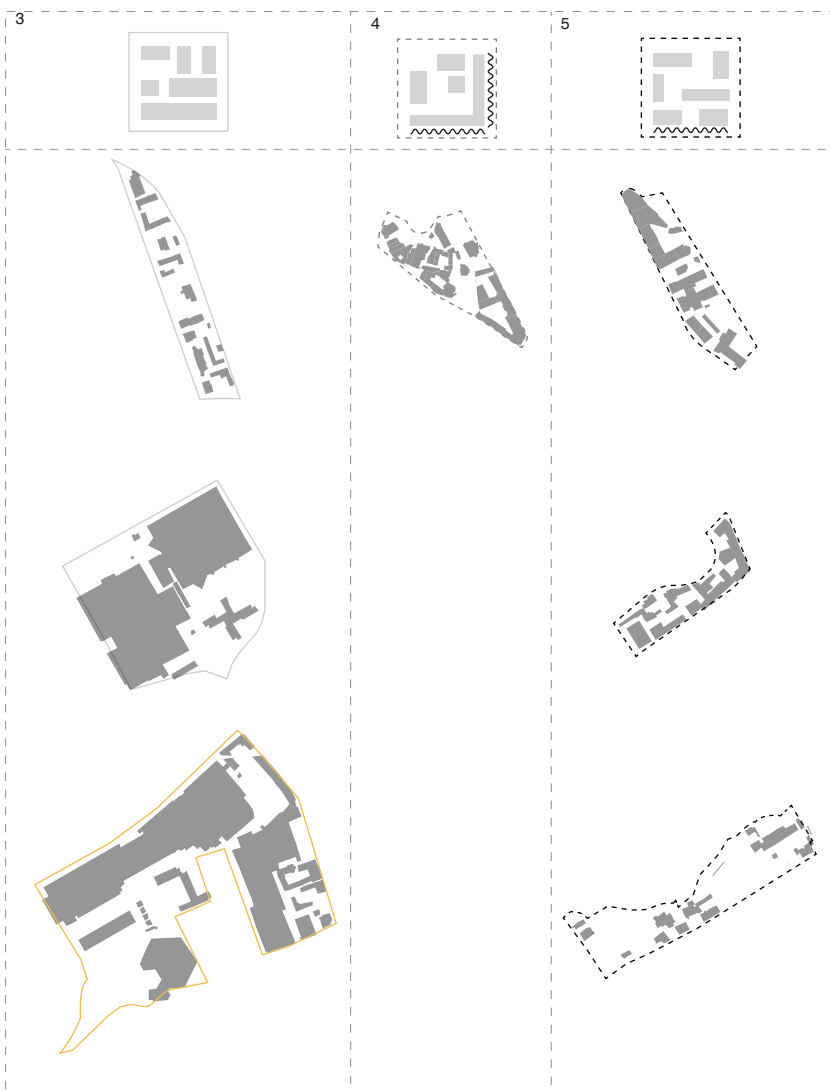
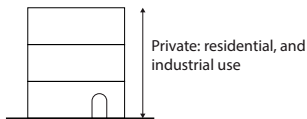
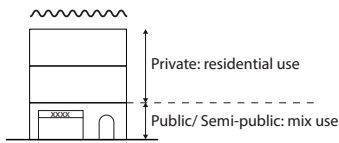
- Additions and adaptations to the needs of the manufacturing functions in the building; maintenance work on the double glazed façade in Corso Jervis; replacement of the window frames and windows because of a fire and the resulting change to the double glazed wall in some points of the second floor of the building (1986); work arising from the safety regulations for industrial buildings.
- Conservative restoration of the structures of the building and thorough conservation of the glazed external wall in Corso Jervis; complete removal of the internal glazed wall of the building with relative loss of the transpiration of the external wall; reconstruction of other glazed walls in the internal courtyards of the building and adaptation to the new technical safety regulations (addition of two stairwells in the structure of the building) required by the new businesses carried out inside the building (call centre); thorough conservative restoration of the structural parts of the New I.C.O. building and the replacement of the whole glazed façade of the building, with loss of the definitive functions of the decorative elements of the planters applied to the glazed walls.
- Implementation of technological elements linked to the use of the building (installation of radio stations for telephone companies).

Urban fabric



Urban Patterns





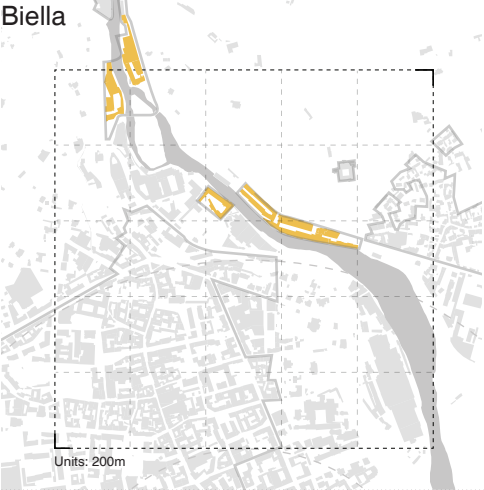
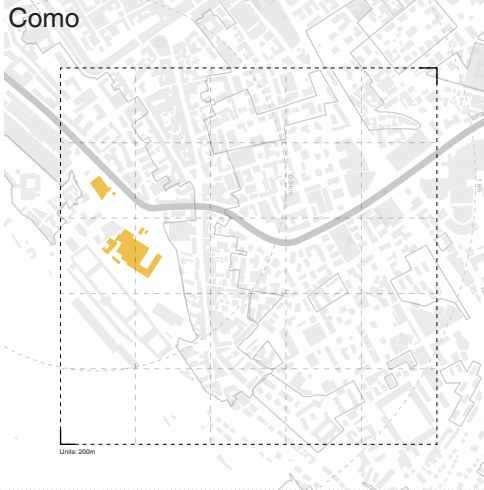

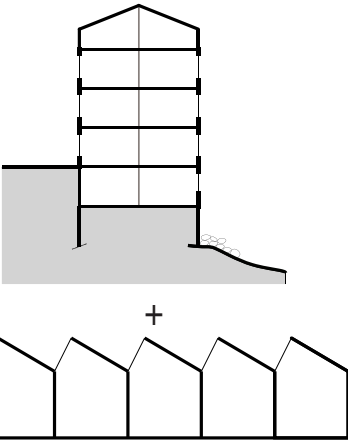
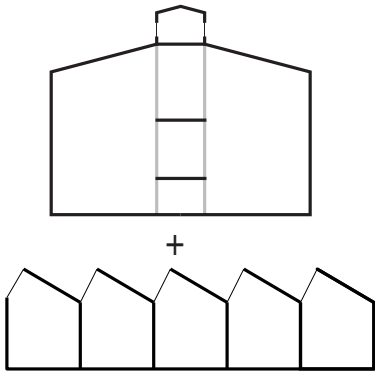
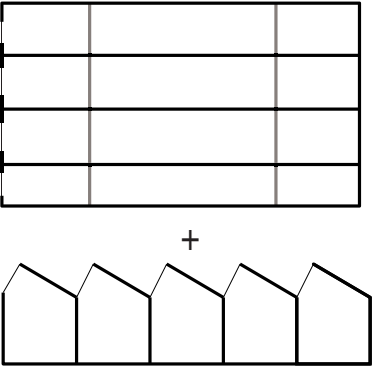
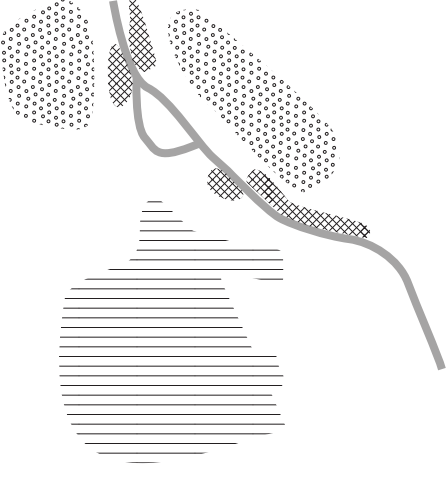
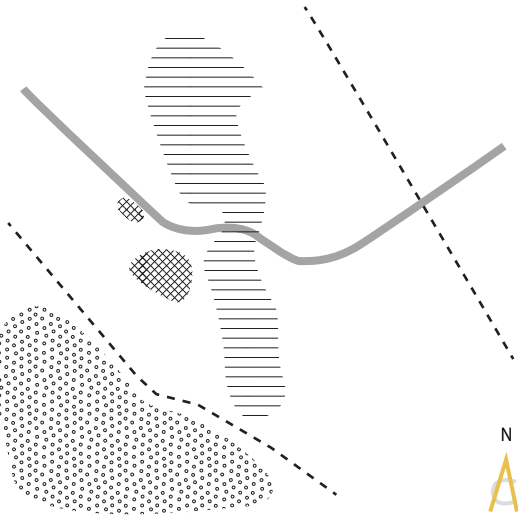
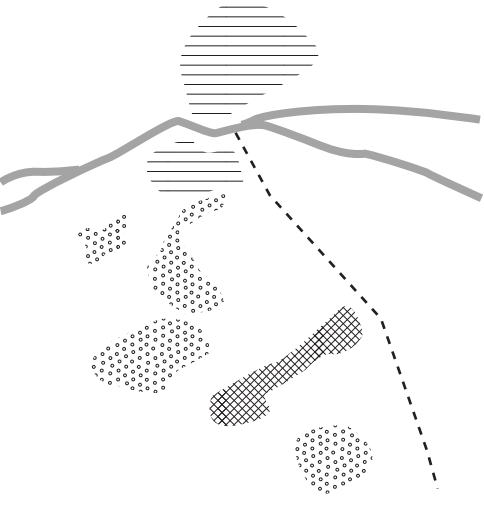
The major parts of urban patterns in the industrial city of Ivrea are characterised as type one. It is evident that the building density inside each plot is lower than that of the city Biella and Como. The scale of the plot is also larger than that of the other two cities. The major area of the plot is dedicated to the urban landscape, which obviously demonstrates Olivetti's idea of building an enjoyable living environment for his workers. It can not be denied that the involvement of Adriano Olivetti in the urban planning of the city Ivrea has a profound impact on the city's urban development.

The industrial city perfectly maintains its original morphology of the site and the relationship between buildings and urban landscape.

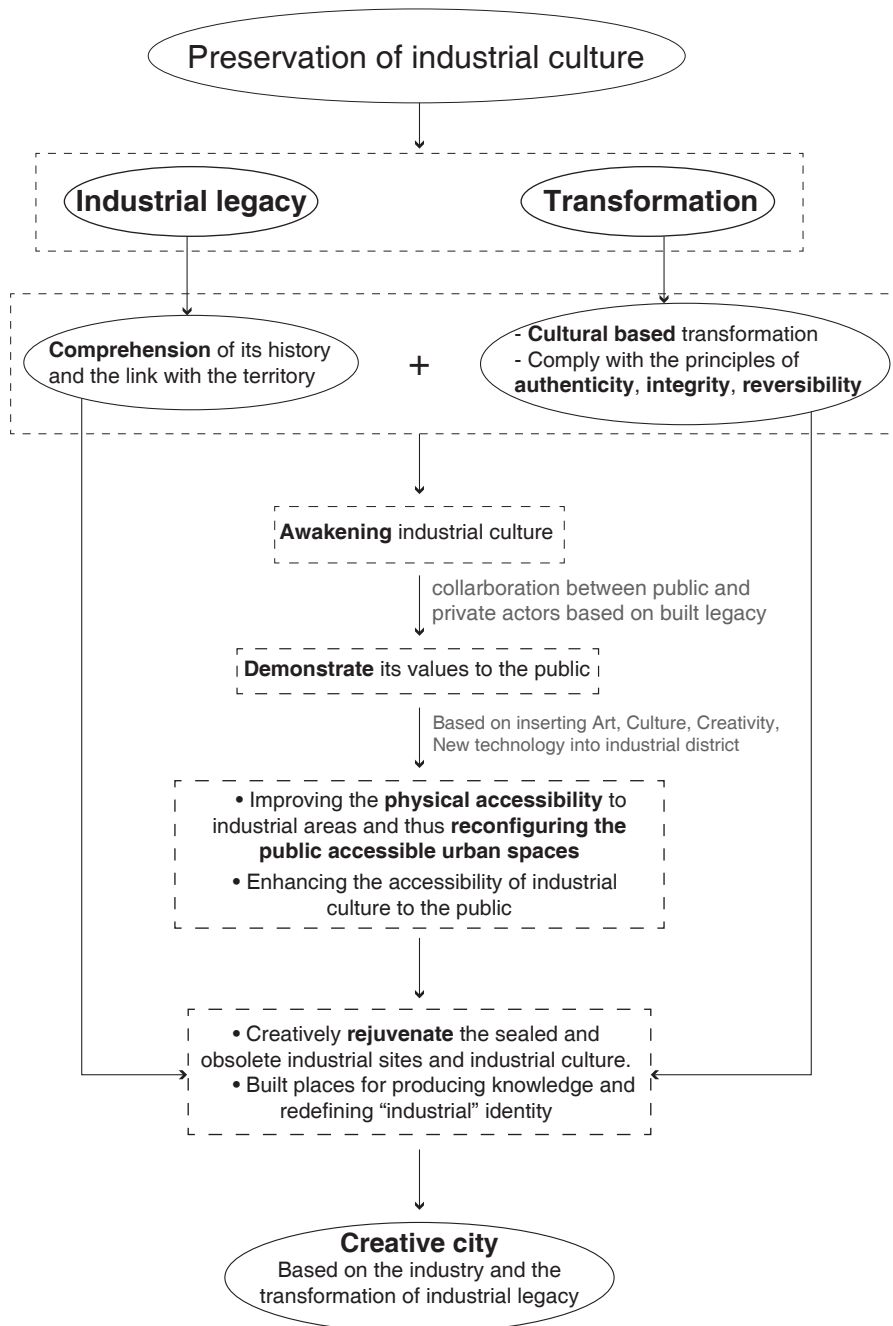
Comparison

Through the analysis, we can find that the distribution of industrial buildings in Biella and Como are fragmented and that of Ivrea area more concentrated and recent. The building types are diverse due to different industries but the large shed type industrial building can be found in all these cities. Regarding the layout of one square kilometer in industrial clusters in Biella, Como, and Ivrea, we can see that the industrial areas of these three cities are surrounded by natural presences, including rivers and riverbanks, woods and landscaped greenery. The location between the industrial area and the historical center is also different, more on the city edge as for Biella and Ivrea are concerned, and in a rather central location in Como.

The context of each industrial building is significant when considering its transformation: the relationship between old and new structures matters particularly in cases where demolition of industrial plants occurred, such as in Como; the dialogue between buildings and environment is also relevant, because the redefinition of former industrial sites moves through the entire reinvention of the links between the broad ecology of the three towns on a different basis compared to industrial exploitation of the hydraulic power of rivers and available greenfield; the claim of reconsidering social and cultural aspects as the basis for renovation encompasses the focus on working condition inside the renovated building and layouts that match the contemporary organization of work.

	<div>Biella</div> 	<div>Como</div> 	<div>Ivrea</div> 
Peak manufacture workers	1,700 (1887)	1,250 (1950)	1,600 (1954)
Industrial area (m²)	≈ 17,915.29	≈ 4,069.57	≈ 41,589.66
Building types	<div>1850s</div> 	<div>1890s</div> 	<div>1930s</div> 
Layout			

Remarks:



In the past several decades, the crucial role of natural space has been emphasised. It not only influences cities' urban formation but also fosters the development of industries and, therefore, the prospects during the historical development of a city and people's daily life. According to this notion, which links the natural environment with site-specific industries — industrial legacy, could be conceived as a way to shape the local uniqueness, contrary to an idea of the global industrial process that considers places as equal identity. In the three case studies analysed here, industrial legacy proves that the significant nexus between the natural setting and local industrial development. Therefore, the consideration of the natural setting should not be ignored along with the reinvention of industrial remains.

The development of industries has influenced the social, economic, technological and spatial development of a city. It has been an integral part of the historical development of cities and marked the progress of civilization, even if industrial legacy includes environmental burdens and uneven social-economic path. It records the past of cities and changes. It is the memory of the past and the building block for the future. However, many old underused industrial buildings, which are tangible assets of industrial culture, still can be found around our cities. They are forgotten by the public. The need for reviving the industrial legacy is multidimensional and certainly includes the tangible aspects related to the legacy of buildings.

Through the case studies, it can be said that the preservation of industrial legacy is not

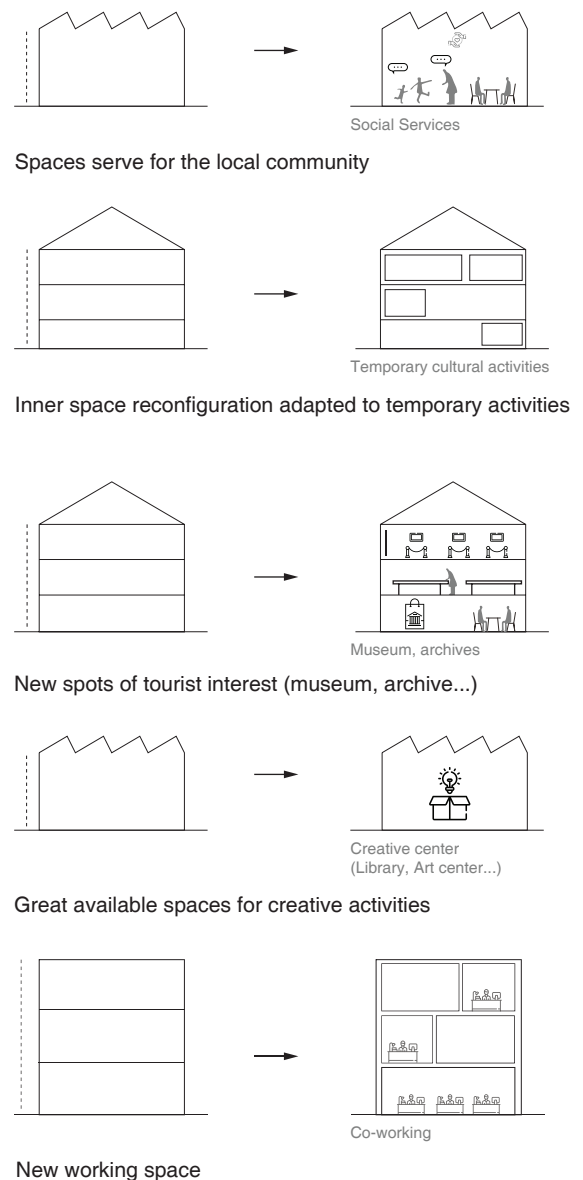


Figure 1. different ways of transformation (by author)

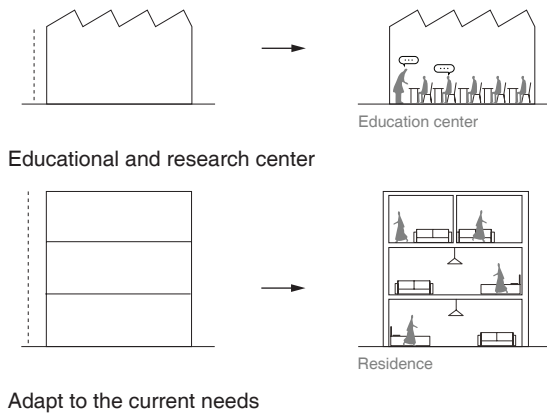


Figure 1.1 different ways of transformation (by author)

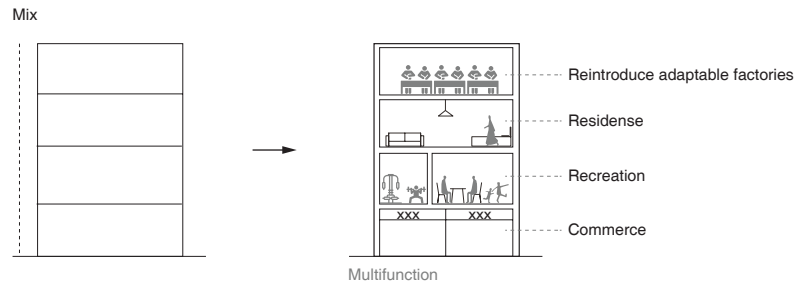
intended as the superficially museification. But what really matters is the association of reuse in which awaken the forgotten industrial culture that marked a different period of civilization. It is not just simply to reuse it without considering the history behind it. The reuse should reflect its social and cultural values to societies from which transforming communities benefit again.

The transformation of industrial legacy is also responsible for urban spatial transformation to some extent. The improvement of physical accessibility to the former industrial buildings as a basic means to engage the public to the industrial culture and help them to restore missing links. It is due to the creative transformation of the industrial legacy in space that the changes of urban spatial permeability, improve people's interaction with creative space and cultures

As the case study showing in Biella, the transformation of ex woolen mill Trombetta based on a concept of producing a responsible

transformation of social by creative projects. It is not only a museum for the collection of the international artist, Pistoletto but also a secondary urban social space indirectly engaging the public to the industrial culture and to raise the public awareness of industrial legacy. Moreover, it helps to increase creativity in preserving the industrial culture while promoting the social transformation and of cultural development.

One thing cannot fall to mention is that the significant role of a partnership between the private and public sectors in providing the ground for a "creative city". As the case studies showing in the city of Como and Ivrea, privately owned industrial properties, are the tangible heritage of industrial culture and what is more significant is the cultural value behind those properties, which is crucial not only to the preservation of the industrial culture but also to the urban culture development. In the case study of the city of Como, the two creative projects, Km_c and ComON, which intertwine



Mix-use, promoting interaction between diverse sectors

Figure 1.2 different ways of transformation (by author)

local culture with the unique natural environment, reflect the synergy effect of the public and private players to reactivate the local silk industry in national and international dimension as a whole. On the other hand, it also promotes the local social-economic development and reinforcing its local culture, local arts, which push it entering in the creative city network.

However, in the case study of the city Ivrea, it is slightly different regarding the time dimension. Ivrea's local industry was formed in the modern context, which leads to the fact that people prone to ignore it. But the great social-economic values and architectural value behind this 20th-century industrial legacy are precious. Due to the fact that a large amount of listed property is privately owned, it concretely emphasizes again the crucial role of the partnership between the private and public sectors. Therefore, it cannot be overlooked that raising the interest of the private association, entrepreneur, and so forth, enhancing the awareness of local private stakeholders and the public for the preservation of 20th-century industrial heritage, which propels the local economic development. The underuse nominated properties have great potential in transformation in terms of social, economic, and urban development, which

injects the creative elements into the city.

Regarding the means of transformation, there are seven models that can be identified through the case studies. (Figure1, and Figure 1.1)

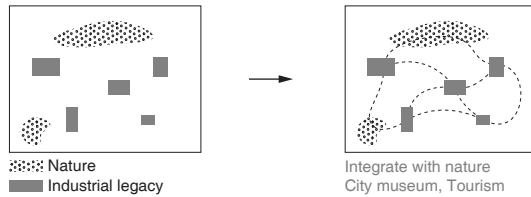
1. Spaces serve for the local community
For a certain neighbour around the industrial site, old industrial buildings could be transformed into a new "inner public space" providing social services for the local community as a new gathering point through which promoting the social interaction between local inhabitants. The direct interaction with the industrial sites provides a way for the public to access industrial culture.

2. Inner space reconfiguration adapted to temporary activities

The vast and flexible spaces provided by industrial buildings give its great spatial variability which can adapt to different activities such as temporary exhibitions, workshops, and other cultural events.

3. New spots of tourist interests (museum, archives...)

Transforming the old industrial buildings into a museum for itself, by exhibiting the archives,



Industrial urban spatial experience route

Figure 1.3 Transformation in urban scale (by author)

machines and relevant industrial objects, induces the locals and visitors to explore the industrial culture and gain the industrial experience in terms of special experiences.

4. Great available spaces for culture-based creative activities.

The development of local culture and art is critical to the urban development of a city. The low cost and spacious space available in the industrial site lead to the fact that many artists chose it as the working space to develop their work. With the intervention of artists, the old sealed industrial legacy presents a new image to the city.

5. New working space

New co-working space avoiding the new construction of office and saving the building materials, which can promote sustainable urban development.

6. Educational and research center

Industrial buildings are the physical evidence of local industrial culture. Making use of the old industrial building as places for producing and delivering knowledge of the related industrial field, can revive the old industrial culture.

7. Adapted to the current needs

The industrial building can be transformed into residence, through which people can living inside the industrial districts to experience the industrial culture.

Expect the measures mentioned above, an alternative mean—mix-used can promote the interaction between diverse sectors, improve the urban economy and maintain the industrial use. (Rappaport, N. 2017) (Figure 1.2)

In the urban scale, for fragmented industrial legacy covered in the urban area, a route can be built between them together with the natural presence forming an open-air museum, which can give an opportunity for the public to experience industrial cultural in terms of urban spatial experience. (Figure 1.3)

In a nutshell, industrial legacy deserves more attention from the public and it cannot be omitted the role of industrial culture in creating the local identity and the transformation of society, along with the economic and environmental transformation. Industrial legacies are an abundant reservoir to explore the culture and to create the creativity of cities.

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