DESIGN FOR

ACCESSIBILITY AND TOURIST ENJOYMENT OF OLIVETTI'S CULTURE:

Adaptive Reuse based on improving Biophilic Design Strategies for the 'Asilo Nido Adriano Olivetti'

Politecnico di Torino

Master of science program in
Archiecture for sustainbility

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Thanks :

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To "**Hossein**" for his unwavering support who means everything for me

To Late "**Dad**" whose memory continues to inspire me every day.
To "**Prof Ingaramo**" for her invaluable guidance.

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00| Abstract

The Adriano Olivetti Nursery School, located in Ivrea, Italy, stands as a testament to modernist architecture and Adriano Olivetti's pioneering vision of integrating social welfare with industrial development. Designed by Luigi Figini and Gino Pollini in 1939, with subsequent expansions by Annibale Fiocchi in 1952, the nursery school exemplifies an innovative approach to educational infrastructure. Recently designated as part of the UNESCO World Heritage site "Ivrea Industrial City of the 20th Century," the school faces challenges in accessibility and adaptive reuse while maintaining its architectural integrity.

This study investigates the adaptive reuse of the Adriano Olivetti Nursery School to enhance accessibility and tourist enjoyment, focusing on integrating biophilic design strategies to improve environmental quality and user experience. Theresearch addresses the following questions: How can adaptive reuse strategies improve the nursery school's accessibility and appeal to tourists?How can biophilic design principles be applied to enhance the building's cultural and historical value?

The study employs a qualitative research approach, including case studies, architectural analysis, and stakeholder interviews. It explores preservation constraints, historical significance, and the application of biophilic design to create a harmonious connection between users and the natural environment. Findings contribute to architectural preservation, sustainable tourism, and biophilic design literature, offering insights into revitalizing historical buildings while meeting contemporary needs and enriching visitor experiences.

Keywords: Adriano Olivetti Nursery School, adaptive reuse, biophilic design, architectural preservation, sustainable tourism, UNESCO World Heritage.

(Fig.2) of the east facade of the Borgo Olivetti nursery school, 1950s, Olivetti historical archive

01|Introduction

The Adriano Olivetti Nursery School in Ivrea, Italy, designed by architects Luigi Figini and Gino Pollini in 1939 and expanded by Annibale Fiocchi in 1952, represents a landmark in modernist architecture and social infrastructure. As part of the "Ivrea Industrial City of the 20th Century," recently designated as a UNESCO World Heritage Site, the nursery school embodies Adriano Olivetti's vision of integrating social welfare with industrial development. Despite its historical significance, the building faces critical challenges in terms of accessibility and modern usability. These challenges include the need to preserve its architectural integrity while adapting it to contemporary standards and enhancing its appeal and functionality for tourists. Additionally, the integration of biophilic design strategies, which promote human-nature connections, is crucial to improving the building's environmental quality and user experience.

Research Question

How can the adaptive reuse of the Adriano Olivetti Nursery School improve accessibility and tourist enjoyment while incorporating biophilic design strategies to enhance the building's cultural and historical value?

Purpose of the Study

The purpose of this study is to develop adaptive reuse strategies for the Adriano Olivetti Nursery School that enhance its accessibility and tourist experience while preserving its historical and architectural significance. This research will explore the application of biophilic design principles to create an environment that fosters well-being and engagement with the building's cultural heritage. By addressing the constraints imposed by the building's historical status and examining innovative solutions for its redevelopment, this study aims to provide a model for sustainable heritage conservation and adaptive reuse. The findings will contribute to the fields of architectural preservation, sustainable tourism, and biophilic design, offering insights into how historical buildings can be revitalized to meet contemporary needs and enhance visitor experiences.

(Fig.1) View toward courtyard Asilo Nido Adriano Olivetti" Building, (Asilo Nido, 2019b)

02| Adaptive reuse concepts and case studies

- Introduction to adaptive reuse

Throughout history, adaptive reuse has been a fundamental practice, demonstrating humanity's ingenuity and resourcefulness. Early examples include repurposing caves for shelter and utilizing animal pelts for clothing, highlighting our ability to adapt materials to new purposes. Today, this same spirit of innovation is reflected in the built environment, where structures are expanded or repurposed to meet evolving needs, and materials are recycled to prolong their usefulness. These projects, known by various names such as refurbishment, renovation, or rehabilitation, embody practicality and efficiency, serving the everyday spatial requirements of society while respecting the past. (Wong, 2016)
It is estimated that that approximately 70% of the structures standing today will endure for another 50 years. Consequently, prioritizing refurbishment and modernization to meet present and future demands becomes imperative in our current practices. Therefore, adopting an adaptive reuse strategy may prove to be the most appropriate approach for handling historical structures. (Fisher-Gewirtzman, 2017)
Considering the current global emphasis on resource conservation, there is a heightened recognition of the importance of assessing existing and outdated structures for potential reuse rather than opting for demolition and new construction. These efforts extend beyond buildings of historical or architectural significance to encompass a wide range of structures. (Wong, 2016)
With the ever-changing social and cultural landscape around the world, heritage and historical buildings face significant challenges. These structures must find a balance between preserving their historical identity and adapting to current needs and developments.
Preserving these places requires a thoughtful approach that recognises their heritage value while ensuring they can meet the needs of contemporary society. This balance means finding ways to incorporate necessary changes without sacrificing the integrity and importance of these historical sites. (Munshed & Ashour, 2024)
Adaptive reuse represents a unique form of refurbishment that presents significant challenges for designers. Altering the functional classification of a building introduces new regulatory requirements and may necessitate rezoning approval. However, despite these obstacles, there are compelling economic, environmental, and social advantages that can make this approach appealing to developers.
Combining new and old architecture ensures the retaining of authentic character while providing an appropriate new use. Such new use eventually adds to the building's historic fabric and to the built fabric as a whole .(ArticleFisher-Gewirtzman, J Archit Eng Tech 2016)
Following the transformation of cities shows that every city can be thought of as a living thing because it is constantly changing and evolving over time. (Lakatos, 2016)

- Definition, principles and advantages of adaptive reuse

the practice of repurposing existing sites, buildings, or infrastructures that have become obsolete and abandoned over time, transforming them with minimal alterations to serve new functions. (Robiglio2016).
adaptive reuse is a conservation strategy focused on sustainability. It involves modifying a space or structure to accommodate its current purpose while also maintaining its cultural significance and historical value ,In essence, it emphasizes the importance of repurposing existing resources

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in a way that respects their heritage and contributes to environmental sustainability. (Ming Hui and Bahauddin, 2019).
Adaptive reuse is the practice of repurposing existing sites, buildings, or infrastructures that have become obsolete and abandoned over time, transforming them with minimal alterations to serve new functions.(ICOMOS NEW ZEALAND, 2010).
Adapting existing structures to new purposes is often termed as remodeling, retrofitting, conversion, or rehabilitation (Brooker, G. & Stone, S. London, 2004). The process of adapting existing structures to serve new functions is commonly referred to as remodeling, retrofitting, conversion, or rehabilitation. (Vafaie et al., 2023) These terms encapsulate the various approaches and techniques employed to repurpose buildings, ensuring their continued relevance and utility in response to evolving needs and circumstances.
While Schmtid (2009) defined adaptive reuse can be understood as the inherent capability of a building to reflect and promptly respond to the evolving needs and demands of its users, as well as to effectively navigate through continual changes over time. By doing so, it seeks to maximize the value and utility of the structure throughout its lifecycle which leads to the sustainability of heritage buildings.
This method introduces a fresh approach to sustainable urban renewal, preserving buildings over their lifespan and reducing waste from demolition. Additionally, it promotes the reuse of existing energy and resources, leading to substantial social and economic advantages (Dewiyana et al., 2016)
Heritage buildings are the legacy left from the past and they also represent the cultural history and need to be conserved for the next generation (UNESCO, 1972) .

Adaptive reuse is The process of adaptation involves altering and adding to a place to accommodate compatible uses. while still retaining its cultural heritage value,It is a comprehensive approach that considers the existing and proposed uses, making adjustments to suit the specific needs(THE BURRA CHARTER, ICOMOS AUSTRALIA, 2013).

The building's capacity, purpose, and performance can be altered through adaptive reuse in addition to routine maintenance.(Douglas, 2006b).

Recognizing the importance of heritage buildings, the Act of 2005 categorizes buildings that are 50 years old and above as heritage buildings (Act 2005).

Only a few structures may undergo the traditional monument preservation, scientific investigation, and restoration processes due to budgetary, rationalization, and usage considerations. Reusing the buildings is a more successful preservation strategy that may be used to a larger range of structures. (Lepel, 2006).
Reusing the buildings instead of demolishing them is key for sustainable cities and fighting climate change. It helps cut carbon emissions by keeping existing structures in use longer, reducing waste from demolition, and making the most of the energy already invested in them. (Yung & Chan, 2012).

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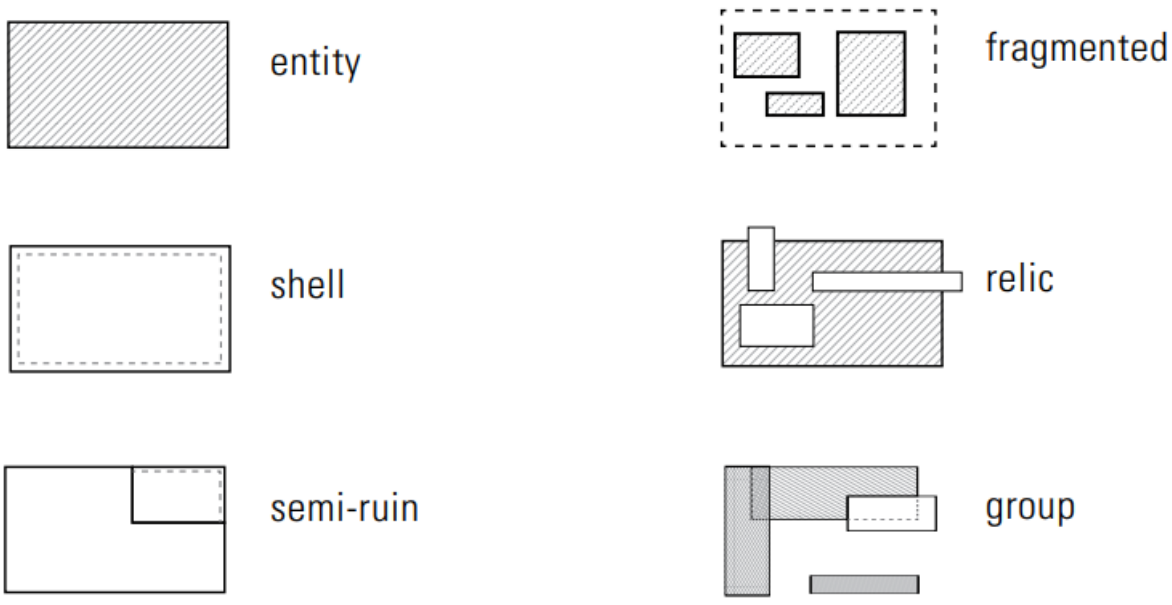
Pillars of sustainable developments	Benefit of Adaptive reuse
Enviromental	Enhancing enviroment.
Enviromental-Economic	Use of fewer resources, energy, and emissions Boosting demand for existing maintained buildi gs.Stimulate vacant neighbourhoods. The recovery of energy embodied in buildings over a large period of time.
Economic	economic growth / More cost-effective
Economic-Social	expansion of the life cycle of buildings. Giving value to the community resources from unproductive real estate.
Social	cultural continuity, identity, and sense of place/ Giving a better aesthetic appearance to the built environment. /Preserving heritage and presentation.
Socio-Enviromentl	decrease in land consumption and urban decline. Revitalizing and developing heritage areas and architectural and technical innovations.

(Table1),The relationship between the pillars of sustainable development and the benefits of adaptive (Abdulameer & Abbas, 2020), p4



(Fig. 3) ,Host structure types in adaptive reuse projets , (Wong, L.2016).

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- Different Types of Host Structures in Adaptive Reuse

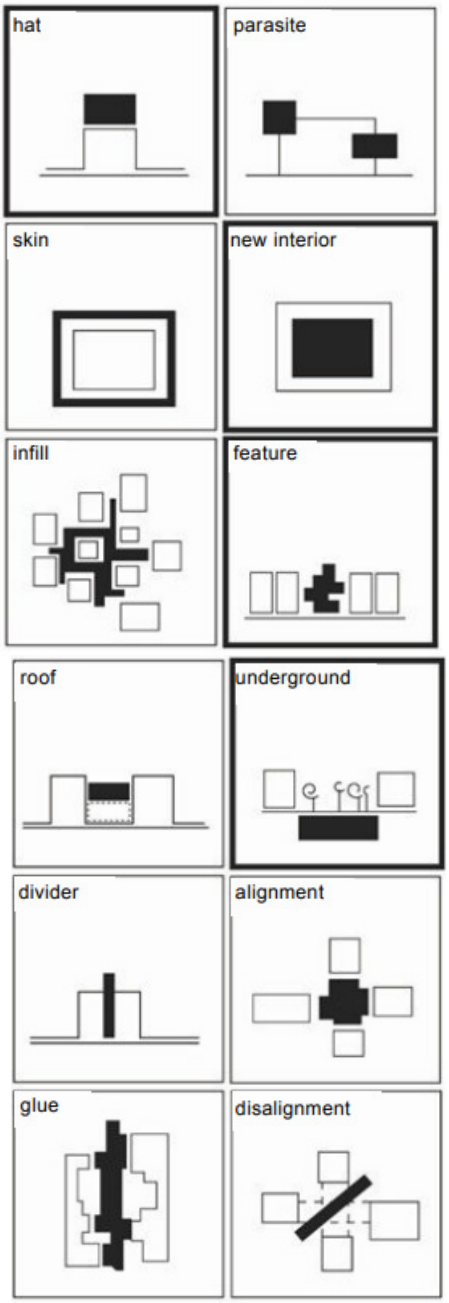
Adaptive reuse of host buildings offers a sustainable approach to repurpose existing structures, preserving their cultural significance while integrating them into new and vibrant uses. The success of such endeavors depends on factors like the building's condition, spatial compatibility with the new use, and contextual placement. Common types of adaptive reuse include whole building conversion, which transforms intact structures, and shell host structures, focusing on interior adaptations while preserving exteriors. Incomplete host buildings provide unique opportunities, with semi-ruin hosts requiring interior enhancements and fragment hosts demanding inventive solutions. Relic hosts serve as catalysts for new construction while preserving historical significance._ (Wong, 2017), (Fig.3)

- Different Types of intervention in Adaptive Reuse

Adaptive reuse presents a particularly intricate case study due to its multiple layers of knowledge compared to projects with fixed physical and functional stages. In adaptive reuse, understanding both the original and final stages, as well as the decisions driving the transformation, is crucial. Analyzing and classifying adaptive reuse precedents requires formal assessments, examination of intervention tactics, and consideration of historical context. A multi-classification system facilitates comprehensive research by enabling cross-knowledge acquisition across various categories. (Fisher-Gewirtzman, 2017b), (Fig.4)

- regulatory barriers to adaptive reuse

Adaptive reuse has many benefits and opportunities; however, it does carry with it several obstacles especially when it pertains to heritage buildings. (Table 2) shows a list of identified barriers to adaptive reuse with their underpinning literature.



(Fig.4), Different Types of intervention in Adaptive Reuse (Fisher-Gewirtzman D ,2016)

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Barrier	Brief description
Building codes and regulations/legal constraints	Compliance with current building codes, regulations, conservation guidelines, licensing and planning requirements
Physical restrictions	Restrictions due to existing £oor layouts, number of columns/walls and structural system layouts.
High remediation costs and construction delays	Contamination due to the use of hazardous materials in buildings that causes additional costs and time delays
Availability of materials and lack of skilled tradesmen	Compatibility of new materials with existing materials, as well as the availability of local expertise and tradesmen capable of implementing conservation works
Complexity and technical dificulties	Refurbishment techniques, technical installations and innovative solutions for the adaptive reuse of heritage buildings.
Economic considerations	Direct and indirect cost considerations in terms of the conservation requirements for the adaptation of heritage buildings.
Social considerations	Pertains to the intangible non-economic values considered to maintain the community's daily life (e.g. a sense of attachment to the place)
Inaccuracy of information and drawings	Lack of accurate information and drawings for heritage buildings (includes defects or dimensional and material inconsistencies)
Limited response to sustainability agenda	Limited support from building owners and commercial property markets in updating buildings to sustainability standards
Maintenance	High maintenance and repair costs due to physical deterioration and defects
Classifcation change	Scope and classi¢cation changes of buildings that need building code and zoning compliance
Inertia of production and development criteria	Diferent production and developmental criteria of cities pose challenges to urban regeneration or redevelopment approaches
Commercial risk and uncertainty	Lengthy and dificult renovation or reuse often leads to reduced profit margins
Financial and technical perceptions	Notion that demolition is the only way to get a reasonable profit since adaptive reuse is seen as too expensive

(Table.2), List of barriers to adaptive reuse , (Conejos et al., 2016), p3

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03| Biophilic Design: Principles and Applications

- Understanding the principles of biophilic design

Biophilic design represents a paradigm shift in architectural practice, emphasizing the integration of natural elements into the built environment to enhance human well-being and connection with nature. Central to biophilic design are several key principles that guide its implementation and underscore its significance in contemporary architecture.

One fundamental principle of biophilic design, as elucidated by Kokogiannakis and Darkwa (2019), is the recognition of green building certification as a critical enabler for promoting the adoption of nature-inspired design strategies. By aligning with green building certification frameworks, architects and designers can leverage established guidelines and standards to ensure the effective integration of biophilic elements into their projects.

Moreover, biophilic design principles emphasize the importance of overcoming traditional barriers, such as concerns regarding capital and maintenance costs (Alim et al., 2018; Wong et al., 2021). Recent research highlights the cost-saving potential of biophilic strategies, particularly in reducing building energy consumption and enhancing occupant comfort (Kokogiannakis & Darkwa, 2019). By emphasizing the economic benefits of biophilic design, stakeholders can make a compelling case for its adoption in architectural practice.

Another key principle of biophilic design is its emphasis on the holistic well-being of building occupants. Sadick et al. (2024) underscore the role of biophilic elements in promoting physical health, mental well-being, and cognitive function. Through the strategic integration of natural light, vegetation, and views of nature, architects can create environments that foster stress reduction, improve air quality, and enhance overall occupant satisfaction.
Furthermore, biophilic design principles advocate for the prioritization of local ecosystems and indigenous vegetation in architectural projects. Integrating local vegetation, as advocated by recent research findings (Sadick et al., 2024), not only enhances ecological resilience but also fosters a deeper connection between individuals and their surrounding natural environments.

In conclusion, understanding the principles of biophilic design is essential for architects and designers seeking to create healthier, more sustainable built environments. By aligning with green building certification frameworks, overcoming financial barriers, prioritizing occupant well-being, and integrating local ecosystems, stakeholders can harness the transformative potential of biophilic design to shape a more harmonious relationship between humans and nature in the built environment.

03| Biophilic Design: Principles and Applications

- Understanding the benefitsf biophilic design

In contemporary architectural discourse, the concept of biophilic design has emerged as a compelling approach to creating built environments that foster human well-being and productivity (Trenddesk, 2013). Rooted in the innate human affinity for nature, biophilic design seeks to integrate natural elements and processes into the built environment to enhance the physical, mental, and emotional health of occupants. The term 'biophilia' translates as 'the love of living things' in ancient Greek.
Biophilic design, a paradigm shift in architectural practice, emphasizes integrating natural elements into the built environment to enhance human well-being and connection with nature (Hui & Bahauddin, 2019). Key principles guide its implementation and underscore its significance

Biophilia and Biophilic Design

Biophilia, a term coined by psychologist Erich Fromm and popularized by biologist Edward O. Wilson, refers to the inherent human tendency to seek connections with nature (Fromm, 19XX; Wilson, 1996). It underscores the notion that humans have an innate affinity for living systems and natural environments. Biophilic design, an extension of this concept, aims to create built environments that mimic or incorporate elements of nature, such as natural light, vegetation, and water features.
Biophilic design aims to improve human well-being by integrating natural elements into built environments (Hui & Bahauddin, 2019). Biophilia, defined as the innate tendency to focus on life and lifelike processes (Wilson, 2009), drives this goal (Kellert et al., 2011). Kellert and Calabrese (2015) identified fundamental conditions for effective biophilic design, including sustained engagement with nature and emo-

human health, productivity, and environmental sustainability. By integrating natural elements into the built environment, biophilic design offers a holistic approach to creating spaces that nurture both people and the planet. Moving forward, further research and implementation of biophilic design principles are essential to realizing the full potential of this innovative approach to architecture and urban planning. Understanding biophilic design principles is crucial for creating healthier, sustainable built environments. By aligning with green certification, overcoming barriers, prioritizing well-being, and integrating local ecosystems, stakeholders can shape a harmonious relationship between humans and nature in the built environment

The Biophilic Effect

Central to understanding the benefits of biophilic design is recognizing the biophilic effect, wherein exposure to natural elements within the built environment positively impacts human health and well-being (Trenddesk, 2013). Factors such as natural light, colors, fractals, and views of nature have been shown to reduce stress, enhance cognitive function, and promote emotional well-being among building occupants.
Biophilic design encourages positive interactions between people and nature, promoting an expanded sense of relationship and responsibility (Cacique & Sheng-Jung, 2022). It is an ideal proposition for adaptive reuse projects, alleviating urban stresses and enhancing buildings (Cacique & Sheng-Jung, 2022).

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Enhancing Productivity

One of the key benefits of biophilic design is its positive impact on productivity in various settings, including workplaces, schools, and healthcare facilities (Trenddesk, 2013). Studies have demonstrated that incorporating natural elements into the built environment can lead to significant improvements in employee productivity, creativity, and overall satisfaction. For example, research conducted at the University of Texas revealed that indoor plants can reduce worker stress and increase work efficiency by 12% (Trenddesk, 2013; Nieuwenhuis et al., 2014).

Environmental Sustainability

In addition to improving human well-being, biophilic design also contributes to environmental sustainability by reducing energy consumption and mitigating the carbon footprint of buildings (Trenddesk, 2013). By incorporating natural ventilation, passive heating and cooling systems, and green infrastructure, biophilic buildings can achieve significant energy savings and promote ecological resilience.

the incorporation of biophilia as a central concept, promoting numerous positive outcomes such as mitigating the urban heat island effect, enhancing biodiversity, improving air quality, and facilitating urban farming, all aligned with the Sustainable Development Goals. The integration of greenery, including lush private balconies and strategically placed vegetation, not only enhances sustainability but also adds economic value to the apartments. However, the strategy faces challenges such as increased structural load, maintenance issues, higher costs, and potential ecological impacts, necessitating careful consideration and integration with other sustainable measures to avoid accusations of greenwashing and maintain .

In conclusion, the benefits of biophilic design are manifold, encompassing improvements in human health, productivity, and environmental sustainability. By integrating natural elements into the built environment, biophilic design offers a holistic approach to creating spaces that nurture both people and the planet. Moving forward, further research and implementation of biophilic design principles are essential to realizing the full potential of this innovative approach to architecture and urban planning. Understanding biophilic design principles is crucial for creating healthier, sustainable built environments. By aligning with green certification, overcoming barriers, prioritizing well-being, and integrating local ecosystems, stakeholders can shape a harmonious relationship between humans and nature in the built environment.

03| Biophilic Design: Principles and Applications

Biophilic design element	Design strategies	Explanations
A) Biophilic principle 1	Nature incorporation	
1. Water	Build waterscapes such as fountains, constructed wetlands, ponds, water walls, rainwater spouts, aquaria, etc.	Water in the built environment provides stress relief, satisfaction, and health benefits, with design elements like water bodies and fountains enhancing its positive impact, while also serving as a restorative environment in biophilic architecture, influencing human preference and offering climate-responsive benefits like evaporative cooling. (Asim & Shree, 2019b).
2. Air	Increase natural ventilation using operable windows, vents, narrower structures, etc.	Natural ventilation significantly impacts human comfort and productivity, with enhancements possible through diverse airflow, temperature, humidity, and pressure variations, achievable via simple methods like operable windows or advanced engineering solutions. (Kellert, 2015)
3. Daylight.	Bring in natural light via glass walls, clerestories, skylights, atria, reflective colours/materials, etc.	Natural light, particularly natural and transparent light, positively influences human psychology, enhancing senses, promoting vitality, and fostering creativity, while appropriate lighting enhances sensory accuracy and visual acuity. (Asim & Shree, 2019b).
4. Plants	Bring vegetation indoors by potting plants and indoor green wall	Incorporating plants, ecologically connected vegetation, especially native species, into the built environment enhances aesthetic appeal, physical health, and emotional well-being, contributing to improved air quality and reducing stress. (Mohammed et al., 2023)

Table.3, Biophilic Design Faramework , (Elaborated by author)

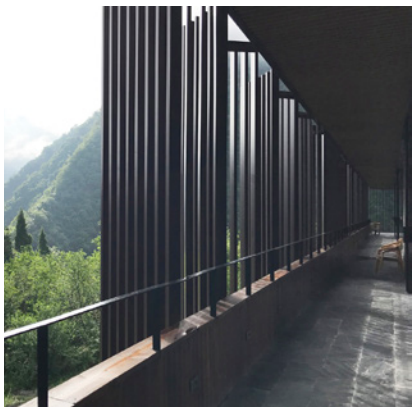

Fig.5, **Air** as a biophilic attribute used in building Mountain Restaurant & Bar, Zunyi China, by ZJJZ Atelier, built in 2018

Fig.6, **ight and plants** as a biophilic attribute used in building Concrete Jungle / Concept idea of open public space / Victoria Chuchupalova

Fig.7, **Water** as a biophilic attribute used in building Apple's Piazza Liberty Store, Milan (Italy), by Foster þ Partners, built in 2018

03| Biophilic Design: Principles and Applications

Biophilic design element	Design strategies	Explanations
A) Biophilic principle 1	Nature incorporation	
5. Animals	Create spaces to accommodate animals such as ponds, aquariums, etc.	Positive interactions with nonhuman animal life in the built environment can be facilitated through design strategies such as feeders, green roofs, and gardens, emphasizing diverse local species and leveraging modern technologies, while isolated encounters typically have minimal impact.
6. Landscape	Natural landscapes and ecosystems, characterized by interconnected plants, animals, water, soils, and geological formations,	are preferred by people for their savannah-like features and are more satisfying due to their self-sustaining nature, rich biological diversity, and provision of ecological services, with the achievement of self-sustaining ecosystems in built environments possible through various design strategies and fostering contact through different means.
7. Weather	Enhance exposure to weather through operable windows, porches, balconies, terraces, courtyards, etc.	Designing spaces to maximize natural ventilation and airflow can improve indoor air quality and thermal comfort while reducing reliance on mechanical systems.
8. Time and seasonal change	Present views of the building façade and appearance that change due to exposure to nature.	

Table.3, Biophilic Design Faramework , (Elaborated by author)

Fig.7, **Landscape** as a biophilic attribute used in building Chichu Art Museum, Naoshima island

Fig.8 **Animals** as a biophilic attribute used in building Mellor Primary School, Stockport (UK), by Sarah Wigglesworth Architects, built in 2015

Fig.9, **Weather** as a biophilic attribute used in building Verde Treehouse - Turin

03| Biophilic Design: Principles and Applications

Biophilic design element	Design strategies	Explanations
B) Biophilic principle 2	Indirect nature incorporation	
9. Forms and shapes	Naturalistic shapes and forms found in the natural world, ranging from leaf-like patterns on columns to plant shapes on building facades, structure and animal facsimiles in fabrics .	can enhance the appeal of spaces by imbuing them with dynamic and ambient qualities reminiscent of living systems.
10. Patterns & geometries	Adopt fractals, hierarchically organised ratios and scales in designs	can enhance the appeal of spaces by imbuing them with dynamic and ambient qualities reminiscent of living systems.
11. Mechanisms	Learn from other species to meet the functional needs (Biomimetic or Biomimicry) such as termites and spiders inspired the efficiency of climatic controls and the structural strength of building materials.	Biomimicry involves emulating forms and functions observed in nature, such as the bio-climatic controls of termite mounds, the structural strength of spider webs, and the heat-trapping ability of certain animal hairs, to address human needs and problems, offering both practical benefits and admiration for the ingenuity of the natural world
12. Images	Presents natural scenes, plants, animals, water, landscapes or geological features in paintings, photographs, videos and fabrics.	can provide both emotional and intellectual satisfaction, with the effectiveness of these representations enhanced by repetition, thematic consistency, and abundance rather than isolated instances.
13. Materials, texture & colour	Adopt natural materials like wood, bamboo, rock, stone, clay, etc.	provide positive visual and tactile responses due to their dynamic properties shaped by the adaptive response of organic matter to survival challenges, offering unique sensory experiences that artificial materials generally cannot replicate and utilized across a diverse range of interior and exterior designs, products, furnishings, and fabrics.

Table3, Biophilic Design Faramework , (Elaborated by author)

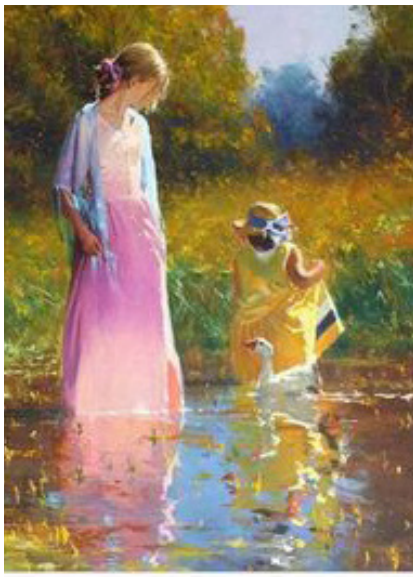

Fig.10, **Image** as a biophilic attribute used in building

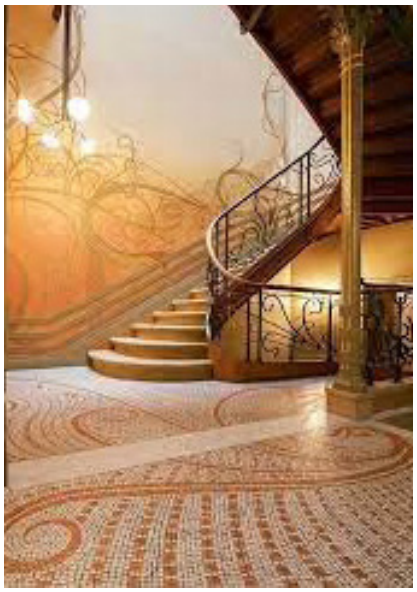

Fig.11, **Form and shape** as a biophilic attribute used in building

Fig.12, **Mechanism** as a biophilic attribute used in building

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Biophilic design elemen	Design strategies	Explanations
C) Biophilic principle 3	Experience of Space and Place	
14. Prospect & refuge	Conceive spaces with two complementary characteristics: open views/vistas (prospect) and under sheltered/safe environments (refuge).	Human evolution has been shaped by the interplay of prospect, providing long views to perceive opportunities and dangers, and refuge, offering safety and security, with these complementary conditions being both functional and satisfying in the built environment, achievable through design strategies such as vistas, visual connections, and secure settings.
15. Complexity & order	Consider natural forms, patterns and geometries, especially in exposed building structures, facades and details.	The interplay between prospect and refuge, reflecting our evolutionary history, is crucial for both functionality and satisfaction in the built environment, and design strategies like vistas, visual connections, and secure settings help achieve this balance.
16. Enticement (peril & mystery)	Generate 'peril' using cantilevers, infinity edges, transparent facades, pathways under/ over water, scenes defying gravity, etc.	
17. TRANSITIONAL SPACES	Provide views of prominent landmarks, landscapes, waterscapes, geological forms, etc. 18. Connection of spaces	Successfully navigating an environment relies on clearly understood connections between spaces, facilitated by discernible transitions such as hallways, thresholds, doorways, gateways, and areas linking indoors and outdoors like porches, patios, courtyards, and colonnades.

Table3, Biophilic Design Faramework , (Elaborated by author)

Fig.13 **Prospect & refuge** as a biophilic attribute used in building

Fig.14, **Complexity & order** as a biophilic attribute used in building

Fig.15, **TRANSITIONAL SPACES** as a biophilic attribute used in building

03| Biophilic Design: Principles and Applications

Biophilic design case studies highlighting successfull implementations

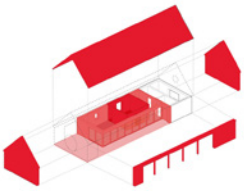
- Cowork Greenhouse / F5 Projects and Architecture

Year : 2021

Gross floor area : 500 m²

Architects: Juan Tomás Ortega García, Jorge Alonso Nicieza, Nacho Cabal Palicio

Location : OVIEDO, SPAIN



Adaptive reuse

Biophilic design

Fig.16, Open office area of F5 Projects, illustrates key biophilic design principles, including the use of plants, natural light, and natural materials (Silva, 2023)

03| Biophilic Design: Principles and Applications

- Adaptive Reuse and Biophilic Design: A Case Study of Cowork Interiors, Oviedo, Spain

In the ever-evolving landscape of the contemporary workplace, the demands for spaces that seamlessly blend functionality, sustainability, and human-centric design have become paramount. This chapter delves into the transformative journey of Cowork Interiors in Oviedo, Spain, exploring how adaptive reuse and a biophilic approach have redefined its architectural narrative and socio-cultural significance.

The concept of **adaptive reuse** breathes new life into existing structures, transcending their original purposes to meet the evolving needs of society. Cowork Interiors epitomizes this ethos by repurposing an abandoned warehouse/car workshop in the heart of Oviedo.
By reimagining this space, the project not only revitalizes a neglected urban asset but also fosters a vibranat ecosystem of collaborative work and social engagement.

Fig.17, Open office area of F5 Projects, illustrates key biophilic design principles, including the use of plants, natural light, natural materialsand transition space (Silva, 2023)

A Biophilic Manifesto:

Rooted in the innate human connection with nature, **biophilic design** infuses spaces with elements of the natural world, promoting well-being, productivity, and creativity.
At Cowork Interiors, the integration of biophilic principles transcends mere aesthetics; it becomes a guiding philosophy shaping every aspect of the environment.

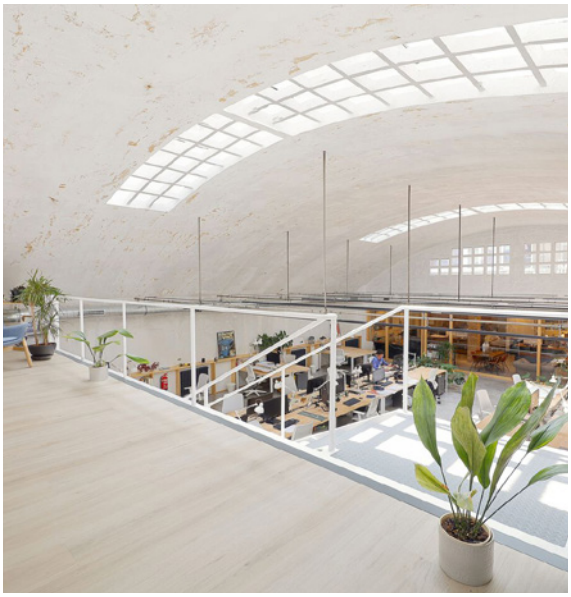


Fig.17, Library area of F5 Projects, illustrates key biophilic design principles, including the use of plants, natural light, natural materialsand transition space (Silva, 2023)

03| Biophilic Design: Principles and Applications

- Adaptive Reuse and Biophilic Design: A Case Study of Cowork Interiors, Oviedo, Spain

Design Philosophy and Spatial Configuration:

The spatial layout of Cowork Interiors reflects a nuanced understanding of human behavior and interaction. Divided into three distinct zones, each section serves a unique purpose while fostering connectivity and synergy among users. The street-facing area welcomes visitors with versatile rooms and meeting spaces, blurring the boundaries between the workspace and the community. The central core, anchored by essential services, embodies the concept of a communal hearth a space for serendipitous encounters and shared experiences. Finally, the vaulted expanse of the former workshop embraces natural light and time, offering a sanctuary for contemplation, collaboration, and celebration.

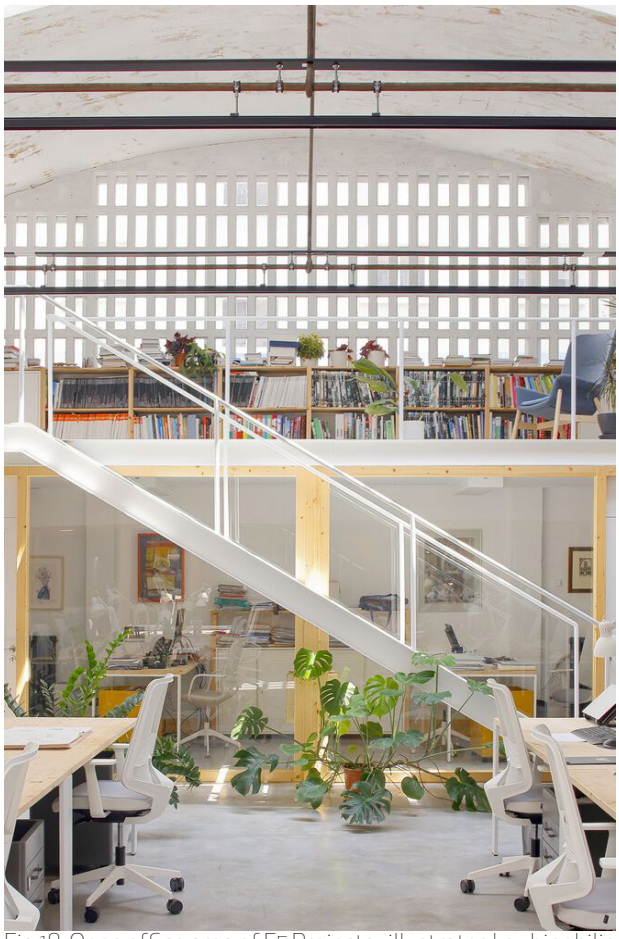


Fig.18, Open office area of F5 Projects, illustrates key biophilic design principles, (Silva, 2023)

Materiality and Sensory Experience:

The material palette of Cowork Interiors embodies a tactile narrative that pays homage to its industrial heritage while cultivating warmth and intimacy. Concrete flooring preserves traces of the workshop's past, grounding the space in history. Rich fir wood accents infuse the interiors with a tactile warmth, inviting occupants to engage with their surroundings. Glass partitions foster transparency and visual connectivity, promoting a sense of openness and cohesion. However, it is the strategic integration of light and verdant foliage that elevates the sensory experience, imbuing the space with vitality and tranquility. Natural plants not only serve as biophilic elements but also as sources of energy, revitalizing the atmosphere and stimulating creativity

Fig.19, Multipurpose space of F5 Projects, illustrates key biophilic design principles, Inclusing natural materials and transition space (Silva, 2023) Fig.19, Open office area of F5 Projects,

03| Biophilic Design: Principles and Applications

- Adaptive Reuse and Biophilic Design: A Case Study of Cowork Interiors, Oviedo, Spain

The Power of Illusion:

Beyond its architectural prowess and sustainable ethos, Cowork Interiors embodies a spirit of optimism and possibility. The project's greatest achievement lies in its ability to inspire and galvanize economic and human activity. It transforms the mundane into the extraordinary, harnessing the power of illusion to fuel innovation and collaboration.

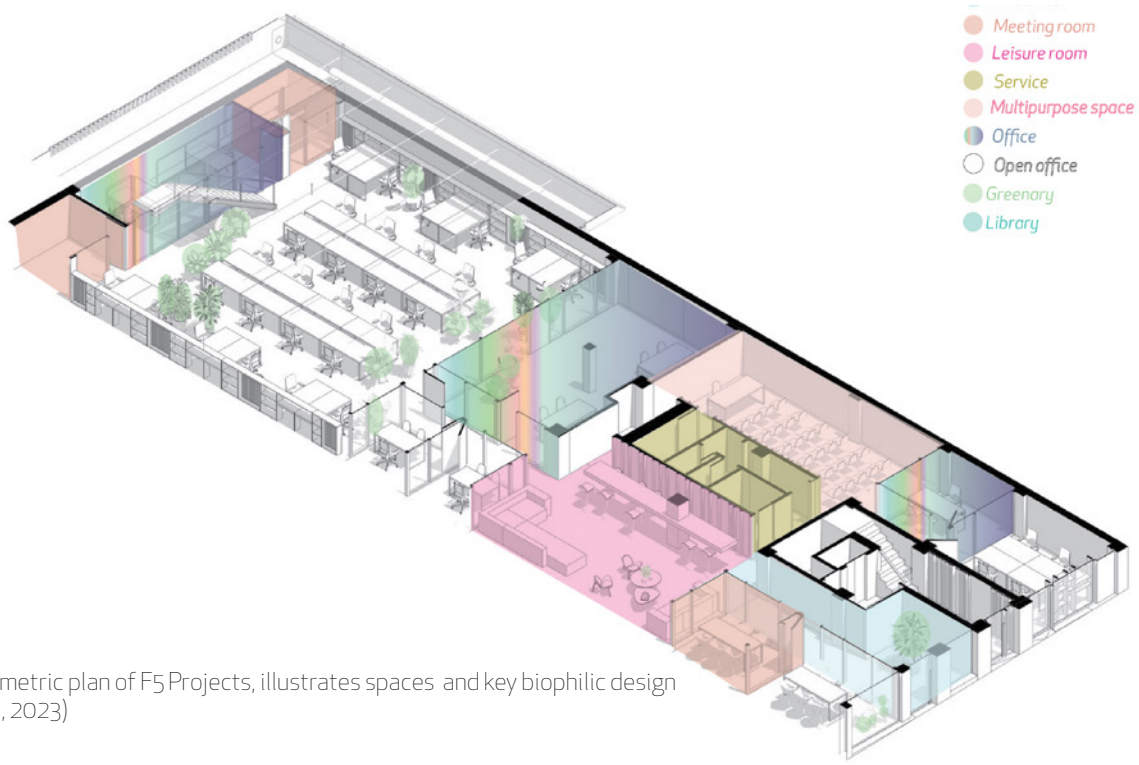


Fig.21, 3D axonometric plan of F5 Projects, illustrates spaces and key biophilic design principles,(Silva, 2023)

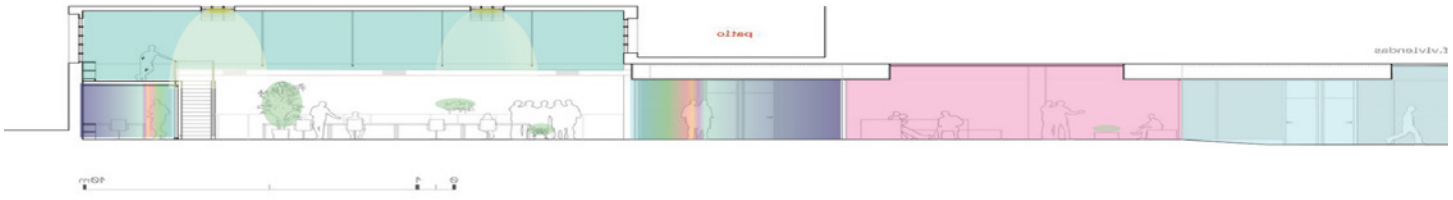


Fig.22, Section of F5 Projects, illustrates spaces and key biophilic design principles,(Silva, 2023)

03| Biophilic Design: Principles and Applications

Biophilic design case studies highlighting successfull implementations

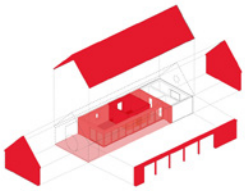
- Cowork Interiorskigali, Rwanda

Year : 2022

Gross floor area : 5090 m²

Architects: David Saladik, Kelly Alvarez Doran, Anton Larsen

Location : Kigali, Rwanda



Adaptive reuse

Biophilic design

(Fig.23) Norrsken Kigali House ,(Silva, 2023a)

03| Biophilic Design: Principles and Applications

- Adaptive Reuse and Biophilic Design: A Case Study of Cowork Interiorskigali, Rwanda

The new Kigali hub is housed on the historic École Belge site in central Kigali. The École Belge de Kigali, established in 1965, is one of the oldest international school facilities in Rwanda. With the historic classrooms and former school playgrounds at risk of being demolished for high-rise commercial use, MASS aimed to preserve the historic structure of the École Belge and illustrate how adaptive reuse could work within the neighborhood to create moments of green and public spaces.
The Norrsken Kigali House is a model of green building development and will be EDGE Advanced certified, meaning its buildings will have 40 percent or more on-site energy savings. For temperature control and ventilation, the design optimizes clay-shaded facades and natural ventilation, and incorporates a thermal labyrinth, a pioneering sustainable cooling system, to reduce energy demands. At night, the walls cool as air temperatures fall, so the cooler air is circulated through high-intensity areas—an auditorium, coworking spaces, and a lobby—as they warm during the day. Sensors that record temperature and carbon dioxide regulate the fan
Combining these conservation measures, the campus design achieves a 32 percent embodied carbon reduction compared to the global average for similar office buildings.
The site offers a curated ecosystem that elevates the status and visibility of entrepreneurs while offering the tools and networks to help startups grow efficiently and become investment-ready.

(Fig.24), **Former school the École Belge de Kigali**, (La Rentrée Des Classes À L'Ecole Belge, n.d.)

(Fig.25), **Prospect & refuge** as a biophilic attribute used in building , (Silva, 2023a)

(Fig.26) **TRANSITIONAL SPACES** as a biophilic attribute used in building , (Silva, 2023a)

Biophilic Manifesto:

In the heart of Kigali, Rwanda, the Norrsken Kigali House project emerges as a testament to the transformative potential of biophilic design. Rooted in the innate human connection to nature, this manifesto heralds a new era of sustainable architecture, where the integration of natural elements within the built environment becomes

03| Biophilic Design: Principles and Applications

- Adaptive Reuse and Biophilic Design: A Case Study of Cowork Interiorskigali, Rwanda

paramount. At its core, biophilic design seeks to rekindle the bond between humanity and the natural world, weaving elements of greenery, light, and water into the fabric of urban landscapes. In the context of Norrsken Kigali House, this ethos manifests in the creation of verdant sanctuaries amidst bustling city streets, where entrepreneurs can find solace and inspiration amidst lush foliage and open skies. More than mere aesthetic embellishments, these green spaces serve as catalysts for holistic well-being, fostering a sense of calm and connectedness that transcends the confines of concrete jungles. By embracing biophilic principles, Norrsken Kigali House not only enhances the quality of life for its occupants but also redefines the very essence of sustainable urban living.

Design Philosophy and Spatial Configuration:

Central to the ethos of Norrsken Kigali House is a design philosophy rooted in adaptability, inclusivity, and innovation. Drawing inspiration from the historic École Belge site, the project reimagines existing structures as vibrant hubs of creativity and collaboration, breathing new life into aged edifices while preserving their cultural heritage.
Through meticulous spatial configuration, the project seamlessly integrates diverse workspaces tailored to the needs of budding entrepreneurs. From expansive collaborative areas to intimate individual workstations, each space is thoughtfully crafted to nurture productivity and foster community engagement. Moreover, the design ethos transcends the confines of traditional office environments, extending into landscaped outdoor areas

(Fig.27) ,**Weather** as a biophilic attribute used in building, (Silva, 2023a)

03| Biophilic Design: Principles and Applications

- Adaptive Reuse and Biophilic Design: A Case Study of Cowork Interiorskigali, Rwanda

that blur the boundaries between interior and exterior realms. By embracing a fluid spatial narrative, Norrsken Kigali House creates a dynamic ecosystem where ideas can flourish and connections can thrive.

Materiality and Sensory Experience:

In the pursuit of sustainability, materiality emerges as a guiding principle, shaping the sensory experience of the built environment. At Norrsken Kigali House, every element – from reclaimed wood to salvaged steel – tells a story of resilience and renewal, embodying the ethos of adaptive reuse.
Through the careful selection of materials, the project not only reduces its ecological footprint but also imbues spaces with a sense of history and authenticity. As occupants navigate through tactile surfaces and natural textures, they are enveloped in a sensorial tapestry that evokes a deeper connection to place and purpose.
Furthermore, the incorporation of biophilic elements – such as living walls and daylight harvesting – heightens the sensory experience, awakening the senses to the rhythms of nature. From the gentle rustle of leaves to the warm embrace of sunlight, Norrsken Kigali House becomes a symphony of sensations that transcends the ordinary and inspires the extraordinary.

The Power of Illusion:

In the transformative journey of adaptive reuse, the power of illusion emerges as a potent force, reshaping perceptions and redefining possibilities. By repurposing the historic École Belge site, Norrsken Kigali House challenges conventional notions of progress, demonstrating that innovation can coexist with tradition.
Through the artful manipulation of space and light, the project creates moments of enchantment that transcend the confines of physical reality. From soaring atriums to intimate alcoves, every corner invites exploration and discovery, blurring the boundaries between past and present, nature and artifice.Moreover, the integration of sustainable technologies – such as thermal labyrinths and solar photovoltaic systems – further enhances the illusion of harmony between human and environment. As occupants navigate through these living laboratories of innovation, they are confronted with the profound realization that sustainability is not merely a concept to be preached but a reality to be lived.

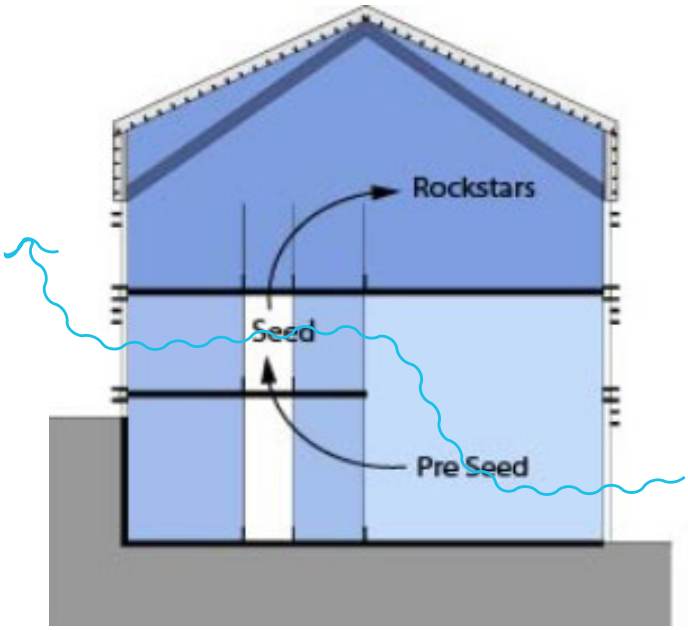
Green Approaches in Buildings:

The Norrsken Kigali House project, developed in collaboration with MASS Design Group, epitomizes a holistic approach to sustainable building practices through its integration of adaptive reuse and biophilic design principles. Embracing a circular economy mindset, the project repurposes existing materials onsite, including bricks and steel, to minimize embodied carbon and promote resource efficiency. Additionally, the adaptive reuse of historic classroom buildings into coworking spaces extends their lifespan by 50 years while preserving the cultural heritage of the site. The incorporation of biophilic elements such as clay-shaded facades, natural ventilation, and a thermal labyrinth fosters a connection to nature, enhancing the well-being of occupants and reducing energy demands. Furthermore, the installation of photovoltaic solar panels and water recycling systems reinforces the project's commitment to energy independence and water conservation. Through these sustainable practices, Norrsken Kigali House emerges as a model of green building development, creating a curated ecosystem that elevates entrepreneurship while minimizing its environmental footprint.

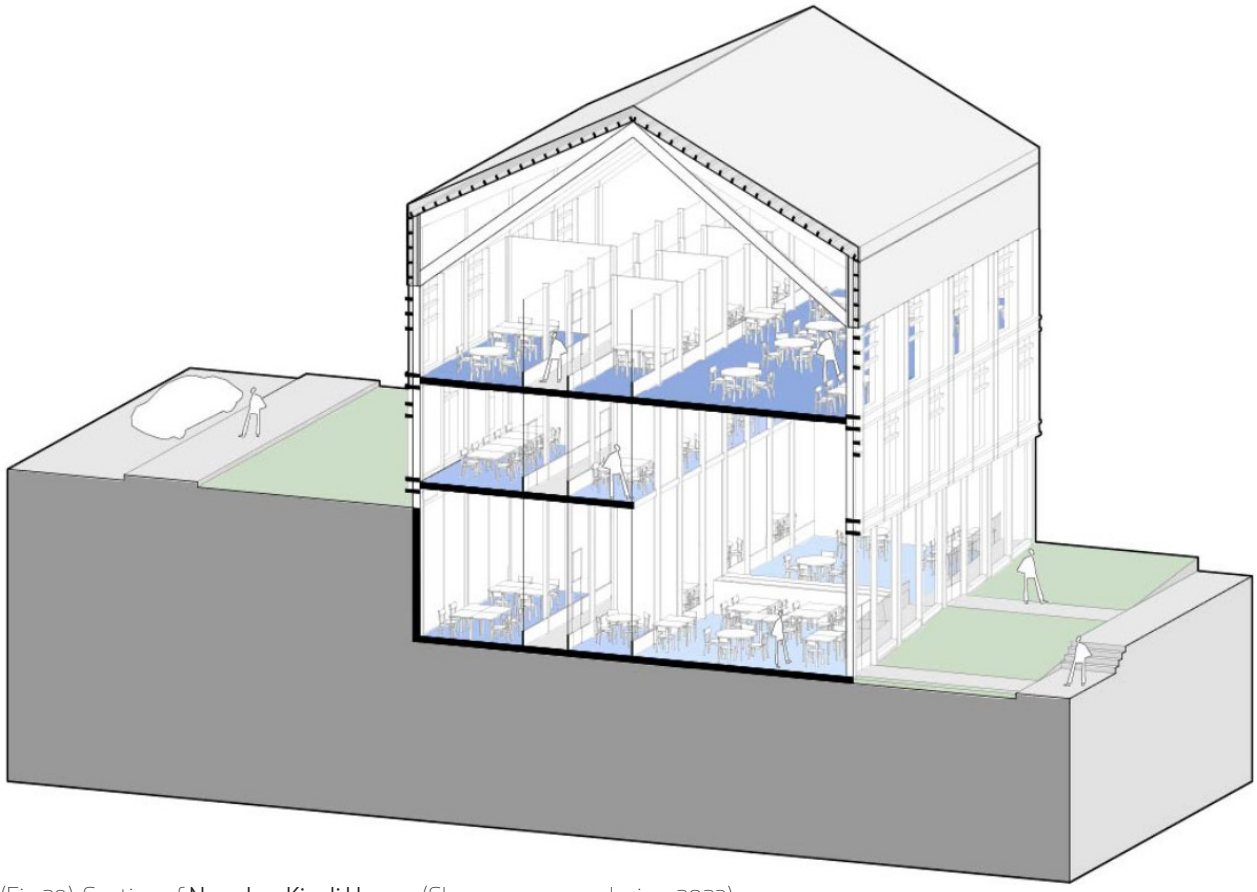
03| Biophilic Design: Principles and Applications

- Adaptive Reuse and Biophilic Design: A Case Study of Cowork Interiorskigali, Rwanda

In conclusion, Norrsken Kigali House stands as a testament to the transformative power of biophilic design and adaptive reuse in shaping the future of urban living. Through a synthesis of nature and innovation, tradition and progress, the project becomes more than a building; it emerges as a beacon of hope, illuminating a path towards a more sustainable and resilient world for generations to come.



(Fig.28) Air ,Natural ventilation, as a biophilic attribute used in building,(Share your green design, 2023)



(Fig.29), Section of Norrsken Kigali House , (Share your green design, 2023)

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04|History and development

Design for Cultural Heritage

The preservation and promotion of cultural heritage have evolved into multifaceted endeavors, encompassing a blend of design principles, anthropological insights, sociological perspectives, and heritage studies. This emergent approach, commonly referred to as "Design for Cultural Heritage," constitutes a holistic framework aimed at safeguarding, revitalizing, and interpreting cultural artifacts and traditions within their socio-cultural contexts (Bendix, 2000).

Understanding Cultural Heritage in Context

At its core, design for cultural heritage acknowledges cultural artifacts as dynamic entities intricately interwoven with socio-cultural contexts. It goes beyond superficial aesthetics to embrace the inherent values, meanings, and narratives embedded within these artifacts. This perspective underscores the need for holistic and context-sensitive design interventions that resonate with diverse communities. By adopting a culturally responsive approach, practitioners can create experiences that evoke a sense of pride and ownership in their heritage among local communities (Smith, 2006).

The Evolution of Design for Cultural Heritage

The evolution of design for cultural heritage finds its roots in seminal works such as Stuart Hall's "Encoding/Decoding" model, which highlights the role of cultural intermediaries in shaping the production, circulation, and reception of cultural meaning (Hall, 1972). This framework underscores the importance of participatory methodologies that empower communities as co-creators and custodians of their cultural heritage. Through collaborative processes of co-design, community members actively contribute to decision-making, ensuring that design interventions reflect their aspirations and needs.

Harnessing Digital Technologies for Heritage Preservation

The advent of digital technologies has revolutionized the preservation and dissemination of cultural heritage. From 3D scanning and virtual reality to augmented reality and interactive multimedia installations, these tools offer immersive and interactive experiences that transcend traditional boundaries. Digital design technologies enable designers to create engaging experiences that bridge the gap between past and present, fostering intergenerational dialogue and cultural exchange (UNESCO, 2011). Digital innovations also facilitate the documentation and preservation of cultural artifacts, mitigating the risks of loss or destruction. Through digitization efforts, heritage objects can be archived, accessed, and shared globally, democratizing access to cultural heritage.

Integrating Sustainability and Inclusivity

In addition to technological advancements, design for cultural heritage emphasizes sustainable and inclusive practices. Sustainable design approaches prioritize environmental stewardship and social equity, balancing the preservation of cultural heritage with the needs of present and future generations. Adaptive reuse, heritage-sensitive urban planning, and community-based tourism initiatives exemplify strategies that harmonize heritage conservation with sustainable development goals. Furthermore, inclusive design practices ensure that cultural heritage remains accessible to all, regardless of age, ability, or background. By designing for inclusivity, practitioners create environments and experiences that accommodate diverse needs and perspectives, fostering a sense of belonging and cultural exchange.

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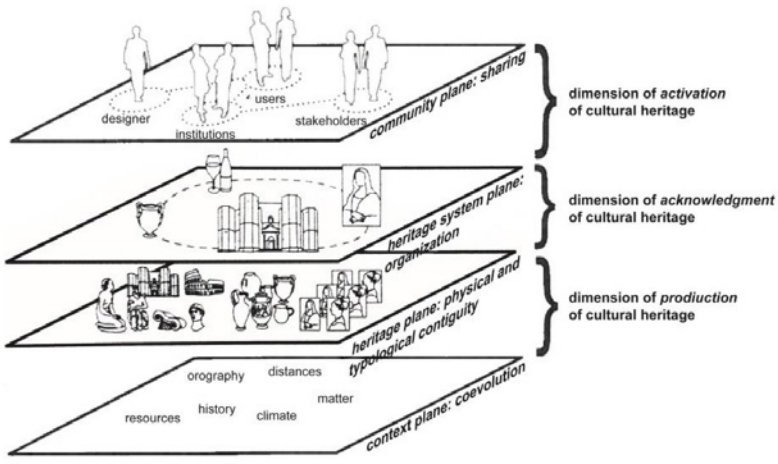
Methodological Approaches

The methodological approach to designing for cultural heritage is rooted in a comprehensive vision that encompasses both the design "of" and "in" the territory (Parente, Sedini, 2018). This approach draws upon the diverse cultures of design to explore, understand, and elevate the unique experiences inherent in the territory, its locales, communities, and local values. By embracing this perspective, mapping processes (Reina, 2014) can be employed to unveil the nuances and distinctions in manufacturing, creative practices, and expertise across different locales characterized by their sense of place. This exploration seeks to grasp how the intrinsic identity of each territory is shaped by its community and raw materials, necessitating bespoke design processes tailored to enhance its inherent resources. As Vicenzo Cristallo articulates, "planning for the territory means recognizing and preserving the identity of a 'local culture'" (Cristallo, 2018, p. 34). Consequently, identity becomes the cornerstone of any territorial planning endeavor.

Indeed, the resources of a place, often referred to as "territorial repositories" (Cristallo, 2018), define the authenticity of the local territory. It is through the interplay of social, economic, environmental, cultural, and human factors, coupled with its distinctiveness, that a territory asserts its authenticity. To ensure the competitiveness and sustainability of local development, it is imperative to approach innovation collaboratively, leveraging models that rediscover a territory's raw materials, expertise, and traditions, while integrating them with new knowledge tools and community perspectives.

In the contemporary landscape, various models of interaction are emerging to facilitate a shared planning process for territorial and socio-economic development. The "collaborative economy" model stands out, wherein participatory planning engenders entrepreneurial initiatives that redefine traditional business paradigms, fostering exchanges among stakeholders and transforming consumption or service experiences (Cristallo, 2018, p. 37). Within this interplay between design cultures and the territory, there exists a nuanced interpretation that is multiscale, multilayered, and multiversal (Lupo, 2009). Grounded in the specificities and requirements of the territory, this approach guides design endeavors through the most appropriate methodology for the project's relationship with the context to be activated. This dynamic interaction underscores the necessity of considering not only the design of the territory itself but also the design processes within it, ensuring a holistic and contextually relevant approach to cultural heritage preservation and development.

In conclusion, Design for Cultural Heritage represents a dynamic and interdisciplinary field that seeks to safeguard and celebrate the richness of human cultural expression. By integrating design methodologies with anthropological insights, sociological perspectives, and technological innovations, practitioners in this field strive to create inclusive, sustainable, and meaningful experiences that resonate with diverse audiences and contribute to the preservation of our shared cultural heritage.

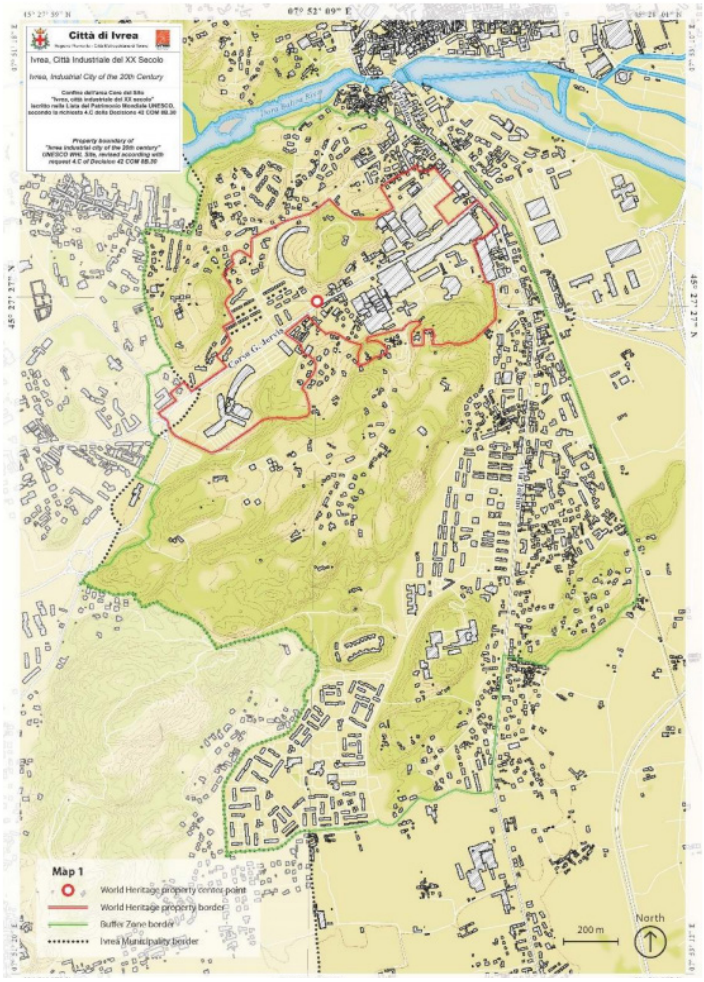


(Fig.30), Relational model of cultural heritage (redesign from Lupo, 2009, p. 131)

04|History and development

From Historical Legacy to Modern Challenges

Ivrea is the main historical centre of the Canavese area.
The State Party details the long history of the city of Ivrea, from its Roman beginnings in the 1st century AD, the seat of bishops in 900 AD, a duchy of the Savoy dynasty from the 13th century, and an important military city until the 19th century. However, it is the 20th century history that is of interest to this nomination.
Ivrea is located on transport routes to Turin, and the
industrialisation of the city can be traced from the
beginning of the 19th century, with the introduction of
hydroelectricity. By the beginning of the 20th century, there were many small companies in Ivrea involved in mining,building, textiles, food and metal-working. The Olivetti company was established here from 1908, and at its height occupied 70% of the entire municipal area of Ivrea.
The town of Ivrea is located in the Piedmont Region, not far from Turin. The city is made of two separate parts, divided by the River Dora Baltea. The old city is located on the left bank, and features its Roman theatre, Baroque cathedral and a castle. On the right bank, the industrial city was developed as the testing ground for Olivetti, manufacturer of typewriters, mechanical calculators and desktop computers The industrial city of Ivrea is manufacturer of typewriters, mechanical calculators and office computers. It comprises a large factory and buildings designed to serve the administration and social services, as well as residential units. Designed by leading Italian urban planners and architects, mostly between the 1930s and the 1960s, this architectural ensemble reflects the ideas of the Community Movement (Movimento Comunità). A model social project, Ivrea expresses a modern vision of the relationship between industrial production and



(Fig.31), Map showing the revised boundaries of the Ivrea property, (UNESCO 2021)

architecture.The proposed boundary modification concerns a roughly rectangular site facing the 'Red Brick building' which accommodates the recent housing project. From the early decades of the 20th century, Olivetti rose to prominence in the manufacture of office machines and became one of the biggest vendors of personal computers in Europe. At its peak in 1958, shortly before the death of Adriano Olivetti, the number of people employed by the company in Ivrea alone was approximately 26,000. However, from the 1980s, the
company experienced difficulties due to changes in communications technologies. It became Olivetti Telecom in 1997, the first movement of a succession of events. The company progressively abandoned its large premises in Ivrea, and the former industrial park, production sites and offices were divided and

04| History and development

acquired by several private owners; although the houses continued to be inhabited. The National Corporate Film Archive, Museum of Technology, various government offices, and part of the University of Turin are now housed in the property. The Municipality has used public-private partnerships toidentify new uses for a number of key buildings. The nominated property is considered by the State Party to be of Outstanding Universal Value as a cultural property for the following reasons:

• Ivrea is recognised internationally as a response of extraordinary quality to the rapid evolution of industrialisation processes in the 20th century;
• The industrial city expresses the building of modern society and international theoretical debates in the years from 1930 to the early 1960s;
• The urban form, landscape and buildings of Ivrea were developed and designed by Italy's principal town planners, architects and factory experts of the early 20th century;
• The buildings and architectural complexes provide for production, social services, and housing, based on emerging modern philosophies and the industrial and building programmes of Olivetti;
• Ivrea is inextricably associated with Olivetti's book l'Ordine politico delle comunità (The political order of the communities), which was followed by the foundation of the Movimento Comunità (Community Movement) concerned with community organisation in the post-war period;
• Ivrea has symbolic value as a social and industrial experiment.

Moreover, the property is not simply a company town, or an ensemble that can be characterised by simply describing its buildings. It demonstrates the materialisation of collective social needs and politics (including trade unions), and town planning policies. there are many recent interventions to the architectural attributes, and intrusions from new developments within the boundary and buffer zone. While many of residential, administrative and services buildings are intact, other have been renovated, and a large number of the buildings are currently vacant. The future of many buildings is uncertain. The underused or vacant buildings could constitute also a threat to the property if no strategy of rehabilitation is put in place. There are many issues associated with the adaptation of the buildings to modern regulations for safety, energy consumption, surfaces, window/floor surface ratio, etc. that could have an impact on the architectural and decorative characteristics of the attributes. Although the number of tourists visiting Ivrea increased in 2000-2014, current tourism pressure is low. There are limited initiatives and infrastructure for tourism. with the high degree of unused buildings, these issues necessarily raise questions about the adaptive reuse of vacant buildings within the nominated property. Many restorations and adaptations have already occurred, and several are in progress.
ICOMOS has strong concerns on the uncertainty about the future conservation, adaptive reuse and sustainable use of this property. (COMUNE DI IVREA, 2018).

04|History and development

Olivetti's Journey: Foundation to Urban Vision

From the Foundation of the Company to the First Products

Camillo Olivetti, born into an affluent Jewish family in Ivrea on August 13, 1868, embarked on a journey that would significantly impact the landscape of Italian industry. His academic pursuits led him to the Politecnico di Torino, where he studied under the tutelage of Galileo Ferraris and graduated in electrical engineering in 1891 (Labò, 1957).
Olivetti's educational journey extended beyond Italy, as he spent time in London and the United States, where he immersed himself in both language refinement and industrial experiences. It was during this period, particularly in Chicago, that Olivetti gained invaluable insights into the dynamics of American industrial and economic prowess.

Upon his return to Italy, Olivetti initially engaged in sales, serving as a representative for various American products, including Williams typewriters. Recognizing the potential of typewriters, a relatively nascent tool in the Italian market, Olivetti's entrepreneurial spirit led him to establish the Ing. C. Olivetti & C. company in 1908, marking the inception of Italian typewriter manufacturing. This venture was preceded by Olivetti's establishment of the C.G.S. (Centimetro Grammo Secondo) in 1896, a small factory in Ivrea focused on precision electrical measurement instruments (Fig.32), (Shapira, 1983).

Fig.32: Original building in red bricks built in 1895 by Camillo Olivetti for C.G.S. and later headquarters of 'Ing. C. Olivetti & C. First national typewriter factory'. (Source: AASO)

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However, Olivetti's vision extended beyond mere replication of existing American models. He sought to innovate, designing a new typewriter from scratch, alongside his close collaborator Domenico Burzio, and a team of individuals meticulously chosen and trained by Olivetti himself. This dedication to originality and excellence culminated in the unveiling of Italy's first typewriter, the M1, at the Turin International Exhibition in 1911 (Musatti et al., 1958).

The M1 represented a departure from conventional typewriter aesthetics, featuring a sleek and elegant design, a vertical orientation, and meticulous attention to detail in its construction. Despite initial skepticism surrounding the quality of Italian-made products compared to their American counterparts, the M1 proved to be reliable and efficient, gradually gaining traction in the market.(Fig.33)

Olivetti's strategic approach to marketing, characterized by direct commercialization and a commitment to quality, played a pivotal role in the success of the M1. The establishment of branch offices across Italy, coupled with innovative advertising campaigns featuring prominent figures such as Dante Alighieri, underscored Olivetti's emphasis on Italian identity and product excellence.

The period between 1911 and 1914 marked significant economic challenges for Italy, yet Olivetti persevered, expanding production and distribution capabilities in anticipation of future growth. However, the outbreak of World War I in 1915 necessitated a temporary shift in production towards wartime efforts, albeit without diminishing Olivetti's commitment to innovation and excellence.

In 1918, Olivetti initiated the first expansion of production facilities along via Castellamonte, laying the foundation for future growth. This expansion was accompanied by a continuous refinement of manufacturing processes and organizational structures, setting the stage for Adriano Olivetti's transformative leadership within the company.

Despite facing stiff competition and economic uncertainties, Olivetti's unwavering commitment to innovation, quality, and Italian identity laid the groundwork for the company's enduring legacy in the global typewriter industry.

Fig.33: Olivetti typewriter or M1, designed by the founder Camillo Olivetti with collaborator Domenico Burzio. (Source: AASO)

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In addition to technological innovation, the history of Olivetti's images from the 1920s to the 1970s tells the social theme of women's emancipation and the increasingly important presence of women in the workforce. The relevance of Olivetti's communication and attention to this theme is described in two posters created by Marcello Dudovich for the M20, depicting the work of typists. Through a synthetic representation of the female world, similar to other advertising posters by the same author for La Rinascente, the typewriter is portrayed as an object belonging to their daily lives, introducing the relationship between technology and beauty. The message of the machine's efficiency is conveyed through the happy expressions of the women using it, depicted against a uniform background color, red for the 1926 poster, and green for the 1928 one, (Fig.34) ,(Boltri, Maggia, Papa, Vidari, 1998).

In the early twentieth century, thanks in part to the introduction of typewriters, the job of a typist was one of the few opportunities for economic emancipation for Italian women. In 1923, a Royal decree included typewriting as a subject in technical institutes, and by 1931, it was also extended to commercial institutes.

TOWARDS A NEW FACTORY 1932-1949

The period between 1932 and 1949 marks a significant phase of transformation for Olivetti and its industrial complex in Ivrea. Founded in the late 19th century by Camillo Olivetti, the company underwent a profound evolution under the leadership of his son, Adriano Olivetti, who assumed control in 1932. Adriano Olivetti's tenure at the helm of the company was characterized by a visionary approach to industrial organization and architecture, guided by principles of ethics, culture, and humanistic values.

During this era, Olivetti experienced substantial growth and diversification, introducing new products and expanding its market presence both domestically and internationally. This expansion necessitated the modernization and enlargement of its production facilities. The original building, constructed in 1895, reflected the architectural style typical of late 19th-century proto-industrial structures,

(Fig.34): Advertising poster 'La Rapidissima' from 1923 by Manlio Pirovano, and the two advertising posters designed by Marcello Dudovich from 1926 and 1928, all for the M20. (Source: AASO, Associazione Archivio Storico Olivetti)

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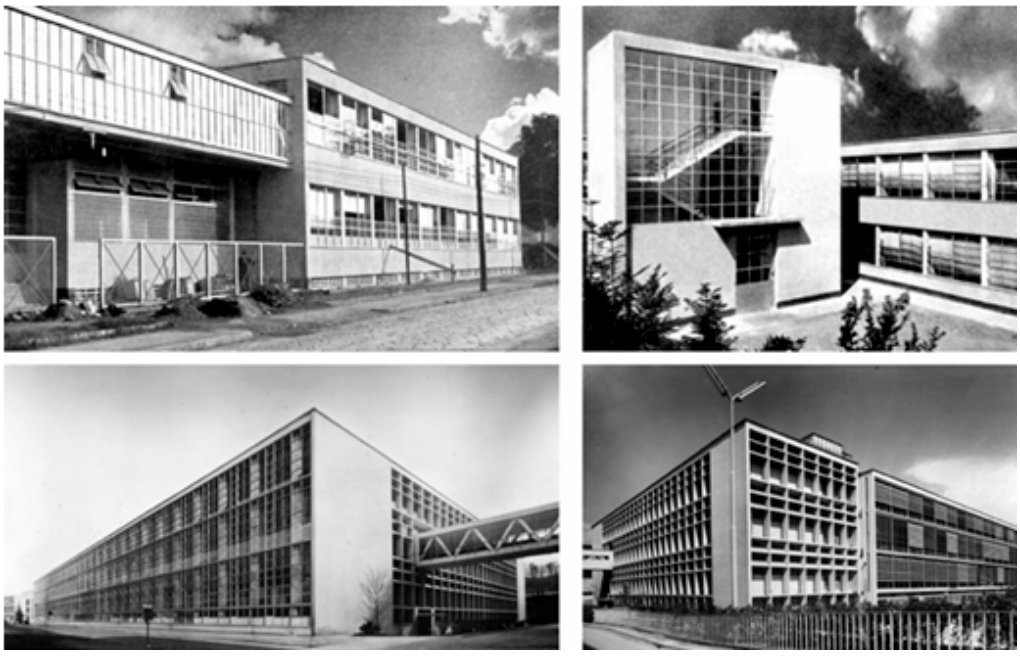
with its red brick façade and modest design (Olivetti, 2014).
However, under Adriano Olivetti's leadership, a new paradigm emerged, emphasizing the integration of architectural aesthetics with functional efficiency and human-centered design. Collaborating with architects, urban planners, sociologists, and other professionals, Olivetti sought to create industrial environments that fostered both productivity and employee well-being (Segre, 2013).

The first expansion of the Ivrea complex, undertaken in 1934, exemplified this approach. Designed by architects Luigi Figini and Gino Pollini, the new facility embraced principles of modern industrial architecture, offering workers spaces designed to human scale and in harmony with nature. Constructed using reinforced concrete and characterized by a predominantly white color scheme, the building represented a departure from traditional industrial design toward a more rational and efficient form (Conte, 2016).

Subsequent expansions, executed by the same architects starting from 1939, further emphasized the importance of light and transparency in the workplace environment. Through the use of extensive glass facades and the incorporation of the pan de verre motif, these additions aimed to create a sense of openness and connection to the surrounding landscape, reflecting Adriano Olivetti's vision of the factory as a space of dignity and inspiration (Segre, 2013). The pure white volumes of the second (1939) and third expansion (1947-49), characterized by large and long glass facades although formally and structurally different, embrace technological development and modernity as a vehicle for Adriano's ideological message: the dream of the transparent factory open to the outside, reflecting the surrounding landscape, eliminating the distance between man and nature, a tool of redemption rather than a device of suffering. It is the same entrepreneur who pushes the designers to adopt, in the second expansion, the large continuous glass window following the example of the Bauhaus, despite the uncertainties caused by the dimensions never before experimented in Italy and the technical and isolation problems connected to it.
In parallel with the development of its production facilities, Olivetti also embarked on initiatives to improve the living conditions of



(Fig. 35), In order from top left: the first extension of 1934 and the back of the first extension with the building connecting to the second; the glass front of the third extension of 1939 and the back characterized by the brise soleil by A.Fiocchi, which highlight the two phases of construction of the extension. (Conte, 2018)

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its employees. The construction of a new residential neighborhood in Ivrea, conceived as a model of modern urban planning, underscored the company's commitment to holistic urban development and social welfare (Conte, 2016).

In conclusion, the period from 1932 to 1949 witnessed a profound reimagining of Olivetti's corporate ethos and physical infrastructure, guided by Adriano Olivetti's visionary leadership. Through innovative architectural and organizational practices, Olivetti transformed its factories into spaces that not only facilitated industrial production but also promoted human flourishing and community well-being.

SOCIAL COMMITMENT ARCHITECTURE AND URBAN PLANNING

Since its inception, corporate philosophy has been closely tied to innovation and technological progress, permeating every field of design (Curino & Vacis, 1998). This commitment to advancement is evident even in the realm of social services, where a forward-thinking approach to the needs of the working community is apparent, often prefiguring future societal requirements. The company acknowledges the correlation between the well-being of its workers and their families and the enhancement of corporate productivity, thereby instituting a comprehensive social assistance system (Musatti et al., 1958).

As early as one year after the establishment of the company Ing. C. Olivetti & C. in 1908, Camillo Olivetti initiated a series of measures to protect his workers (Curino & Vacis, 1998). Among these initiatives was the establishment of a mutual fund to provide healthcare and financial support for factory workers in cases of injury or illness, such as tuberculosis. Additionally, starting from 1919, well before legislative mandates, family allowances were provided to all employees, nearly 250 at the time, for each dependent child. These initiatives aimed to provide tangible assistance to employees facing exceptional circumstances beyond their regular income (Curino & Vacis, 1998; Musatti et al., 1958).
The company further extended its commitment by constructing housing for its employees to address the housing shortage, a result of both increased workforce and outdated existing buildings (Curino & Vacis, 1998). In 1926, six two-story single-family homes were built in a neighborhood adjacent to the factories, known as Borgo Olivetti. These traditional cottage-style houses featured individual garden plots, supplementing the families' sustenance while maintaining ties to the surrounding area (Fig.36), (Curino & Vacis, 1998; Musatti et al., 1958).

The transition in leadership in 1932 marked the onset of an organized and systematic approach to social service planning within the company (Musatti et al., 1958). For Adriano Olivetti, the company held a moral obligation to the community it inhabited, serving as a catalyst for economic and social progress. This ethos laid the groundwork for proactive social safety nets, employee welfare programs, and support for working women (Musatti et al., 1958).

(Fig.36). House from 1926 near Borgo Olivetti

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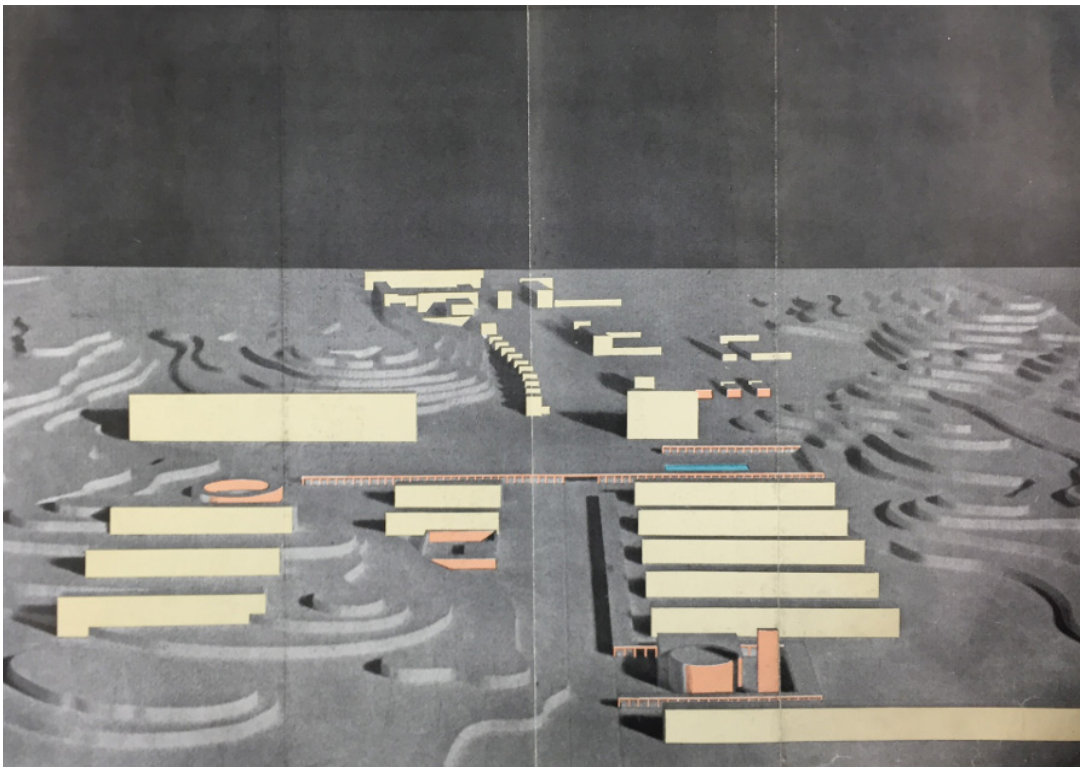
The foundations for this development were laid in 1934, when the first real urban experience of the company began with the drafting of a plan for a new neighborhood in Ivrea. The project was not intended to be an organizational basis solely for the city, but as Adriano expressed: "...this master plan was not conceived as an isolated event but is included in a broader master plan: the Regional Plan for the Aosta Valley, the comprehensive study of which is underway under the auspices of the National Entity for Scientific Organization of Labor," with the aim of "changing the conditions of life in a region and providing as much as possible in terms of health and human comfort, for the beauty and prestige of the new Italy" (Olivetti, 1936). The implementation of the project was entrusted by Adriano himself to Figini and Pollini, the architects who were dealing with the first expansion for the old factory, and who, in line with the rationalist architecture of the time, proposed along the road axis in front of the industries, 'candid parallelepiped blocks' distributed 'geometrically between the undulating lines of the low hills and wooded hillocks' and spaced between them 'by measurements with harmonic ratios' (Figini, Pollini 1936). The neighborhood is characterized by social mixity, corresponding to different functional housing types for the class that was supposed to inhabit them; green areas, sports fields, collective buildings separate the residences from the factories. (Fig37)

Olivetti's commitment to social progress was manifested through architectural projects that aimed to enhance the quality of life for residents of Ivrea. By integrating housing, educational facilities, cultural centers, and recreational spaces into the urban fabric, Olivetti sought to create vibrant, inclusive communities that fostered a sense of belonging and collective identity.



(Fig37) Preliminary Studies and Proposals for the Regulatory Plan of Valle d'Aosta, 1937. Summary Table of the Regulatory Plan: A. Olivetti, General Direction; R. Zveteremich, I. Lauro, Introductory and General Part of the Plan, Detailed Plans - G.L. Banfi, L. B. di Belgiojoso, P. Bottoni, L. Figini, E. Peressutti, G. Pollini, E. N. Rogers. Plan for Ivrea (L. Figini, G. Pollini).

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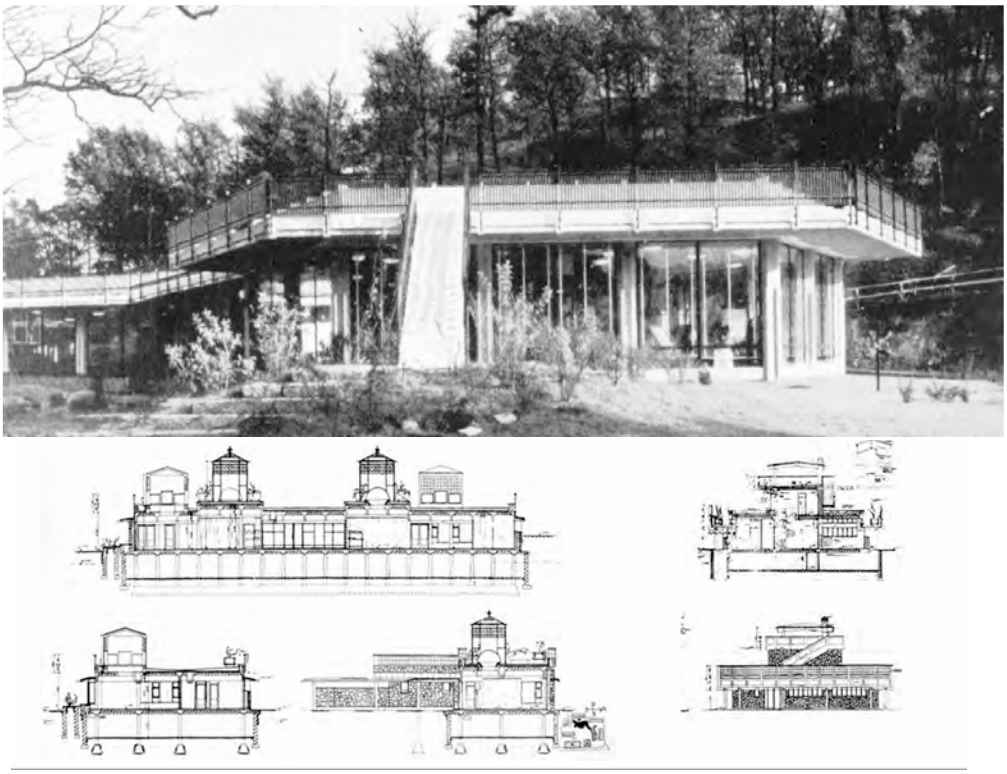
Key Projects:

Mensa Building: Serving as both a dining facility and a cultural hub, the Mensa Building exemplifies Olivetti's multifaceted approach to community development. Through its design, which encouraged social interaction and intellectual engagement, the Mensa Building played a central role in nurturing a sense of community among employees and residents.

Canton Vesco: As a residential development, Canton Vesco epitomizes Olivetti's vision of integrated urban living. By combining modern amenities with traditional architectural elements, such as housing, schools, and recreational facilities, Canton Vesco exemplifies a holistic approach to urban planning that prioritizes human-scale design and environmental sustainability.

Community Center in Palazzo Canavese: Designed to serve as a focal point for civic engagement and cultural exchange, the Community Center in Palazzo Canavese embodies principles of democratic participation and social cohesion. Through its innovative design and programming, the center facilitated grassroots initiatives and empowered local communities to shape their own destiny.

Asilo Nido Building: holds significant importance as a pioneering symbol of social innovation and corporate responsibility. Established by Adriano Olivetti, founder of Olivetti, the childcare facility exemplified a progressive approach to industrial management, offering support to workers and their families beyond traditional labor practices. By providing childcare services, Olivetti addressed the needs of working parents, likely enhancing employee well-being and fostering loyalty among its workforce. Moreover, the facility's impact extended beyond Olivetti, benefiting the broader community by providing essential childcare services and potentially contributing to local economic development. Architecturally, the building may have also served as a showcase of modernist design principles, further cementing its legacy as a landmark of innovation and social responsibility. (Bonfante et al., 2009b)



(Fig.38)Mario Ridolfi and Wolfgang Frankl, Neighborhood kindergarten Canton Vesco,1955:,Mensa and Olivetti leisure centre,1955-59: localization compared to the complex Olivetti on via Jervis . (Bonfante et al., 2009b)

(Fig.39) Houses for large families, Figini and Pollini, 1940, (Bonfante et al., 2009b)

(Fig.40), Asilo Nido Building, (Source: AASO)q

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UNESCO Revitalization in Ivrea: A Celebration of Cultural Heritage and Sustainable Development

The Olivetti Models in Ivrea stand as testament to a bygone era of industrial innovation and social progress, embodying the visionary ideals of Adriano Olivetti and the transformative impact of his company on the town's landscape. In this section, we explore the multifaceted significance of the Olivetti Models as cultural heritage buildings within the broader context of the UNESCO Revitalization in Ivrea initiative.

Architectural Excellence:

The architectural prowess of the Olivetti Models transcends mere structural design, encapsulating a harmonious synthesis of form, function, and aesthetic appeal. Crafted by esteemed architects and urban planners, these buildings represent quintessential examples of modernist architecture, characterized by clean lines, geometric precision, and functional layouts. Such architectural mastery has earned the Olivetti Models recognition as 20th-century masterpieces, perpetuating their legacy as beacons of innovative design and engineering prowess [Ratti & Mauri, 2019].

Historical Significance:

Beyond their architectural allure, the Olivetti Models serve as custodians of Ivrea's industrial heritage, bearing witness to the region's evolution amidst the tumultuous post-war era. Amidst rapid technological advancements and societal upheavals, these buildings emerged as crucibles of innovation, propelling economic growth and societal advancement. The narrative of Olivetti's ascendancy from a modest typewriter manufacturer to a global industry leader finds resonance within the walls of these structures, underscoring their indispensable role as repositories of industrial history and societal transformation [UNESCO, 2018].

Cultural Legacy:

Adriano Olivetti's visionary ethos extended beyond mere business acumen, encompassing a steadfast commitment to social responsibility and community development. The Olivetti Models, along with the meticulously planned urban infrastructure, epitomize this holistic approach to corporate citizenship. From employee welfare facilities to cultural institutions, these buildings embody Olivetti's ethos of fostering symbiotic relationships between industry, society, and culture, thereby leaving an indelible mark on the town's cultural landscape [Ratti & Mauri, 2019].

Symbol of Identity:

For the denizens of Ivrea and beyond, the Olivetti Models represent more than just architectural marvels; they serve as tangible symbols of local pride and identity. As erstwhile bastions of the region's economic prosperity and innovation, these buildings evoke a sense of nostalgia and collective memory, serving as poignant reminders of a bygone era characterized by industrial prowess and communal solidarity [UNESCO, 2018].

The UNESCO designation of Ivrea as a World Heritage Site in 2018 heralded a new chapter in the town's storied history, catalyzing comprehensive revitalization efforts aimed at safeguarding its cultural legacy while fostering sustainable development. Central to this endeavor is the preservation and adaptive reuse of iconic structures associated with Olivetti, such as the Olivetti Models and the Asilo Nido Adriano Olivetti nursery school. By revitalizing these historic edifices, Ivrea not only preserves tangible links to its industrial past but also cultivates vibrant spaces for cultural exchange and community engagement.

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Furthermore, the UNESCO Revitalization in Ivrea initiative encompasses strategic interventions to bolster the town's urban infrastructure and public services. Initiatives ranging from transportation enhancements to healthcare reorganizations are aimed at enhancing accessibility, livability, and overall quality of life for Ivrea residents, all while safeguarding its cultural and natural assets.

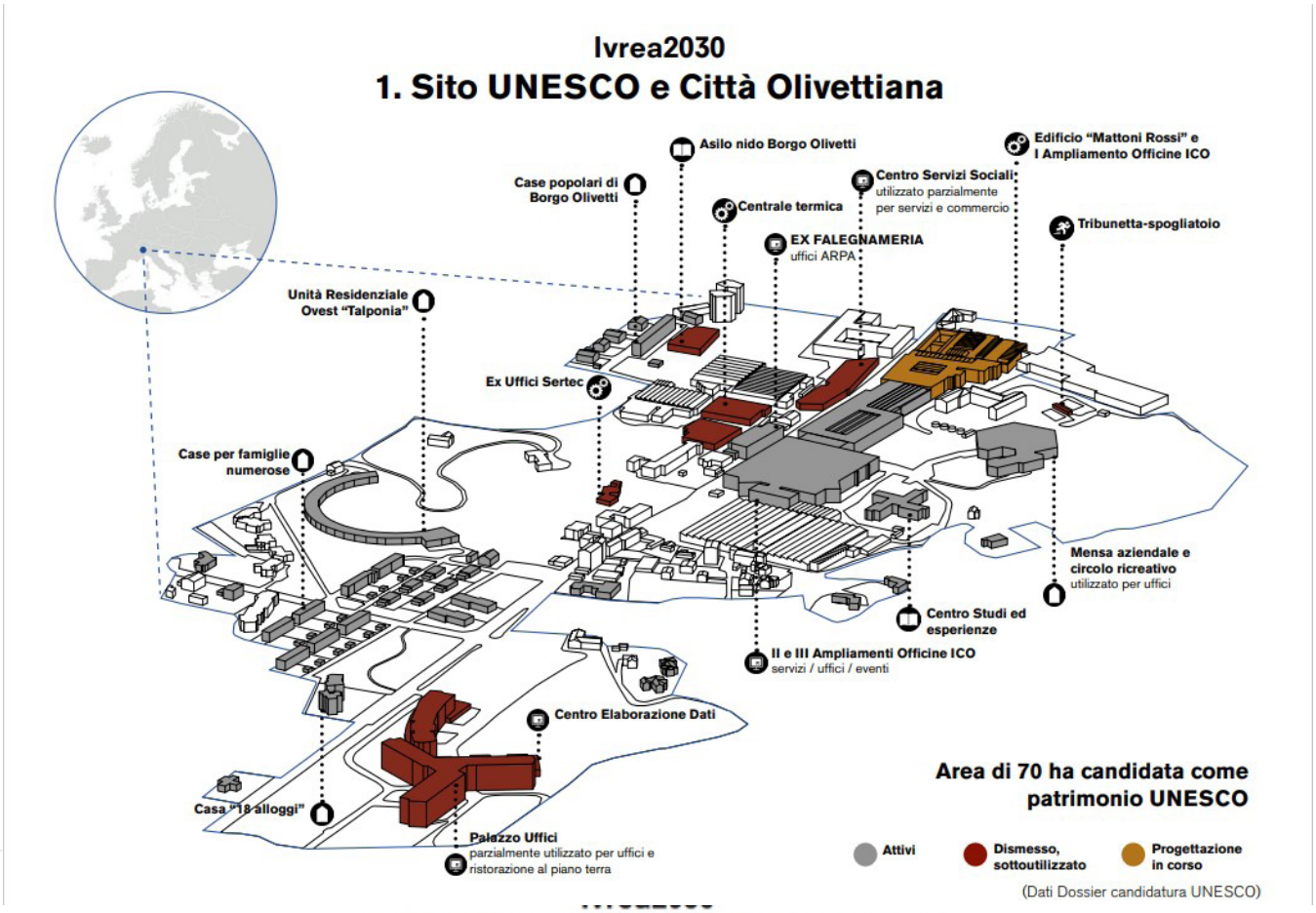
At the heart of the UNESCO Revitalization in Ivrea agenda lies a steadfast commitment to sustainable tourism and economic development. By leveraging its UNESCO World Heritage status, Ivrea seeks to allure visitors from far and wide, offering immersive experiences that celebrate its industrial legacy, architectural heritage, and cultural traditions. Simultaneously, the town fosters local entrepreneurship and innovation, nurturing a dynamic economy rooted in heritage preservation and sustainable practices.

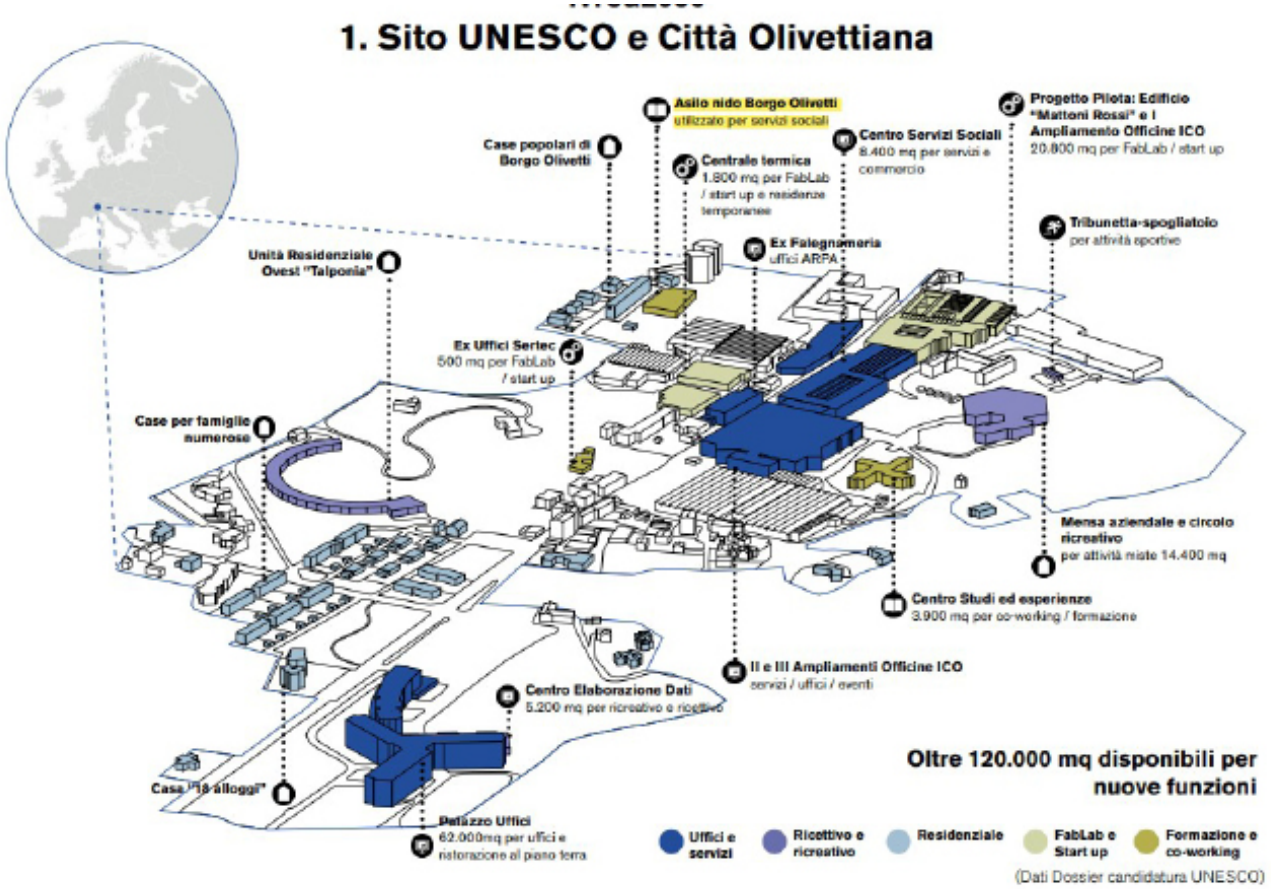
Moreover, the initiative prioritizes environmental conservation and resilience-building measures, aligning with UNESCO's mandate to safeguard cultural and natural heritage for posterity. Efforts to enhance green spaces, promote biodiversity, and mitigate climate change impacts underscore Ivrea's dedication to creating a resilient and sustainable community that thrives in harmony with its surroundings [UNESCO, 2018].

Strategic Objectives for Sustaining and Enhancing the Urban Balance of Ivrea

1.Ivrea in balance between the metropolitan city of Turin and the polycentrism of Canavese
2.ivrea in balance between accessibility to the territory and the role of city of services
3. Ivrea in balance between sports and cultural tourism linked to the river and the historic centre, and landscape tourism linked to the 5 lakes and the morainic amphitheater
4. Ivrea in balance between new forms of living and working, recovering the identity of the Olivetti-like city and reactivating empty and abandoned spaces
5.Ivrea in balance between the relaunch of the 20th century industrial city and the international role of research and technological innovation hub
6.Ivrea in balance between urbanized territory and agro-environment

In conclusion, the UNESCO Revitalization in Ivrea initiative represents a remarkable convergence of heritage preservation, sustainable development, and community empowerment. Through strategic interventions aimed at bolstering urban infrastructure, promoting sustainable tourism, and prioritizing environmental conservation, Ivrea is charting a course towards a more resilient and vibrant future. The recognition of the Olivetti Models as cultural heritage buildings underscores the town's commitment to honoring its industrial legacy and nurturing a sense of collective identity among its residents. As Ivrea continues to navigate the delicate balance between preserving its heritage and embracing innovation, it serves as a shining example of how cultural heritage can serve as a catalyst for positive change and inclusive growth.





(Fig.41), VISION DI IVREA 2030, (Città di Ivrea)

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05|Analyzing the "Asilo Nido Adriano" Building

History of building

The Adriano Olivetti nursery school, located in Ivrea, Italy, holds historical significance as a testament to the architectural and social vision of its namesake, Adriano Olivetti. Designed by architects Luigi Figini and Gino Pollini in 1939, with subsequent expansions overseen by architect Annibale Fiocchi in 1952, the nursery school exemplifies the innovative approach to social infrastructure championed by Olivetti.

Constructed adjacent to the Olivetti factories and railway for accessibility, the nursery school occupies a limited and irregularly shaped plot of land, preserving the original topography. The architectural design reflects a thoughtful integration of functional spaces, with separate areas designated for infants and toddlers, administrative offices, medical facilities, and recreational spaces. The building's layout, characterized by open courtyards and natural lighting, emphasizes a child-centered approach to education and care.

The construction of the nursery school employed local materials, including stone masonry and precast concrete beams, showcasing a commitment to regional craftsmanship and sustainable building practices. The use of large windows and shading structures ensures adequate ventilation and thermal comfort, while maintaining a connection to the surrounding landscape.

Over the years, the nursery school has undergone adaptations to meet evolving educational standards and safety regulations. While some original features have been modified or repurposed, efforts have been made to preserve the architectural integrity and historical significance of the building. Currently, the nursery school is undergoing evaluation for cultural heritage status by the local authorities and the Soprintendenza, in accordance with national preservation laws.

In addition to its architectural merits, the Adriano Olivetti nursery school serves as a tangible legacy of Adriano Olivetti's humanistic approach to industrial development, advocating for the well-being of workers and their families. Its enduring relevance lies in its embodiment of progressive educational principles and its role as a community hub for generations of Ivrea residents. (Boltri & Papa, 1998).

Nurturing Futures

The nursery school not only serves as a simple childcare service but aims to address the complex needs of motherhood and infancy while also looking towards the future.

A fundamental point is the continuity of care from pregnancy to the seventh month after childbirth, ensuring comprehensive support for mothers, including exemption from work and salary integration. This extended attention is crucial for ensuring the spiritual and physical balance of children, as the mother's presence without economic concerns is a determining factor. (Savi, 1990)

Furthermore, the nursery school cares for the health and well-being of both mothers and children, offering healthcare and material assistance from the early stages of pregnancy and carefully monitoring cases requiring special care. This commitment goes beyond legal and contractual requirements, addressing the issue of childcare comprehensively and rationally.
From the moment children are welcomed into the nursery school, a complex educational process begins, extending until the age of six.

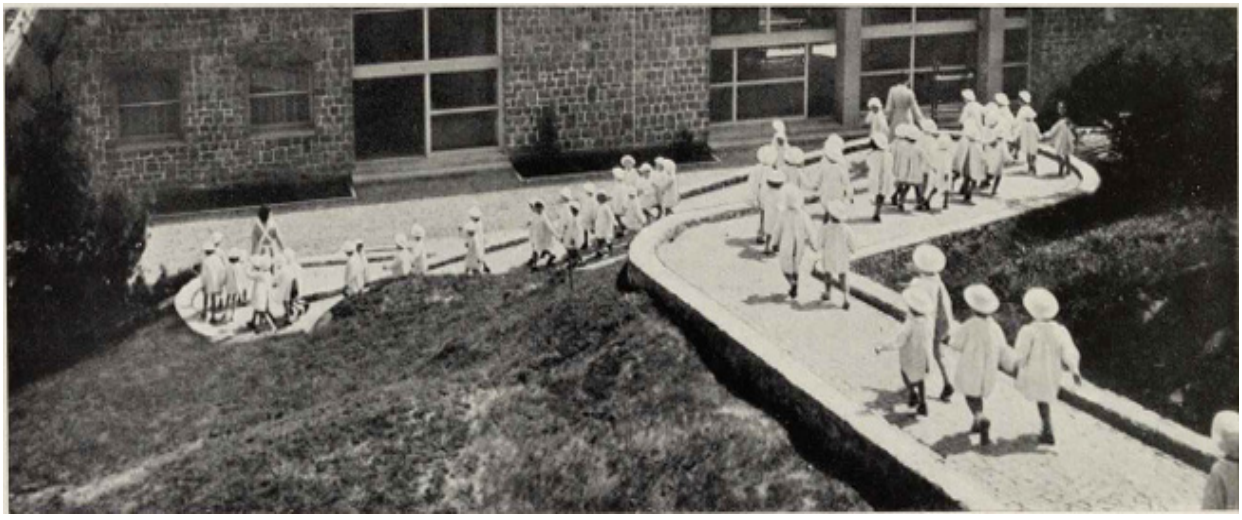
05|Analyzing the "Asilo Nido Adriano" Building

The institution is divided into two parts, the "Nido" and the "Asilo," each with specific tasks aimed at meeting the needs of children at different stages of development. Highly specialized staff takes care of feeding, hygiene, supervision, and education of children, ensuring a safe and stimulating environment.

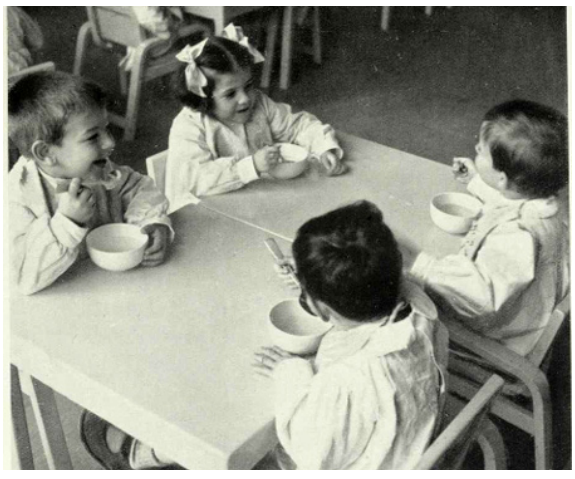
A distinctive aspect of the nursery school is its innovative pedagogical approach, which combines educational methods such as Froebel, Montessori, and Agazzi. This approach aims to stimulate children's intuition and imagination through educational and recreational activities, as well as promoting personal hygiene and respect for order and cleanliness.

Finally, the nursery school's environment is designed to promote an atmosphere of optimism and modernity, reflecting the architectural language of future times. This luxurious and welcoming environment not only provides a harmonious and free education but also offers children the opportunity to become familiar with the needs of modern life and to navigate confidently in the world of tomorrow.

In conclusion, the "2Asilo Nido Adriano" emerges as an excellent example of how an institution can integrate childcare with innovative educational approaches, ensuring the well-being of mothers and preparing children for their future. (Savi, 1990)



(Fig.42)View from the hill , (Savi, 1990)



(Fig.43), Snack time, (Savi, 1990)

(Fig.44) Before going to the table, (Savi, 1990)

05|Analyzing the "Asilo Nido Adriano" Building

The Architectural Features

The Asilo Nido Adriano Olivetti building is a distinguished example of innovative architectural design dedicated to early childhood education. Designed by renowned architects Figini and Pollini, this building embodies a harmonious blend of functionality, safety, and aesthetic appeal, specifically tailored to meet the needs of young children. Situated in close proximity to the Olivetti factory in Ivrea, Italy, the nursery was conceived not only as a childcare facility but also as an architectural expression of modernist ideals and community-oriented design. This detailed exploration of the building's architectural features highlights the thoughtful design elements that contribute to its enduring legacy and continued relevance.

Site Selection and Strategic Positioning

The site selection for the Asilo Nido Adriano Olivetti was a meticulous process aimed at ensuring both convenience and an optimal environment for children. Located just steps away from the factory, the site offers easy access for factory workers while maintaining a serene and hygienic atmosphere. The building is positioned on an elevated terrain that gently slopes away from the road, creating a natural buffer from urban noise and pollution. This elevation facilitates the creation of outdoor play areas above the building, further enhancing the children's experience with ample outdoor space for physical activities. (Ricci, 2007)

Architectural Layout and Zoning

The nursery covers an expansive area of 1,467 square meters and accommodates up to 150 children aged from infants to six-year-olds. The architectural layout is divided into distinct zones, each serving a specific function: (Fig ?)

Administrative and Medical Facilities

These areas are centrally located for easy access and include offices, a reception area, and medical rooms to ensure the well-being and administrative management of the nursery.

Primary Sections

The building is divided into two main sections: the Nursery and the Infant Nursery. The Nursery section includes classrooms, changing rooms, a spacious playroom, a dining hall, a kitchen, and related amenities. The Infant Nursery is tailored to the needs of younger children, with specialized facilities to accommodate infants and toddlers.

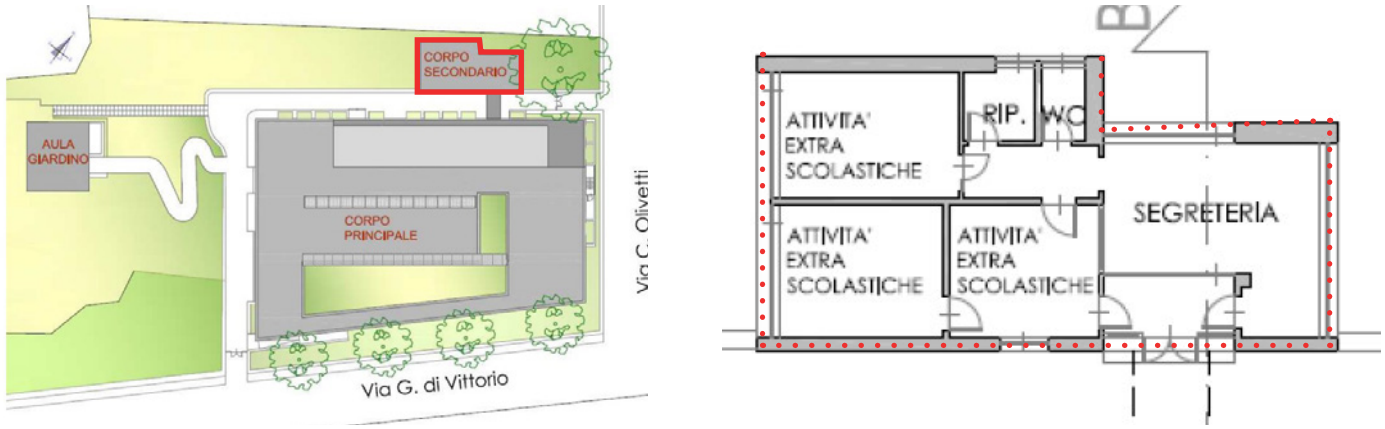
Auxiliary Spaces

Additional spaces for teachers and caregivers are situated on a mezzanine level, providing convenient and private areas for staff. The basement houses various support functions such as air-raid shelters, laundry services, and storage, ensuring comprehensive functionality. (Savi, 1990)

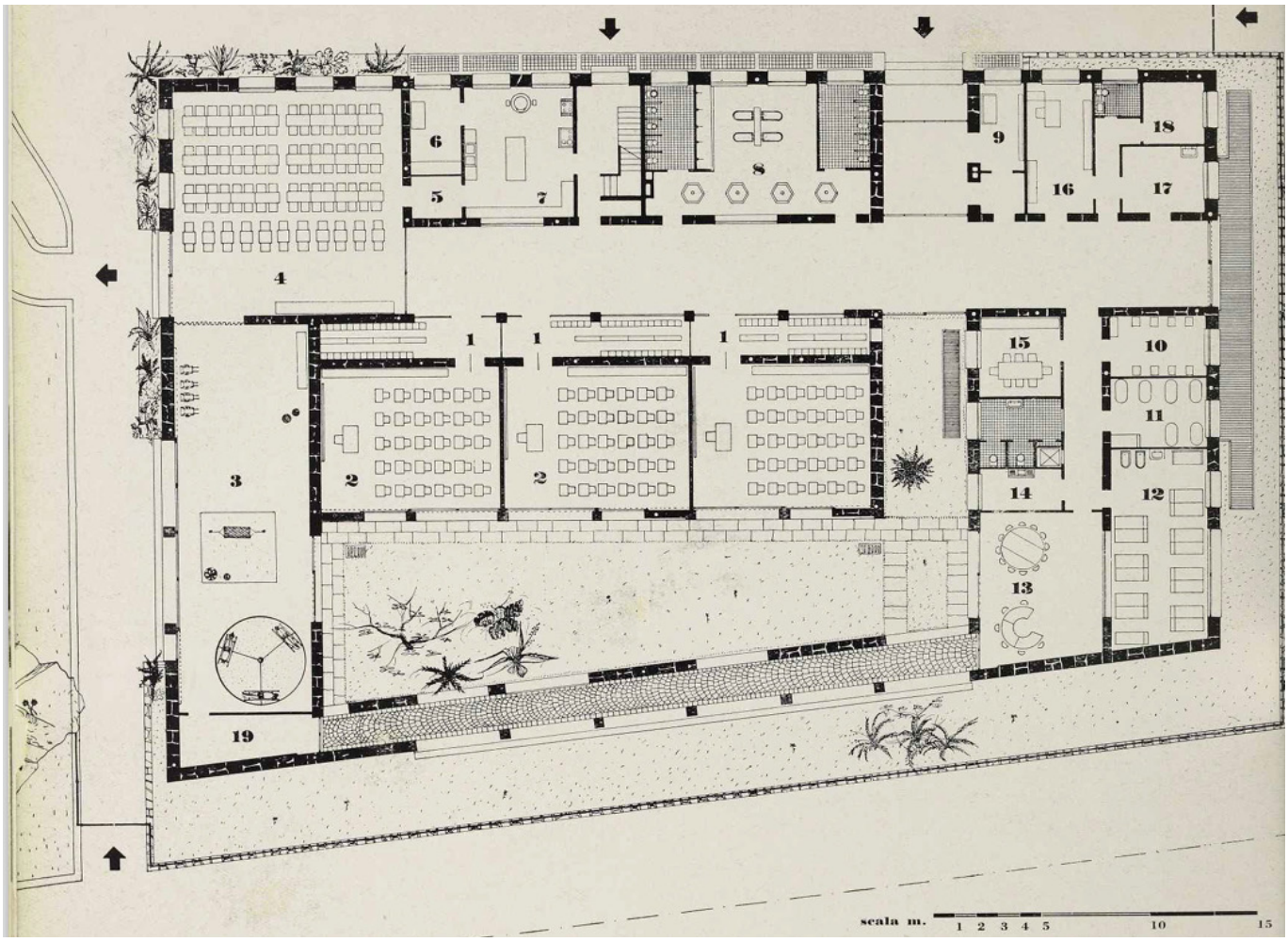
The secondary building:

an expansion built in 1952 for use as a pediatric outpatient clinic, is currently being used as offices and administration. It consists of a single-story building with a rectangular floor plan measuring 16.00 x 8.00 meters and an internal height of 3.00 meters. The architectural and construction typology is the same as that of the main building. (Fig 45), (Gianotto et al., 2015)

05|Analyzing the "Asilo Nido Adriano" Building



(Fig.45), The secondary building, (Gianotto et al., 2015)

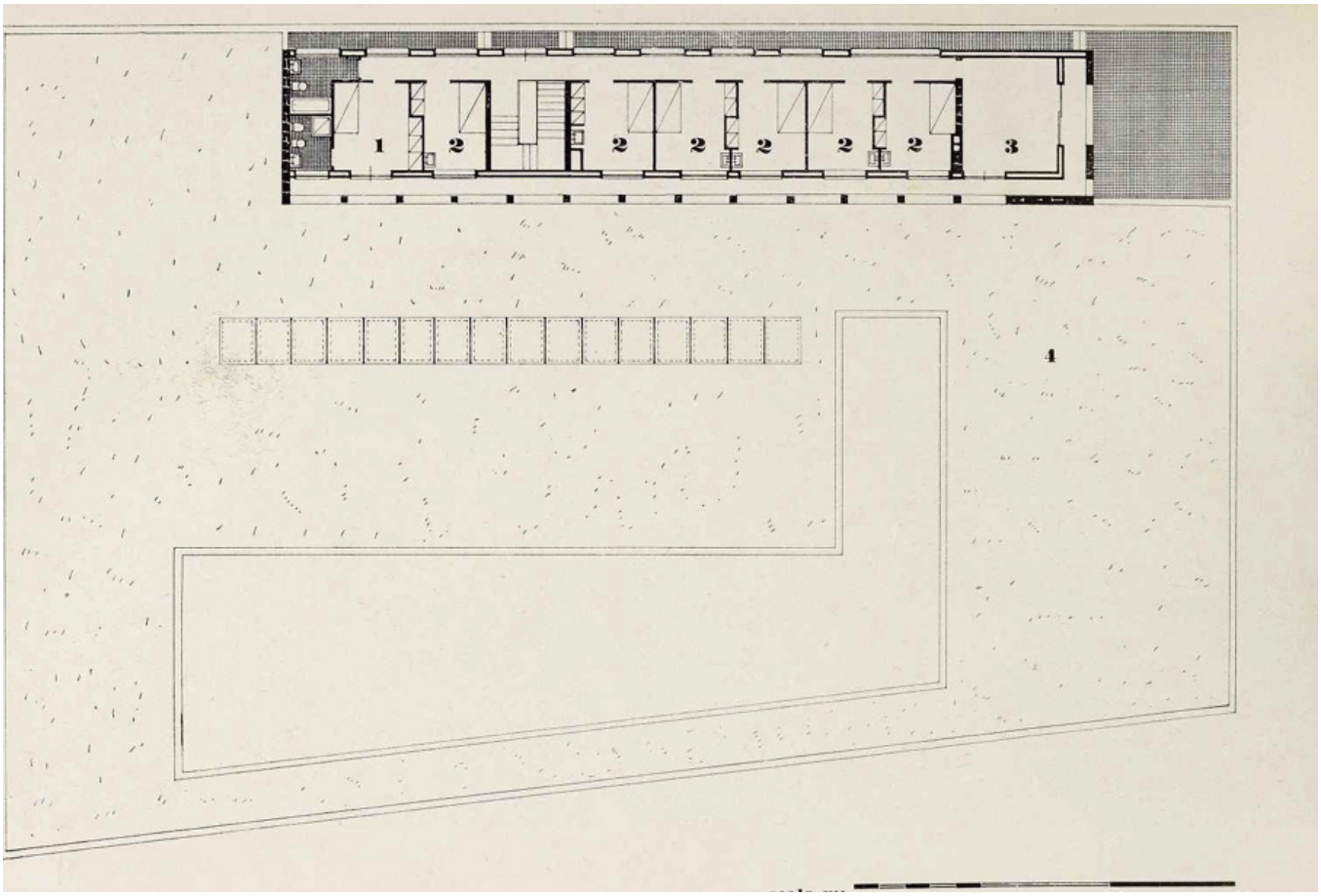


(Fig.46) Ground floor plan of Asilo Nido Adriano building , (Savi, 1990)

GROUND FLOOR PLAN

1. Changing room 2. Classroom - 3. Games room - 4. Dining Hall - 5. Sideboard - 6. Pantry 7. Kitchen 8. Bathrooms, showers and sinks 9. Staff rooms 10. Breastfeeding - 11. Infants' dormitory 12. Toddlers' Dormitory 13. Toddlers' play room. 14. Disinfection room - 15. Staff dining room 16. Director 17. Doctor 18. Isolation 19. Warehouse.

05|Analyzing the "Asilo Nido Adriano" Building



(Fig .47)First floor plan of Asilo Nido Adriano building , (Savi, 1990)

*1. Director's bedroom 2. Teachers' bedrooms 3. Staff living room 4. Green carpet roof.

Architectural Composition and Axis Orientation

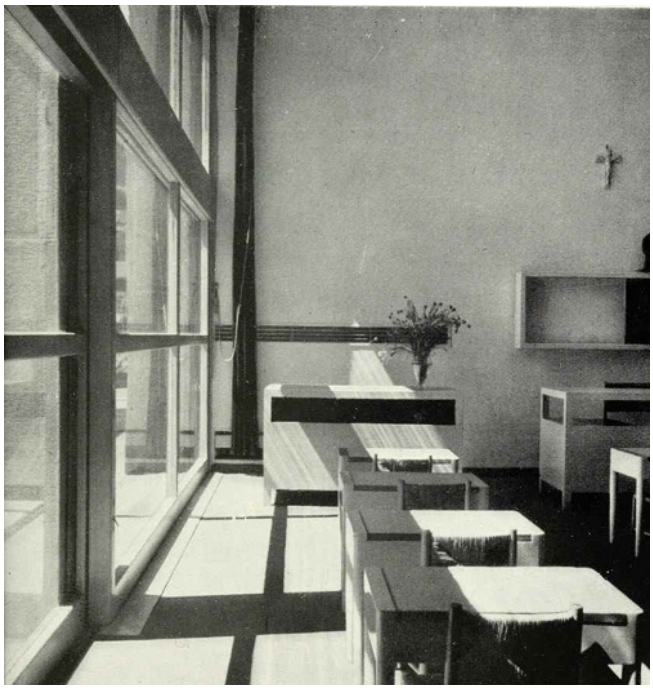
The architectural composition of the Asilo Nido Adriano Olivetti is meticulously organized around three principal axes:

Entrance Axis:
This axis provides a clear and welcoming perspective leading towards the inner courtyard, fostering a sense of openness and connection.

Intersecting Axes:
Two additional axes run parallel to each other and intersect with the primary entrance axis. These axes delineate vistas across the garden hillside, creating a cohesive and visually appealing layout.

Classrooms are strategically oriented towards the inner courtyard, featuring expansive glass walls that overlook the landscaped grounds. This design not only maximizes natural light but also creates a seamless connection between indoor and outdoor spaces. Shading devices are thoughtfully integrated to mitigate excessive sunlight exposure, ensuring a comfortable and conducive environment for learning and play. (Fig 48).

05|Analyzing the "Asilo Nido Adriano" Building



(Fig.48) Classrooms towards the inner courtyard of Asilo Nido Adriano building , (Savi, 1990)

Material Selection and Construction Techniques

The choice of materials and construction techniques for the Asilo Nido Adriano Olivetti reflects both aesthetic considerations and practical needs:

Locally Sourced Materials:
The building utilizes "opera incerta" stone masonry and live stone pillars from Val d'Aosta. These materials are not only locally sourced but also contribute to the building's structural integrity and thermal insulation. (Fig.49)

Prefabricated Elements:
The roof structures consist of prefabricated concrete slabs and beams, ensuring durability and ease of construction. The use of prefabricated elements also aligns with modernist principles of efficiency and standardization.

Varied Flooring Materials:
The flooring materials are chosen based on the function of each space. Linoleum-cork combinations are used in child-occupied areas for their comfort and safety, while ceramic tiles are employed in service areas for their durability and ease of maintenance.

Integration with Outdoor Spaces

The integration of outdoor spaces is a fundamental feature of the Asilo Nido Adriano Olivetti, enhancing the physical and emotional well-being of the children:

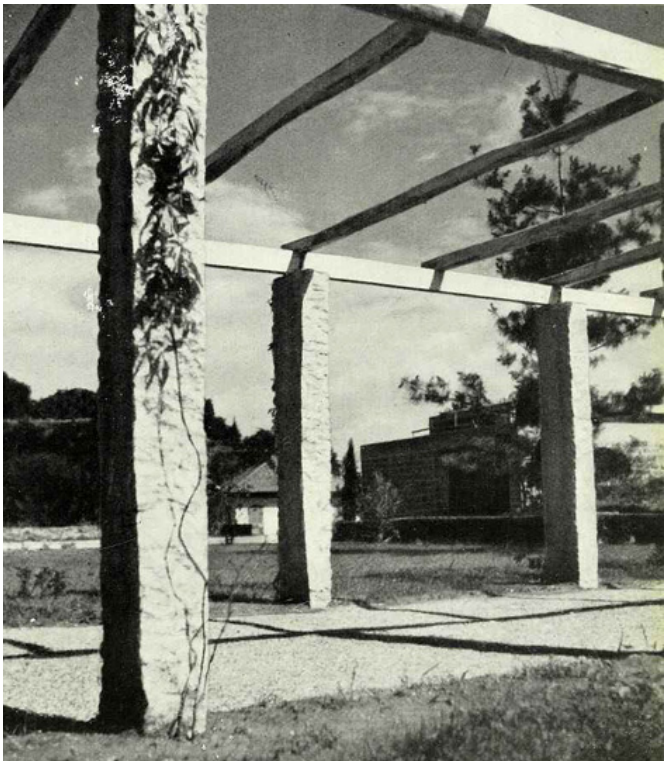
Upper Garden Terrace:
Accessible via a ramp and staircase, the upper garden terrace is seamlessly integrated into the natural topography. It includes recreational amenities such as a swimming pool, sand pits, and green spaces, providing a rich environment for play and exploration. (Fig ?)

Landscaping Elements:
Pergolas, a fountain, stone benches, and tables are thoughtfully placed throughout the garden area, creating an inviting and interactive outdoor space. Designated zones for a rabbit hutch, greenhouse, and experimental gardens further enrich the children's experience, promoting a connection with nature. (Fig .50).

(Fig.49)opera incerta" local materials used in the building of Asilo Nido Adriano, (Gianotto et al., 2015)

05|Analyzing the "Asilo Nido Adriano" Building

(Fig.50) Upper Garden Terrace, (Savi, 1990)



(Fig.51) Pergola , (Savi, 1990)

Previous interventions

Previous interventions on the building Over the years, the building has undergone extraordinary maintenance interventions mainly aimed at regulatory compliance regarding safety and energy consumption reduction.
In 1970, the original windows were replaced with new white PVC elements and metal fences were installed, painted with white enamel, to delimit the entrances facing the streets.
In 1993, in order to comply with new safety regulations, a wooden fence was built on the right side of the access path to the garden classroom, and certain sections of stone walls that delimited it were raised with a galvanized metal grille.
In 1996, since until then the thermal-hydraulic-sanitary system was connected to the Olivetti plant's central heating system and there was a desire to make the nursery energetically autonomous, a methane gas plant was installed in the room on the first floor of the main building, which was previously used as a laundry room. Subsequently, in the early 2000s, the building was connected to the district heating system. In 2004, the main building of the property underwent extraordinary maintenance intervention aimed at compliance with the current fire prevention regulations to obtain the Fire Prevention Certificate (CPI). This intervention essentially consisted of:
– Compartmentalization of the basement storage rooms by constructing fire-resistant walls and installing REI 60 fire doors.
– Upgrading the ground floor emergency exits by replacing the existing windows with new aluminum windows with double glazing (4 laminated, 12, 4).
– Replacing glass panels with a height of less than one meter with double-glazed units (4 laminated, 12, 4).
– Installing metal ramps to the internal garden in front of classrooms 3, 4, 5.
– Constructing an external pedestrian ramp connected to the driveway entrance.

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– Upgrading staircase railings.
– Replacing existing rubber floors with natural rubber in the corridor and at the exit routes.
– Replacing kitchen and bathroom floors with non-slip tiles.
– Replacing the carpeted floor in the office area with natural rubber flooring.
– Replacing vinyl-asbestos flooring in the corridor and the two existing bathrooms on the first floor with natural rubber flooring.
– Compartmentalizing the kitchen area from the corridor.
Moreover the skylight above the gallery of the main body, made up of prefabricated elements in glass blocks, was the subject of a safety intervention in 2014, consisting of the installation on the intrados and on the extrados of the same, of a polycarbonate protection.n (Fig.52), (Gianotto et al., 2015)

(Fig.52) Skylight above the gallery , (Gianotto et al., 2015)

- Identifying potential challenges and opportunities for adaptive reuse

WHEREAS the Municipal Administration of Ivrea intends to participate in the call for proposals issued by the Piedmont Region concerning the enhancement of sites included in the UNESCO World Heritage List within the regional territory, proposing the enhancement of the building housing the Olivetti Nursery School, a historical-monumental landmark of the "Olivetti Architectures", as it represents a priority and qualifying objective for the cultural and tourist repercussions induced by the recent inclusion of the city in the UNESCO World Heritage List: "Ivrea Industrial City of the 20th Century.
CONSIDERING that said enhancement will be implemented through an articulated and complex process of interventions aimed at the cultural, social, and tourist use of the building, which includes an initial phase essentially consisting of securing the basement. adapting the premises for office use (former Guardiania) and the Garden Hall into exhibition and informational spaces.

- Social and community analysis to understand local needs and aspirations

The Borgo Olivetti Nursery School, designed by Gino Figini and Luigi Pollini between 1939 and 1941 (with the addition of a clinic and a pediatric clinic in 1952), is located in Ivrea (TO), at via Camillo Olivetti 34, near the Olivetti factory, close to the ICO workshops. The building is therefore situated in the area of the city that was most functional for its intended use at the time: its proximity to the train station, transportation, and the factory was a significant help for parents who, while going to work, could conveniently accompany their children there. The Nursery School is therefore strategically located for the city and can be considered an "outpost" for the tourist flow interested in discovering the UNESCO heritage.

05|Analyzing the "Asilo Nido Adriano" Building

For this reason, the choice of the Municipal Administration to focus on enhancing the Core Zone starting from the restoration of the Nursery School is crucial, setting up the first informational and exhibition spaces in the park and in its two relevant pavilions - the Garden Hall and the Guardiania.

- ANALYSIS OF CONSTRAINTS

With Decree No. 23 of 2016 – attached to this report – the Regional Commission for Cultural Heritage for Piedmont declared cultural interest, pursuant to articles 10 and 12 of Legislative Decree No. 42/2004, for the reasons outlined in the historical report contained in the aforementioned Decree, the two buildings designed by architects Figini and Pollini, namely the main building and the garden classroom. The Decree therefore excludes from the cultural interest constraint the buildings that do not fall within the original 1941 project, including the guardhouse, built subsequently in the post-war period, according to the design of architect Annibale Fiocchi.

The main building, moreover, being classified within the PRGC as category A "Buildings of monumental architectural importance," is subject to further constraints aimed at safeguarding the building itself as "of high formal quality, designed by Italian architects of clear renown, whose importance in the history of Italian architecture of the 20th century is universally recognized by critics."
The PRG of Ivrea thus establishes that "on such buildings, actions aimed exclusively at the integral protection and safeguarding of the original image, compositional, and distributive arrangement are permitted – even in the presence of changes in designated use". Therefore, only strictly conservative interventions will be allowed on the courtyard building.
Therefore, only a strictly conservative type of intervention will be allowed on the courtyard building. (COMUNE DI IVREA)

Refrences

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UNESCO's suggestion for the type of interventions

Redevelopment and Enhancement of the Olivetti Nursery for Accessibility and Tourist Enjoyment of Olivetti's Culture :

The Municipal Administration of Ivrea is committed to enhancing the Olivetti Nursery School, a historical and monumental landmark of the "Olivetti Architectures." This project aims to improve the cultural, social, and tourist use of the building, which is an essential component of Ivrea's recent inclusion in the UNESCO World Heritage List as the "Ivrea Industrial City of the 20th Century." This proposal outlines the various stages and interventions planned to achieve this goal, focusing on the building's accessibility, historical preservation, and tourist appeal.

Background and Significance

Historical Context:
The Olivetti Nursery School, designed by renowned architects Gino Figini and Luigi Pollini between 1939 and 1941, with additional facilities added in 1952, is a vital part of Ivrea's industrial heritage. Located at Via Camillo Olivetti 34, near the Olivetti factory and close to the ICO workshops, the building served the city's working parents by providing a convenient and strategically located facility for their children.

UNESCO World Heritage Status

Ivrea's inclusion in the UNESCO World Heritage List underscores the city's significance as an industrial and cultural hub of the 20th century. The enhancement of the Olivetti Nursery School is a priority for the Municipal Administration due to its potential to attract cultural tourism and highlight Ivrea's architectural heritage.

Project Objectives

The primary objective of this project is to enhance the Olivetti Nursery School through a series of carefully planned interventions. These include:

- Securing and removing asbestos from the basement premises.
- Revitalizing the surrounding green area. Adapting premises for office use (former Guardiania).
- Transforming the Garden Hall into exhibition and informational spaces.

These interventions will ensure the building's safety, functionality, and attractiveness to visitors.

Project Phases and Interventions
Initial Phase

The initial phase focuses on making the building safe and accessible. This includes:

- Asbestos Removal: Securing the basement premises by removing asbestos to ensure a safe environment for visitors and staff.
- Green Area Revitalization: Enhancing the surrounding green area to create an inviting space for outdoor activities and relaxation.
- Reuse and Adaptation: Given economic constraints, the total recovery of the architectural complex, particularly the reuse of the main building as a nursery school, will be carried out in stages. The current project phase includes:

- Office Adaptation: Converting the former Guardiania into office spaces to support administrative functions.

- Exhibition Spaces: Transforming the Garden Hall into spaces for exhibitions and information dissemination to educate visitors about the Olivetti heritage.

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- UNESCO's suggestion for the type of intervention

Architectural and Cultural Constraints Cultural Interest and Preservation

With Decree No. 23 of 2016, the Regional Commission for Cultural Heritage for Piedmont declared the Olivetti Nursery School and the Garden Hall as buildings of cultural interest under Legislative Decree 42/2004. This designation necessitates that any interventions on these buildings must adhere to strict conservation guidelines to preserve their historical and architectural integrity.

Preservation Requirements

The main building, classified under category A "Buildings of monumental architectural importance" in the PRGC, is subject to additional constraints to safeguard its original image and architectural quality. As such, only conservative interventions aimed at integral protection and preservation of the building's original design and layout are allowed.

Design and Structural Details

Original Construction:
The nursery school project dates back to 1939, during the era of autarky, which prohibited constructions in reinforced concrete. Consequently, the building was designed with a structure entirely made of stone masonry. The pillars are crafted from live stone, with precast concrete beams used only in the horizontal parts.

Site Layout and Landscape
The designers utilized the natural dioritic rock hill to position the main nursery building on the lower, flat portion, while the elevated terrain was designated for the park. This design follows the contour lines of the land, providing outdoor recreational space for the children and enhancing the building's integration with its natural surroundings.

Detailed Analysis of Constraints and Compliance

Cultural Interest Declaration:
The Regional Commission for Cultural Heritage for Piedmont, with Decree No. 23 of 2016, declared the Olivetti Nursery School and the Garden Hall to be of cultural interest under Legislative Decree 42/2004. This designation emphasizes the historical and architectural value of these buildings, mandating strict adherence to conservation guidelines. The Guardiania, built in the post-war period by architect Annibale Fiocchi, is excluded from this cultural interest constraint, allowing for more flexible in terventions in this part of the complex.

Preservation Guidelines

The main building's classification as a category A "Building of monumental architectural importance" in the PRGC imposes additional preservation requirements. According to the PRGC, any changes in use must maintain the integral protection and safeguarding of the building's original image, compositional, and distributive layout. Therefore, all interventions must be conservative, focusing on preserving the building's original design and architectural features.

Site and Architectural Design

The original design by Figini and Pollini utilized the natural dioritic rock hill, positioning the main nursery building on the lower, flat portion, while the elevated terrain was designated for the park. The park follows the contour lines of the land, providing outdoor recreational space for the children and enhancing the building's integration with its natural surroundings. The design also includes a small portico,

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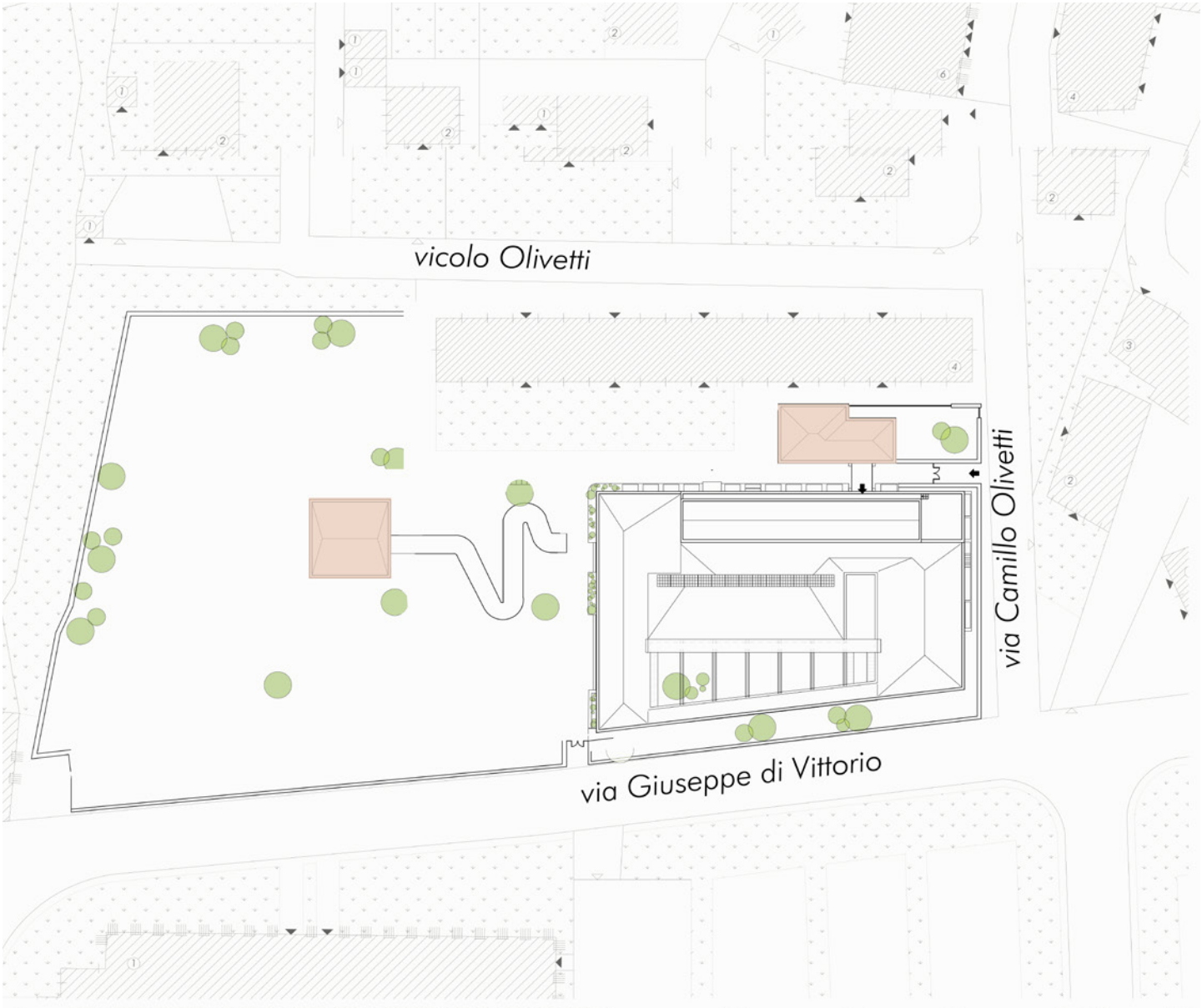
an adorned sandpit, a rectangular swimming pool suitable for children, a fountain, and a pergola with stone posts and wooden beams reminiscent of the Canavese pergolas typical of local viticulture. (Città di Ivrea)



(Fig.53), The building built after second world wild , more flexible in terventions (Città di Ivrea)

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Implementation strategies and considerations for the proposed design

- The Intersection of Sustainability and Adaptive Reuse in 'Asilo Nido Adriano Olivetti'

Adaptive reuse of the Borgo Olivetti Nursery School involves repurposing the structure while retaining its historical essence, enhancing sustainability, and promoting biophilic design principles. Biophilic design emphasizes the integration of natural elements into the built environment to improve occupant well-being and connectivity to nature (Kellert, 2008). By incorporating features such as natural lighting, indoor plants, and green spaces, the nursery can provide a healthier, more stimulating environment for children (Beatley, 2011). This approach not only preserves the building's architectural heritage but also aligns with contemporary sustainable practices, thereby adding value to the existing structure and ensuring its relevance for future generations (Elmqvist et al., 2015; Birkeland, 2008).

Implementing adaptive reuse based on UNESCO guidelines is essential for maintaining the architectural integrity of the nursery school while introducing sustainable enhancements. This includes using eco-friendly materials, improving energy efficiency, and creating flexible spaces that can adapt to changing needs (Langston, 2012; Wilkinson et al., 2014). Adaptive reuse not only helps preserve cultural heritage but also reduces environmental impact by minimizing demolition waste and the need for new construction materials (Bullen & Love, 2011; Plevoets & Van Cleempoel, 2011; Douglas, 2006). According to the European Commission (2013), adaptive reuse can also significantly contribute to the reduction of carbon footprints in the construction industry by extending the lifecycle of existing buildings.

Biophilic design plays a crucial role in the adaptive reuse of the Borgo Olivetti Nursery School by fostering a connection between the building's occupants and nature. Studies have shown that biophilic elements, such as natural light, vegetation, and water features, can enhance cognitive function, reduce stress, and improve overall well-being (Browning, Ryan, & Clancy, 2014; Heerwagen & Gregory, 2008). For the nursery school, incorporating such elements can create a nurturing and stimulating environment, promoting development and well-being (Gray & Birrell, 2014).

Moreover, the integration of sustainable practices such as passive solar design, natural ventilation, and the use of renewable energy sources can significantly improve the building's environmental performance (Lechner, 2014). For example, optimizing the building's orientation and using high-performance glazing can maximize natural light while minimizing energy consumption (Mendler, Odell, & Lazarus, 2006). Incorporating green roofs can also enhance the building's sustainability by improving insulation (Gissen, 2003).

The adaptive reuse of the Borgo Olivetti Nursery School also aligns with broader urban sustainability goals by contributing to the preservation of historical urban fabric and promoting the sustainable development of Ivrea (Rossi, 2018). By maintaining and enhancing existing structures, the city can reduce urban sprawl and conserve resources, supporting a more sustainable and resilient urban environment (Rodwell, 2007).

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- In conclusion, the adaptive reuse of the Borgo Olivetti Nursery School, guided by UNESCO's heritage conservation principles and biophilic design, offers a valuable opportunity to preserve cultural heritage while promoting sustainability. Through thoughtful integration of natural elements and sustainable practices, the building can continue to serve the community, reflecting the visionary legacy of Adriano Olivetti and contributing to a vibrant and sustainable urban landscape.

- Biophilic Design for 'Asilo Nido Adriano Olivetti': Following UNESCO's Guidelines for Heritage Preservation

Biophilic design, guided by UNESCO's heritage preservation principles, can revitalize the 'Asilo Nido Adriano Olivetti' by integrating greenery, photovoltaic (PV) panels, and green roofs to enhance the building's sustainability and aesthetic appeal. Utilizing natural elements like indoor plants and green roofs can significantly improve air quality and reduce urban heat island effects (Beatley, 2011; Browning et al., 2014). Green roofs, for instance, can provide insulation, reduce stormwater runoff, and create habitats for urban wildlife, contributing to biodiversity and climate resilience (Oberndorfer et al., 2007; Berardi, GhaffarianHoseini, & GhaffarianHoseini, 2014). Incorporating PV panels not only reduces the building's carbon footprint but also generates renewable energy, aligning with sustainable development goals (Lechner, 2014; Mendler et al., 2006). This transition towards renewable energy sources can significantly decrease the operational costs of the building over time (Hernández & Kenny, 2010).

Creating a seamless transition between indoor and outdoor spaces enhances occupants' well-being and fosters a connection with nature, which is crucial for biophilic design (Kellert, 2008; Gray & Birrell, 2014). Large windows can facilitate natural light penetration, reducing the need for artificial lighting and improving indoor environmental quality (Edwards & Torcellini, 2002). Studies have shown that access to natural light and views of nature can enhance cognitive function, reduce stress, and increase productivity among occupants (Berman, Jonides, & Kaplan, 2008; Heerwagen, 2000).

This approach can transform the nursery into a vibrant visitor center and co-working space, driving economic opportunities and promoting local tourism (Rodwell, 2007; European Commission, 2013). Adaptive reuse projects often lead to increased foot traffic and revitalization of surrounding areas, fostering local business growth and community engagement (Shipley, Utz, & Parsons, 2006). Additionally, such projects can serve as educational models demonstrating sustainable practices and heritage conservation, attracting researchers, students, and sustainability advocates (Cantell, 2005).

The adaptive reuse of the 'Asilo Nido Adriano Olivetti' can be a catalyst for broader urban renewal. The integration of biophilic design and sustainable technologies can inspire similar transformations in neighboring buildings, promoting a cohesive and sustainable urban landscape (Yuen & Hien, 2005). The preservation of this historic structure, coupled with modern sustainability practices, aligns with UNESCO's vision of heritage sites as living entities that contribute to contemporary cultural and economic life (UNESCO, 2011).

Moreover, the economic benefits of adaptive reuse extend beyond immediate operational savings. By maintaining and enhancing existing structures, cities can reduce the environmental impact associated with demolition and new

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construction, thereby conserving resources and minimizing waste (Bullen & Love, 2011; Wilkinson et al., 2014). The long-term economic viability of such projects is further supported by the reduced energy costs and the potential for attracting green financing and incentives (Guy & Farmer, 2001; Rypkema, Cheong, & Mason, 2011).

In conclusion, the adaptive reuse of the 'Asilo Nido Adriano Olivetti' through biophilic design principles, in line with UNESCO's guidelines, offers a multifaceted approach to heritage preservation and sustainability. By integrating natural elements, renewable energy technologies, and creating seamless indoor-outdoor connections, the building can be revitalized into a functional and vibrant space. This transformation not only enhances the building's sustainability and occupant well-being but also drives economic opportunities and promotes urban renewal. The project stands as a model for combining heritage conservation with modern sustainable practices, demonstrating the potential for adaptive reuse to contribute to a resilient and sustainable urban future.

- The Impact of Greenery and Water on Interior Aesthetics and Well-being

The integration of greenery and water within interior spaces significantly enhances both aesthetics and occupant well-being. Biophilic design principles emphasize the importance of incorporating natural elements into indoor environments to foster a sense of connection with nature, which has been shown to reduce stress, enhance cognitive function, and improve overall psychological well-being (Browning et al., 2014; Kellert, 2008). Indoor plants not only improve air quality by reducing airborne pollutants but also create a calming and visually appealing atmosphere (Bringslimark et al., 2007; Lee et al., 2015). Water features contribute to a sense of tranquility and relaxation, supporting productivity and mental health among occupants (White et al., 2010; Kaplan, 1995).

In the context of transforming the 'Asilo Nido Adriano Olivetti' building into a modern co-working space, integrating greenery and water elements in interior design can enhance the quality of the work environment. By creating visually appealing and biophilic spaces, this approach not only supports the well-being of co-workers but also contributes to the overall ambiance and attractiveness of the workspace.

- Dual Benefits: Green Roofs and PV Panels for Environmental and Economic Gains

Green roofs and photovoltaic (PV) panels offer dual benefits of environmental sustainability and economic gains. Green roofs, covered with vegetation, reduce stormwater runoff, mitigate urban heat island effects, and provide natural insulation, thus reducing energy consumption (Getter & Rowe, 2006; Oberndorfer et al., 2007). They also support biodiversity and contribute to improved air quality (Berardi et al., 2014). PV panels, on the other hand, generate renewable energy, reducing greenhouse gas emissions and dependence on non-renewable energy sources (Hernández & Kenny, 2010; Lechner, 2014). This integration not only enhances the sustainability credentials of buildings but also leads to long-term cost savings through reduced energy bills and potential revenue from energy generation.

For the 'Asilo Nido Adriano Olivetti' building, incorporating green roofs and PV panels aligns with UNESCO's guidelines for sustainable development and heritage preservation, ensuring that the building maintains its historical significance while contributing positively to the environment and economy. By adopting these technologies, the building can serve as a model of sustainable architecture, promoting environmental stewardship and economic resilience.

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- Blurring Boundaries: The Integration of Outdoor and Indoor Environments

Integration of outdoor and indoor environments in architectural design enhances user experience, promotes well-being, and supports sustainability goals. By blurring the boundaries between inside and outside spaces, architects can create dynamic environments that maximize natural light, ventilation, and visual connections with nature (Dovey, 2016; Groat & Wang, 2002). Design strategies such as large window and open-plan layouts not only enhance natural daylighting and passive heating/cooling but also encourage interactions with outdoor green spaces (Edwards & Torcellini, 2002; Heerwagen & Gregory, 2008).

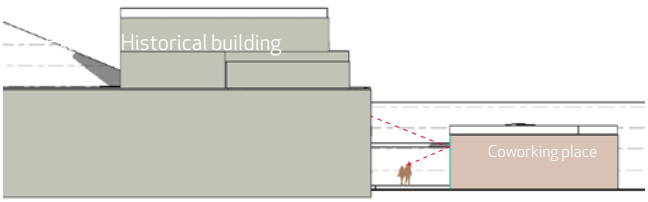
For the 'Asilo Nido Adriano Olivetti' building, integrating outdoor green spaces such as courtyards and rooftop gardens with indoor areas can create a harmonious environment conducive to collaboration and creativity among co-workers. This approach not only enhances the building's aesthetic appeal and functionality but also aligns with biophilic design principles, promoting a healthier and more productive work environment.

Reflective Glass for Co-Working and Underground Use for Information: Strategies for Mitigating Impact on UNESCO Heritage

In transforming the 'Asilo Nido Adriano Olivetti' building into a contemporary co-working space while adhering to UNESCO guidelines for heritage preservation, strategic design choices are crucial to minimize impact on the existing structure and its historical context. Reflective glass, employed judiciously in the building's facade, offers several advantages. It allows for natural light penetration while reducing solar heat gain and glare, thus optimizing energy efficiency and occupant comfort (Reinhart & Wienold, 2013; Roaf et al., 2004). This approach maintains the aesthetic integrity of the original architecture by preserving sightlines and minimizing alterations visible from the exterior.

Additionally, integrating underground spaces for information hubs and ancillary services supports the UNESCO principle of minimal intervention. Underground facilities can house visitor information center, ensuring that necessary functions do not detract from the building's outward appearance or structural stability (Brady et al., 2016; Lourenço et al., 2018). This strategy not only respects the historical significance of the 'Asilo Nido Adriano Olivetti' but also enhances its functionality in a discreet and sustainable manner.

By combining reflective glass technologies and underground utilization for information services, this approach supports the goals of heritage preservation and modern functionality. It exemplifies a balanced approach to architectural intervention, ensuring that the building remains a harmonious part of its UNESCO-designated context while meeting contemporary needs for collaborative workspaces and visitor facilities.



(Fig.54) , The impct of using Reflective glass in new expansion

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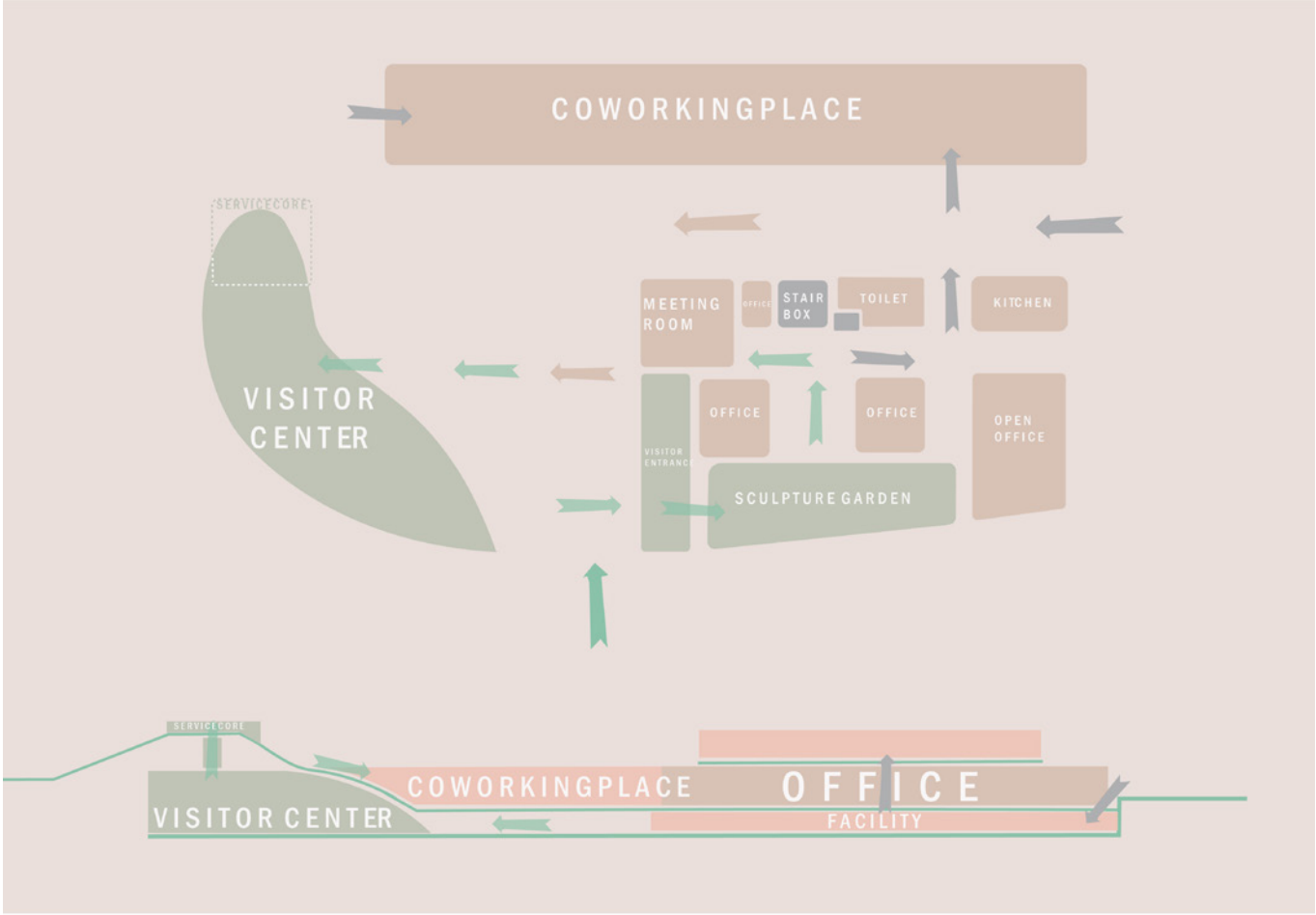
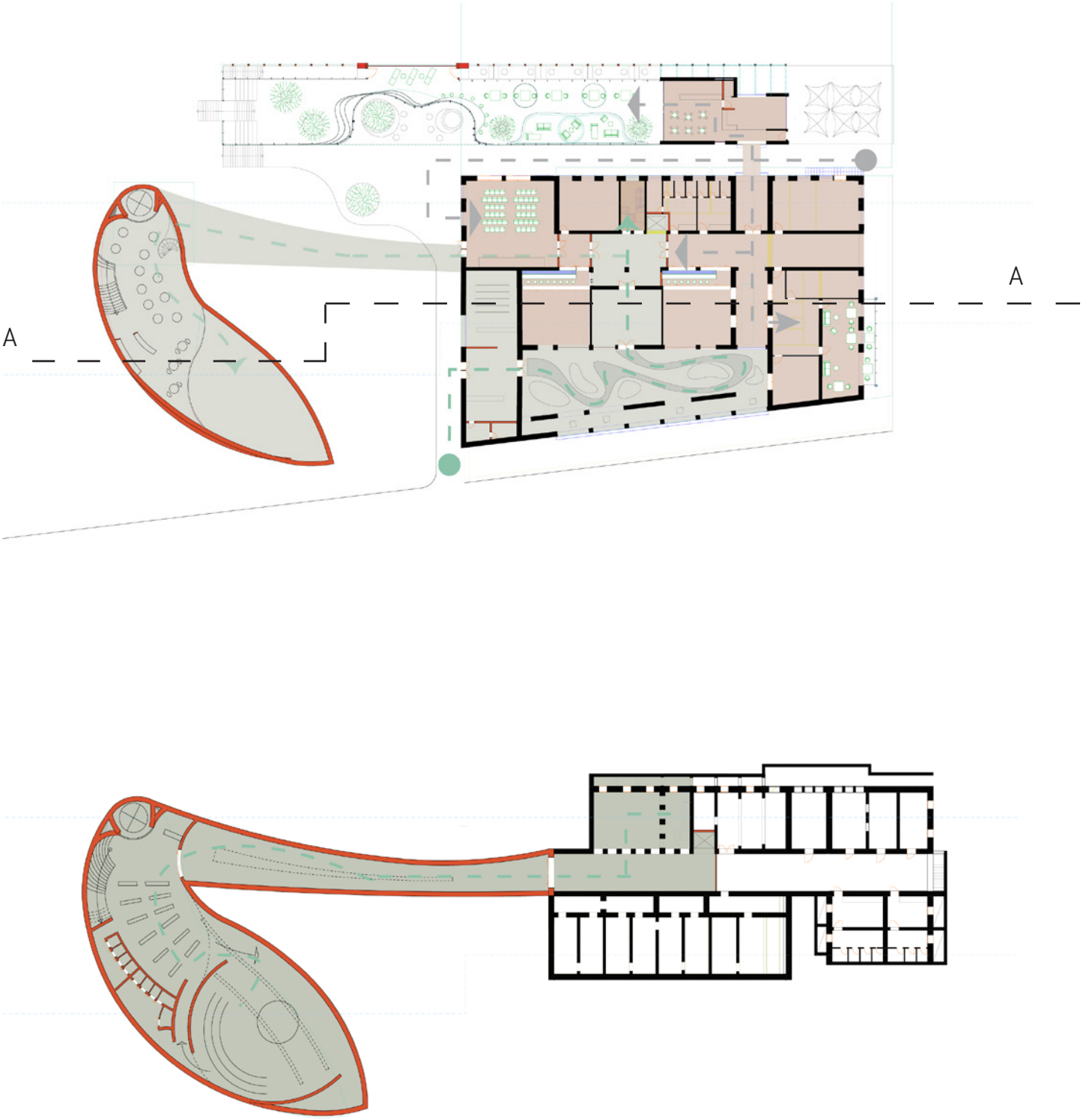
A New Life for 'Asilo Nido Adriano Olivetti': UNESCO's Plan for a Visitor Center and Co-Working Space

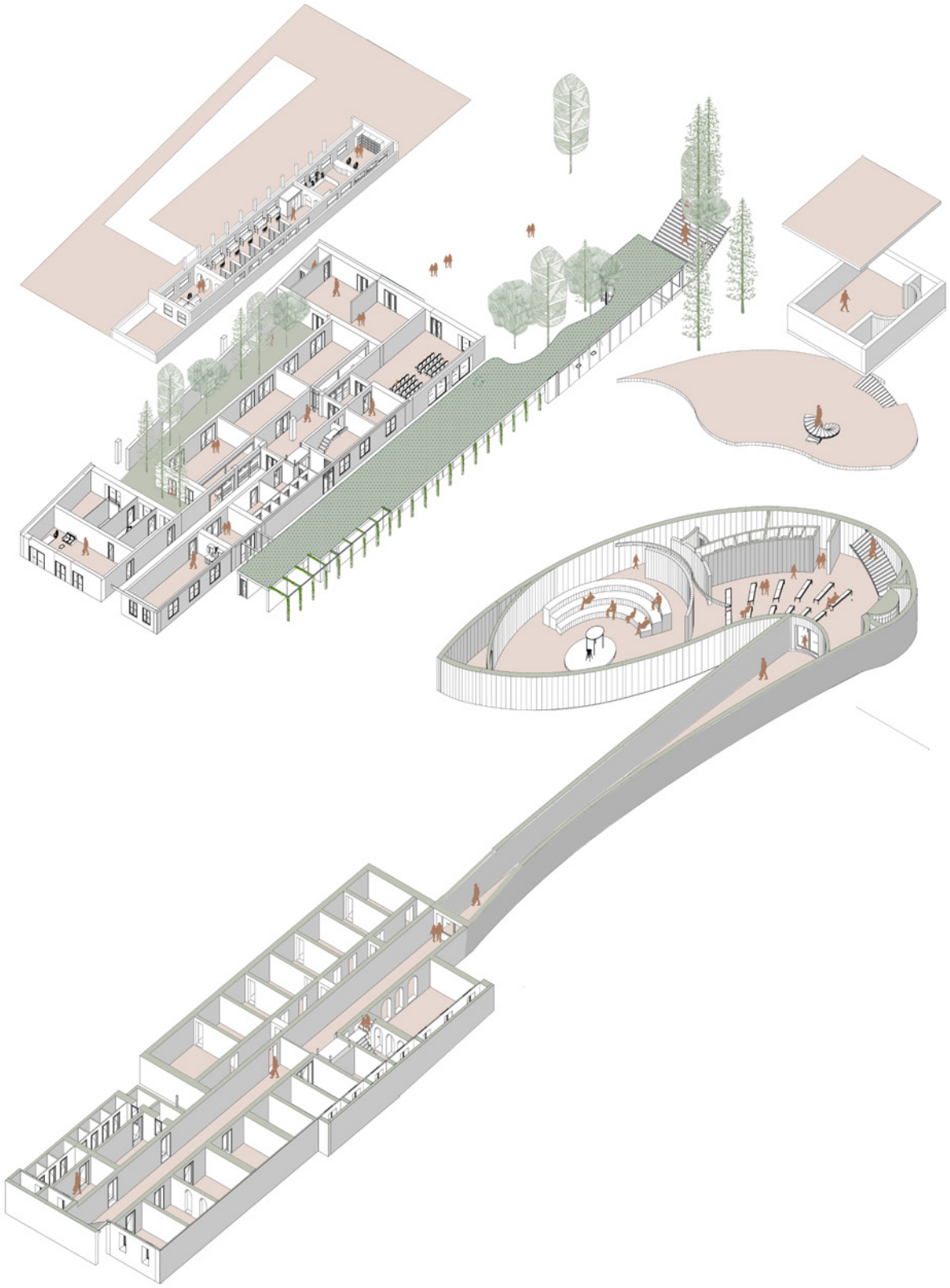
Design documents :



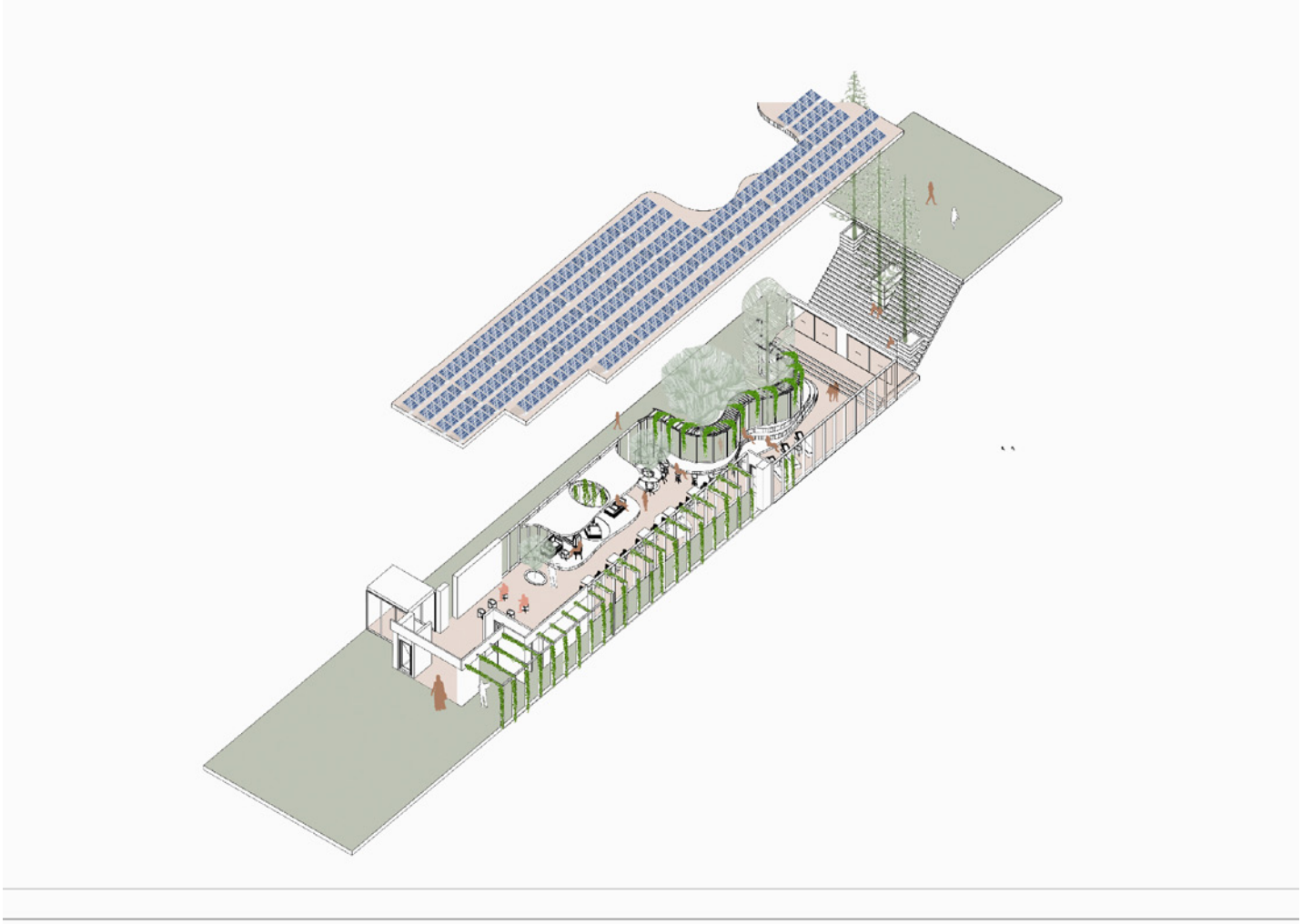
(Fig.54) , Functional diagrams



(Fig.55) , Distribution diagrams , scale 1/100

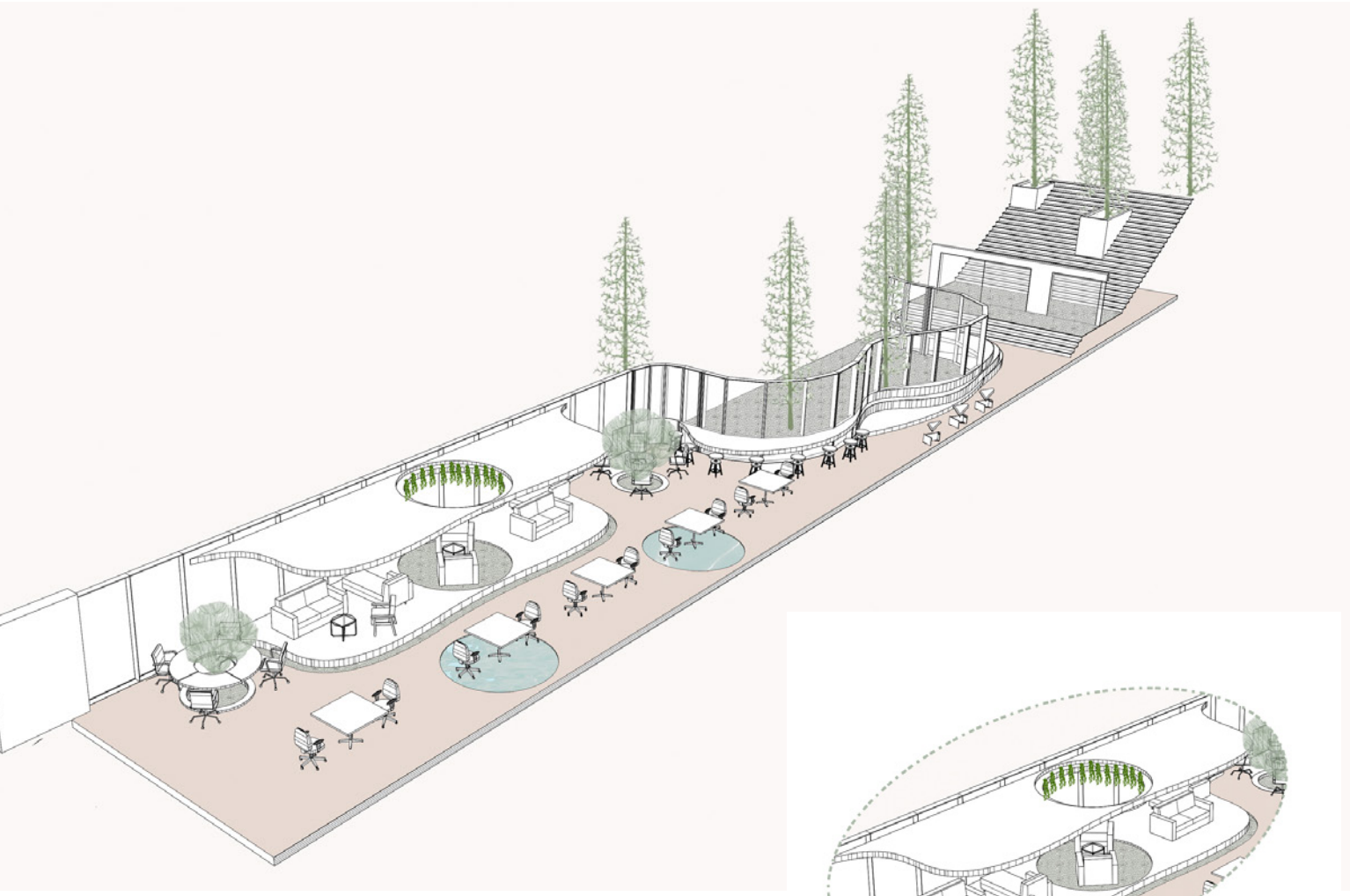


(Fig.56), exploaded plan design diagram,, scale 1/100



(Fig.57) exploaded plan biophilic design diagram,coworking place, scale 1/100

(Fig.58) , SECTION A-A ,Visitor center design,underground expansion , scale 1/100



(Fig.59), Biophilic design features in coworking place, scale 1/100

(Fig.60), Texture of stone and plants as Biophilic features

(Fig.61), water as Biophilic features

(Fig.62), Tree as Biophilic features

(Fig.63), Creating a Fluid Transition Between Inside and OutsideBiophilic features

06| LESSONS LEARNED

From the thesis "ACCESSIBILITY AND TOURIST ENJOYMENT OF OLIVETTI'S CULTURE: Adaptive Reuse based on improving Biophilic Design Strategies for the 'Asilo Nido Adriano Olivetti', several critical lessons emerge that can be valuable for students and researchers interested in architecture, heritage conservation, and sustainable design.

Effective adaptive reuse necessitates a delicate balance between preserving historical integrity and integrating modern design elements. Students can learn to respect the historical and cultural significance of buildings while creatively incorporating contemporary biophilic design strategies. Elements such as natural light, vegetation, and water features significantly enhance occupant well-being and satisfaction.

Biophilic design not only enriches the user experience but also offers economic and environmental benefits by reducing energy consumption and promoting sustainability. Students can advocate for and implement biophilic design principles to achieve cost savings and support environmental goals in their professional practices. Engaging with the local community and integrating local ecosystems into design projects ensures relevance and sustainability. Developing skills in community engagement and understanding local ecological systems can help students create designs that are both sustainable and community-centric.

A deep understanding of the cultural and historical context of a building enhances the relevance and authenticity of adaptive reuse projects. Students should research and incorporate historical and cultural narratives into their design processes to preserve and highlight a building's heritage.

The case study of the 'Asilo Nido Adriano Olivetti' provides specific insights and lessons applicable to future projects. Olivetti's design emphasized social well-being by integrating natural elements to create a supportive environment. Future projects can draw inspiration from Olivetti's approach, prioritizing human-centered design that enhances well-being through biophilic elements.

Preserving the industrial and cultural heritage of significant sites is crucial for maintaining historical narratives. Students can learn to value and integrate historical preservation into modern design, ensuring that the essence of historical sites is retained. Modern technology, such as digital mapping and interactive displays, can enhance visitor experiences and provide educational opportunities. Utilizing technology in design can help future architects create more engaging and informative environments for users.

Adaptive reuse projects can contribute to sustainable tourism by making historical sites more accessible and enjoyable. Students can explore how their designs can support sustainable tourism, benefiting local economies and promoting cultural heritage.

The thesis "ACCESSIBILITY AND TOURIST ENJOYMENT OF OLIVETTI'S CULTURE" offers valuable lessons for students and practitioners in architecture and design. Key takeaways include the importance of balancing preservation with innovation, enhancing well-being through natural elements, and engaging with local communities and ecosystems. The case study of the 'Asilo Nido Adriano Olivetti' exemplifies how these principles can be effectively applied, offering a model for future projects that integrate biophilic design with heritage conservation. By learning from these insights, students can develop a holistic and sustainable approach to architecture and design that respects and enhances cultural heritage.

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