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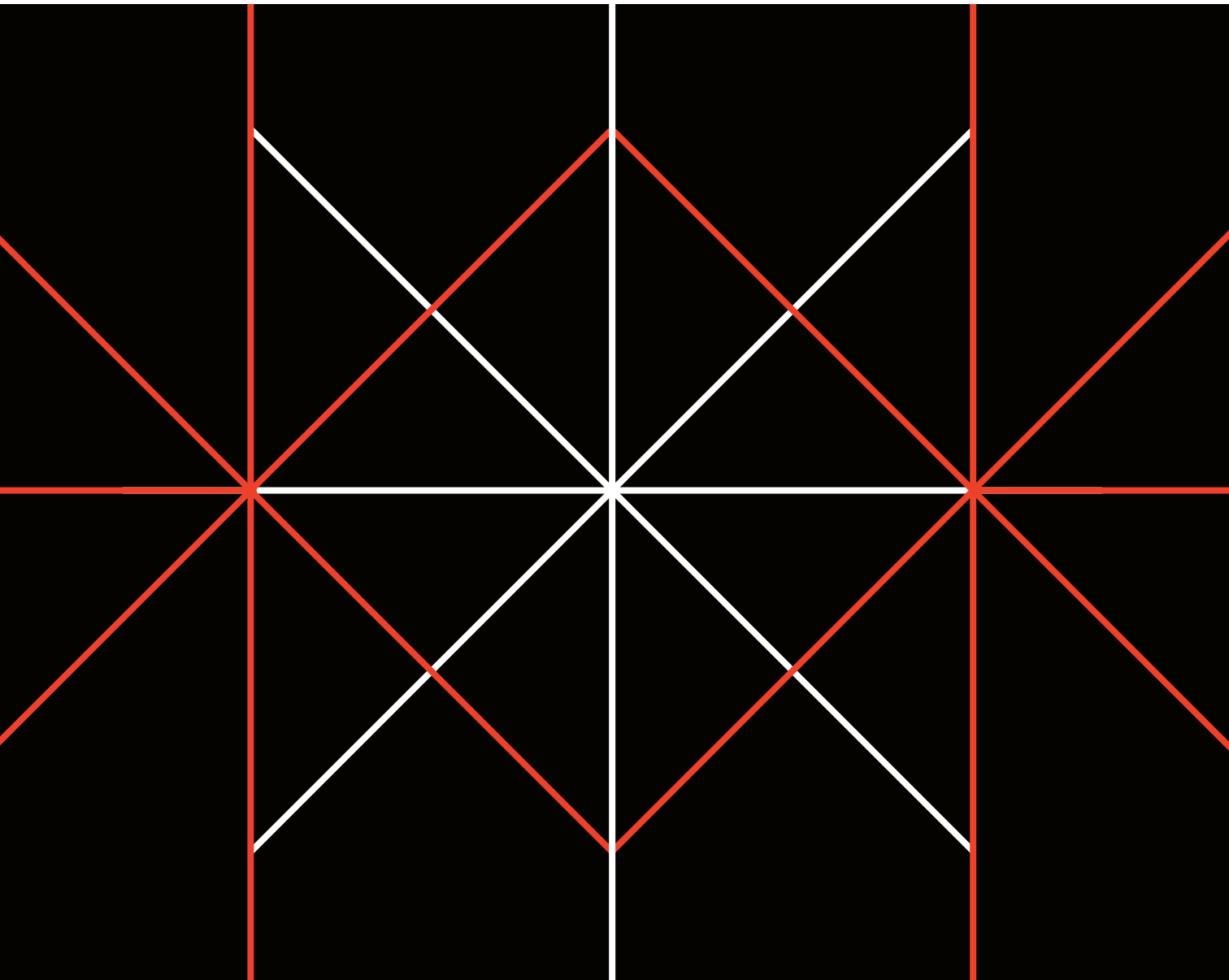
10 August 2026

SPACE

DASP Yearbook 2023



SPACE

DASP Yearbook 2023

SPACE

SPACE

DASP Yearbook 2023

PhD in Architecture.
History and Project

Politecnico di Torino
DAD - Department of Architecture and Design

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INTRO-
DUCTION

TORINO 10125. OUT OF THE DASP-HOME.* AN INTRODUCTION

Marco Trisciuoglio

*"But the designer does not usually construct a history with the rigor expected of a historian, and we expect the design to display other qualities of subjectivity as well. A design is also equivalent to a novel, convincing the user to suspend disbelief. Part-novelist, part-historian, the architect is 'the history man'. We expect a history or a novel to be written in words, but they can also be cast in concrete. An architectural book can be history and a novel, and so can a building"**.*

Jonathan Hill (Director of the PhD Architectural Design at UCL), 2014

The PhD Program in Architecture. History and Project (DASP) was born out of two long lasting traditions of doctoral level studies and research in the area of Architecture at Politecnico di Torino. The PhD Program programmatically investigates the complexity of architectural cultures starting from the multi-disciplinary and trans-disciplinary interweaving between the history and the design of buildings, cities, territories. On the one hand, in fact, urban and architectural composition and technology of architecture favor an interpretation of the project as a tool for measuring the stratifications of theoretical elaborations, technical innovations and modifications of built environment. On the other hand, the historical disciplines for architecture and the city, far from a local vision and thanks to the cooperation with other histories (the economic, social, anthropological and aesthetic ones), trace paths that can be traveled by architects and urban planners, but also by other humanities scholars, such as philosophers and linguists. The intertwining of the two research traditions on which it was founded has thus made the DASP in recent years, precisely starting from these premises, the most advanced doctoral space in which to cultivate humanistic studies within the context of a technical European university as Politecnico di Torino is.

The activities of the DASP are characterized by a push towards internationalization, built starting from the vast network of scientific projects established by the members of its Council (named Collegio), which becomes fundamental both in the definition of new strategies in the architectural and urban fields (in the two areas of design and historiography) and to face the professional and working challenges that derive from it.
The PhD Program shares the study objectives of numerous laboratories, centers and research groups based in the University (such as the China Room, the Future Urban Legacy Lab interdepartmental center, the Institute of Mountain Architecture and, more recently, the Construction History Group and the Transitional Morphologies Joint Research Unit): often the thesis proposals are built in agreement with these subjects or are open to the world of entrepreneurship and innovation, involving public administrations, companies, trade associations, non-profit organizations. Equipped with a teaching staff made up of over a third of teachers from other Italian universities and from foreign universities, alongside the Italian language the DASP has equally chosen (both in internal communication and in the didactic offer) the English language, considered as the lingua franca of scientific research.

Recognized by the Department of Architecture and Design DAD, in its Strategic Plan, as the joint instrument of third level learning and research training in the field of Architecture, the DASP is the main place where that fundamental (or "curiosity driven") research is cultivated which is useful for feeding apparatuses of knowledge and skills to be spent on applied (or "mission oriented") research and on participation in competitive challenges in the European research framework (nowadays Horizon Europe).

The main purpose of the DASP as a pedagogical institution remains that of research training, whatever the occupational and professional outlet that this specific training will allow for the PhD. The PhD in Architecture. History and Project provides PhD students with tools and methods to address and resolve specific research questions related to design and historiography of buildings and their contexts (topographical, technical-constructive production, symbolic and socio-economic), of cities and their characteristics (of form, functioning, strategic role), of territories and their narratives (in the game of the processes of representation, interpretation, transformation). The DASP aims to keep this research training at a high level and with broad horizons of attention in order to make the skills acquired usable, also and above all, in fields of competencies that are not strictly and purely academic, in line with the profile of skills that today it is required, both in Italy and in Europe, from those who obtain the title of PhD.

The DASP PhD gets in fact the competencies to become a researcher at universities and at research institutions (either public or private, either Italian or foreign) in the fields of history and documentation of architecture and cities, of buildings' design processes management, of infrastructures and urban spaces design, of control and development of technologies and especially construction techniques, working in the domain of abstract and applied sciences in the main fields of design and technological innovation. The future of the PhDs foresees a career as a researcher and teacher, as a manager in national or international public bodies, in all those sectors responsible for architectural quality, the enhancement of the historical heritage, the address of urban and territorial transformations, because of them having the necessary skills to also deal with the organization and promotion of cultural events and the management of complex design processes at various scales.The PhD training allows access to the liberal professions in architecture, where high quality skills are required, but also the ability to critically analyze phenomena and decision-making processes, and also in other parallel fields, such as urban and territorial planning, the management of capitalization phenomena and specialized publishing.

The objectives of the DASP are clarified in the accreditation document, compiled every year by Coordinator upon request of the Italian Ministry of University and Research and made available to the Academic Board and DASP PhD students.The same objectives are part of the introductory report that Coordinator and Council hold every year on a date located between the first two weeks of November to welcome the new members (Opening Day): it is an occasion that is not only formal, but which serves to better define, by periodically refining it, the scientific and educational agenda of the PhD in Architecture.

The identity of the DASP is also made explicit on the two doctoral websites: the official one on the Politecnico di Torino platform (https://www.polito.it/didattica/dottorato-di-ricerca-e-scuola-di-specialization/active-courses/architecture-history-and-design/research-themes), and the one external to the university system, traditionally self-managed by PhD students (https://daspstudents.org). Today, this DASP Yearbook is added to those communication tools, as the first result of a passionate initiative by DASP PhD students, once more interested in socializing the content of their researches and offering it to the widest possible comparison, cultivating the precise project of building a scientific community ready to face future challenges.

Even out of the comfort zone of their physical headquarters DASP-Home (at Istituto Galileo Ferraris), Torino 10125.

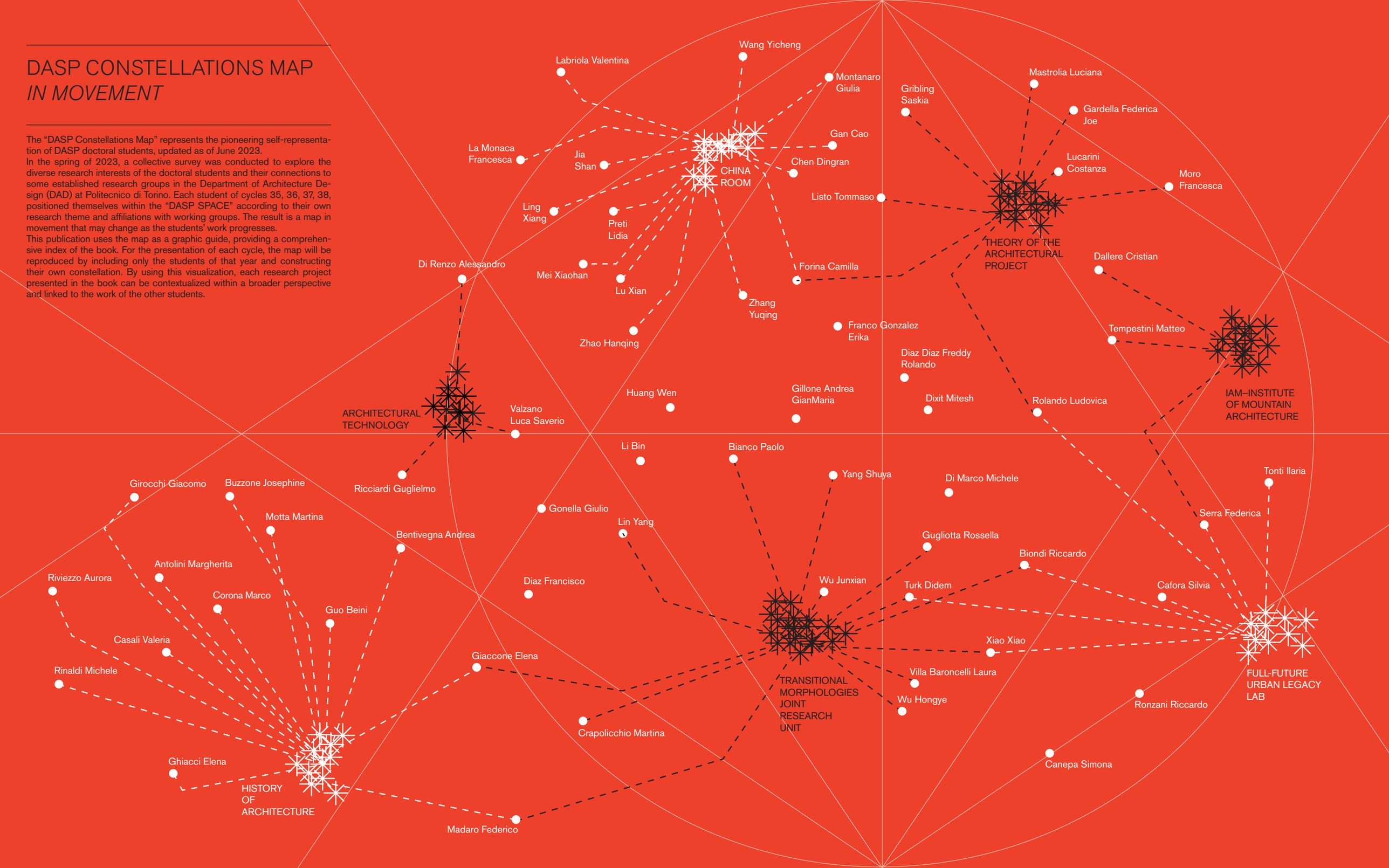
* The text of this introduction is taken from the document *Proposal for the accreditation of doctorates - a.y. 2023/2024*, presented to the Italian Ministry of University and Research on June 5th, 2023.

** Jonathan Hill, History by Design, in Ian Borden, Murray Fraser and Barbara Penner (eds), *Forty Ways To Think About Architecture. Architectural history and theory today*, John Wiley and Sons Ltd, London 2014, p. 166.



DASP CONSTELLATIONS MAP
IN MOVEMENT

The “DASP Constellations Map” represents the pioneering self-representation of DASP doctoral students, updated as of June 2023.
In the spring of 2023, a collective survey was conducted to explore the diverse research interests of the doctoral students and their connections to some established research groups in the Department of Architecture Design (DAD) at Politecnico di Torino. Each student of cycles 35, 36, 37, 38, positioned themselves within the “DASP SPACE” according to their own research theme and affiliations with working groups. The result is a map in movement that may change as the students’ work progresses.
This publication uses the map as a graphic guide, providing a comprehensive index of the book. For the presentation of each cycle, the map will be reproduced by including only the students of that year and constructing their own constellation. By using this visualization, each research project presented in the book can be contextualized within a broader perspective and linked to the work of the other students.



LEGENDA. HOW TO READ THIS PUBLICATION

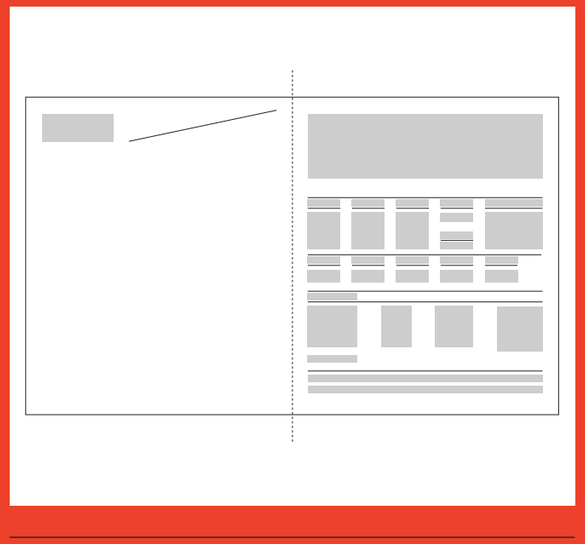
The aim of this publication is to explain the complexity of the DASP's structure and its relationships both inside and outside the organization. The content is presented in a simple and easy-to-read format, resembling a magazine which covers several PhD research topics with varying levels of detail, all presented on equal footing.

The publication's layout and graphical design takes inspiration from two Italian literary series from the 1960s: the *Piccola Biblioteca Einaudi*, a universal pocket series of non-fiction, and *URANIA*, a science fiction series by Arnoldo Mondadori. The DASP Yearbook adopts the small pocket format and the use of three primary colours (white, black, and red), which distinguished the stylistic choices of both publishing houses at the time, thanks to Einaudi's strong identity imprint by Bruno Munari and Mondadori's Art Director Anita Klinz. This publication uses those different colors to define each macro area and identify the content of the pages. The recurring structure is flexible and can adapt to the unique differences between cycles and PhD students. Images and diagrams are presented in black and white to maintain continuity, with images often crossing pages to keep them connected.

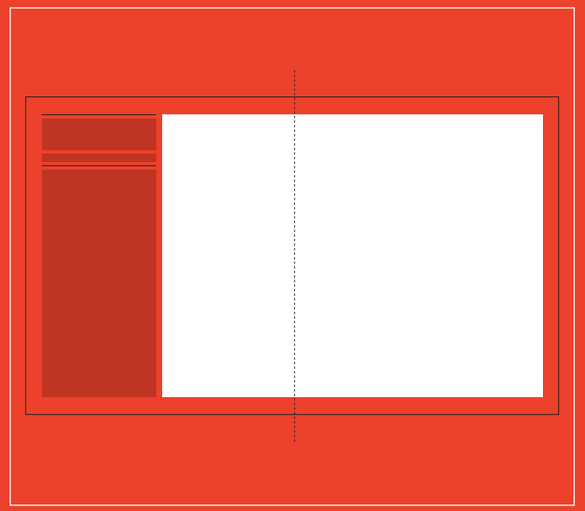
The typography used in this project features the *Akzidenz Grotesk* typeface. It's a simple and clean *sans-serif* font that became popular in the 1950s as part of the *Swiss Modernism* style and it was widely used by public transportation companies, including the New York Subways, because of its neutrality and clarity. To balance out the system's rigidity, we've added *Marlide Display*, which was inspired by classic serif fonts from the late 1970s. .

CHAPTERS A COLOR CODE

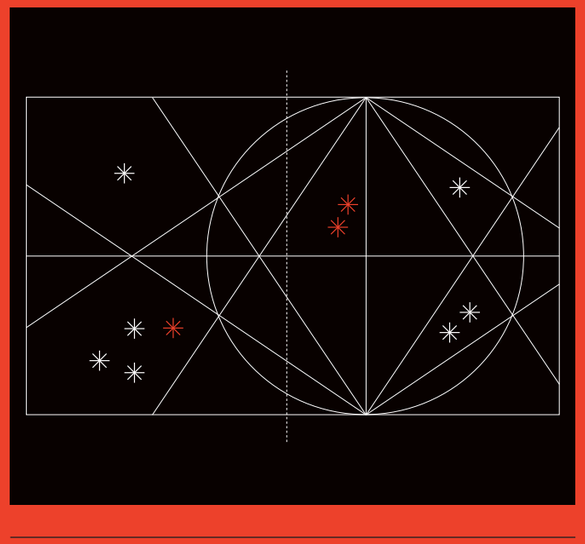
Every chapter is guided through its specific colour and contains various topics, specific materials with different formats of text and/or images.



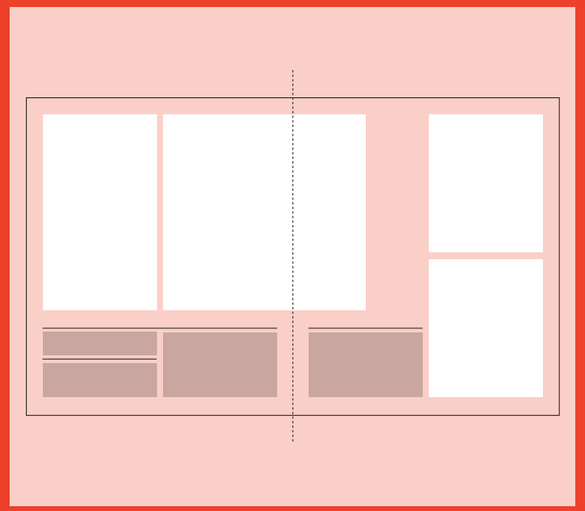
White - Title page of the chapters and colophon



Red - Introduction and info on the DASP and the yearbook



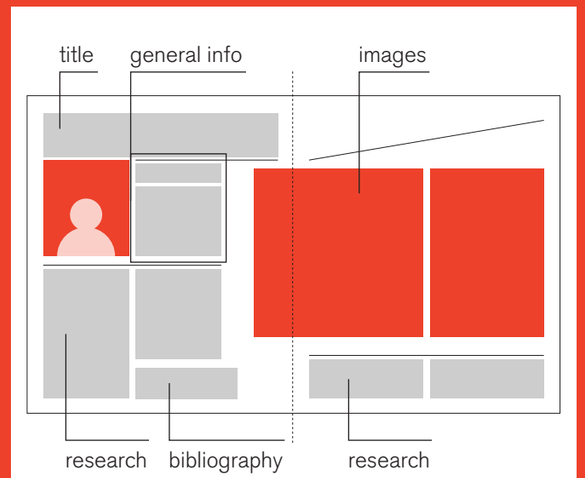
Black - Graphical index of the cycles



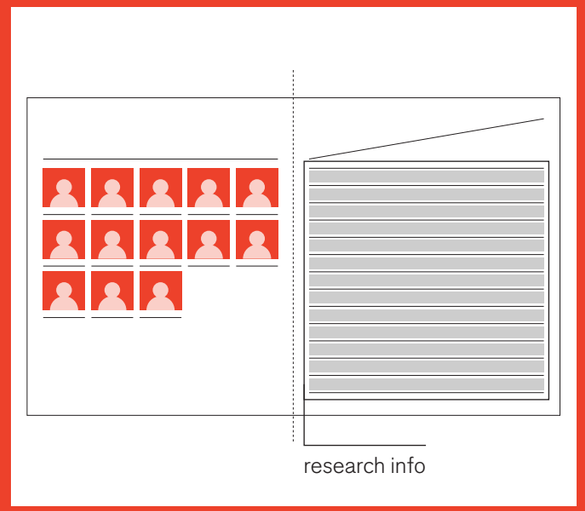
Pink - DASP activities such as workshop and congresses

A SIMPLE STRUCTURE TO SHOW COMPLEX RESEARCH

The PhD Candidates pages have a simple and repetitive structure that can be adapted to any research



Page structure for 38-37-36 cycle PhD students



Page structure for 35 cycle PhD students

001

XXXVIII
CYCLE

Labriola Valentina

Jia
Shan

CHINA
ROOM

Chen Dingran

THEORY OF THE
ARCHITECTURAL
PROJECT

IAM–INSTITUTE
OF MOUNTAIN
ARCHITECTURE

ARCHITECTURAL
TECHNOLOGY

Huang Wen

Gillone Andrea
GianMaria

Dixit Mitesh

Bianco Paolo

Di Marco Michele

Gonella Giulio

Serra Federica

Wu Junxian

Guo Beini

Rinaldi Michele

TRANSITIONAL
MORPHOLOGIES
JOINT
RESEARCH
UNIT

Villa Baroncelli Laura

Wu Hongye

FULL-FUTURE
URBAN LEGACY
LAB

HISTORY
OF
ARCHITECTURE

Madaro Federico

CHIMERAS. THE RELATIONSHIP BETWEEN TYPOLOGY, TECTONICS AND TOPOGRAPHY IN THE AGE OF CONTEMPORARY CHANGES



Paolo Bianco

Cycle
38° - PoliTo Grant

Year
2022 - 2025

Supervisors
Marco Trisciuoglio

Research Group
Transitional Morphologies Joint Research Unit

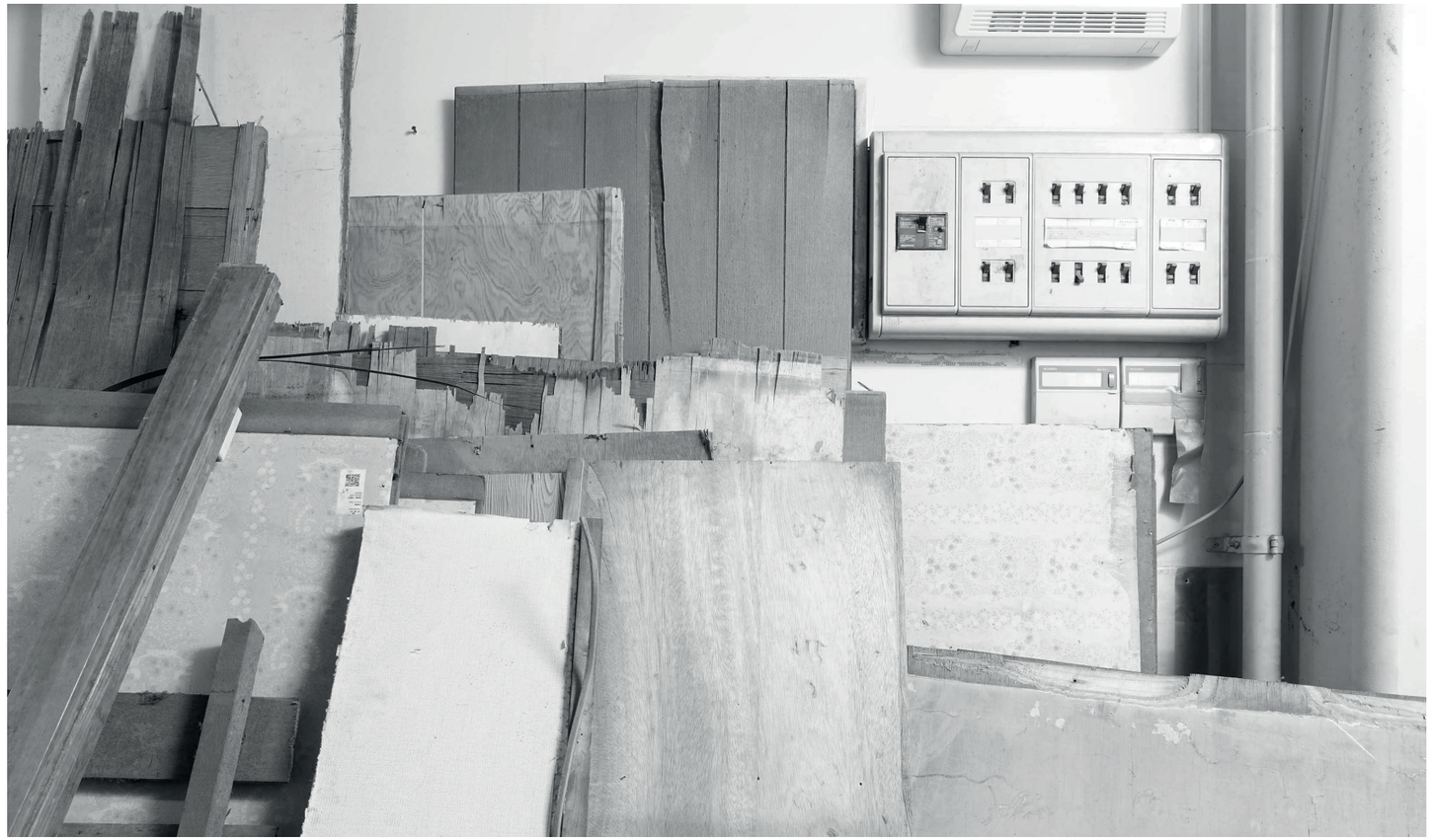
Topography, typology and tectonics are three themes of architecture that have always been intersectionally linked, almost to the point of defining them, at least in less recent times, as mutually dependent. A drawing by Antonio Averlino (known as Filarete) in his *Trattato di Architettura* of 1460, very well represents this link: a naked Adam, which we can define as "the first Type", having only a lump of earth that is the Topography (not only as orography but as environment and soil), to shelter itself from the rain can cover his head with his hands, the only tectonics he has, drawing with the arms (not accidentally) the *trite* that is at the base of the primitive hut.

This interdependence has been for centuries the basis of the permanence of classical types and the relationship between the different components in architecture. The evolution in construction techniques, which remained unchanged until the industrial revolution, has made this link less evident and, in some cases, completely eliminate it.
In small isolated settlements, far from urban dynamics of efficiency, the relationship between the themes has remained evident. In these places most of the built fabric continues to be *ordinary buildings* that have not experienced upheavals but have slowly adapted to the change. Building by themselves, the inhabitants have modified the buildings in pieces through the replacement of architectural components.

These changes have gone hand in hand with the evolution of materials and standardized industrial production that, thanks to the low cost of the product and the easy applicability by unskilled labour, has partly supplanted the vernacular materials. *Chimera objects* were born, where traditional and industrial elements are combined together in a single entity. In these buildings, the old bearing structures in stone and wood are complemented by concrete and steel elements with the same structural function; aluminium windows and doors replace the wooden ones while ceilings, partitions and floors are made of synthetic materials that reproduce the aesthetics of the original ones. These updates have mainly concerned the basic type and have become part of the natural *typological process* because they occurred with constancy and graduality, in a sufficiently wide time interval to be "assimilated". This building has carried out the task of *being memory* of a changing society where architecture can be without architects.

In the last decade, however, the theme always considered more invariable of the three, the topography, is undergoing an unexpected change. If we continue to consider the topography as the sum of the morphological, social and climatic elements of a territory, we realize how we are witnessing a distortion of each of these dynamics. Climate change, deeper social gaps and unexpected health emergencies have made the urban model increasingly unsustainable and unsuitable. A new interest in rural territories, from the mountain areas to the rural suburbs of large cities, is leading to a rapid need for updating the typology and tectonics, which until now have gone hand in hand, producing this type by the *hybrid tectonics* that well integrates into the tissue.

Assuming a progressive worsening of the environment, and the rapid acceleration in change what will it mean in the relationship between the three themes in these places? Will the house still be "the house that makes itself" or will there be no more time to constitute, through change, a real typological process? Will these *chimeras* continue to be a mixture of vernacular and industrial or will this new typology cease to exist, especially when the act of building in these places will be more regulated and become less spontaneous?



Dismantling Takamizawa House, 2019
©Jan Vranovský

Caniggia, G. (1997). *Ragionamenti di tipologia. Operatività della tipologia processuale in architettura.* Firenze: ALINEA Editrice.
Caniggia, G., & Maffei, G. (1995). *Lettura dell'edilizia di base.* Venezia: Marsilio Editori.
Gazzola, L. (1987). *Architettura e tipologia.* Roma: Officina Edizioni.
Kadowaki, K. (A cura di). (2020). *Co-ownership of action: trajectories of elements.* Tokyo: TOTO Publishing.
Romano, M. (1993). *L'estetica della città europea. Forme e immagini.* Torino: Giulio Einaudi Editore.
Sand, J. (2013). *Tokyo Vernacular.* Berkeley: University of California Press.

BALANCING CONSERVATION AND REVITALISATION: EVIDENCE FROM URBAN DESIGN PRACTICES FOR HISTORIC DISTRICTS



Dingran Chen

Cycle
38° - CSC Grant

Year
2022 - 2025

Supervisors
Michele Bonino

Research Group
China Room

The world is currently facing challenges in balancing cultural heritage conservation and urbanisation requirements, particularly in China, where serious social problems have gradually emerged as “bottlenecks” with the booming of the urban area. This research investigates the application of urban design strategies for the conservation and revitalisation of historic districts. Gaining sufficient empirical evidence on how urban design practice affects cultural heritages from different points of view, such as social, economic, and environmental aspects, is crucial to comprehend and optimise the state of conservation and revitalisation of historic districts in the context of urbanisation. The research explores case studies and lessons learned from various urban revitalisation efforts in historic districts worldwide, to identify effective design strategies for conserving the historic character of a district while also promoting vitality. Moreover, this research will select Guangzhou as the main research scope and, from an urban design perspective, focuses on the conservation and revitalisation of historic districts for those affected by the urbanisation process. The insights gained from this research can inform future urban revitalisation efforts in historic districts, helping to promote sustainable and vibrant urban communities while conserving the rich cultural heritage.

Background

Today, urbanisation is a topic of concern for numerous government agencies and the general public. Rapid urbanisation has not only contributed to the development of cities but has also shed light on an array of problems. At the same time, the deterioration of spatial form in historic districts has sped up the process by which the surrounding neighbourhoods have become obsolete. The historic district, as an essential component of the city, is forced to contend with the issues that urbanisation presents. Li et al. (2021) conclude that urbanisation is one of the reasons for the decline of most historic districts. Achieving a balance between conservation and revitalisation is one of the effective ways for historic districts to confront these challenges. By investigating urban design practices within historic districts, this research will primarily focus on the value of the objective and explore the reasons and implications of conservation. Moreover, in terms of revitalisation, this research focuses on making historic districts more vibrant, promoting the sustainable development of historic areas, and discussing the effect of innovative technology. Due to limited resources, lack of awareness, and other obstacles, the heritage conservation is frequently neglected in developing countries. As a result of the rapid and unbalanced urban development prevalent in developing countries like China, historic districts are rapidly deteriorating (Li et al., 2021). According to Xie and Heath (2017), due to urbanisation and redevelopment, thousands of China’s historic districts confronted destruction or irreversible damage in the late 20th and early 21st centuries. This study will focus on Guangzhou as the main research scope, and through a cross-sectional comparison of other comparable urban design cases, it seeks to investigate the current status of heritage conservation in China and reflect on this issue in depth.

Li, M., Liu, J., Lin, Y., Xiao, L., & Zhou, J. (2021). Revitalizing historic districts: Identifying built environment predictors for street vibrancy based on urban sensor data. *Cities*, 117.
Xie, J., & Heath, T. (2017). *Conservation and revitalization of historic streets in China: Pingjiang Street*, Suzhou. Journal of Urban Design, 22(4), 455-476.



Ruínas de São Paulo, Part of the Historic Centre of Macao (China) in the world heritage list
© Dingran Chen

Research Questions

What lessons can be learned from efforts to revitalise historic districts worldwide? What are the key challenges and opportunities in developing urban design strategies that balance the conservation of historic districts with the needs of modern communities? What insights can be drawn from case studies of urban revitalisation projects that can inform effective strategies for conserving China’s cultural heritage?

Methodology and Procedure

This research employed a mixed methodology, combining both quantitative and qualitative approaches. Furthermore, the research involved various methods, including literature review, case study, field survey, questionnaire survey, and data collection and analysis procedures.

THE ROLE OF DESIGN TO MITIGATE THE SPREAD OF EPIDEMIC PRONE DISEASES WITHIN HEALTHCARE FACILITIES



Michele Di Marco

Cycle
38° - Free position

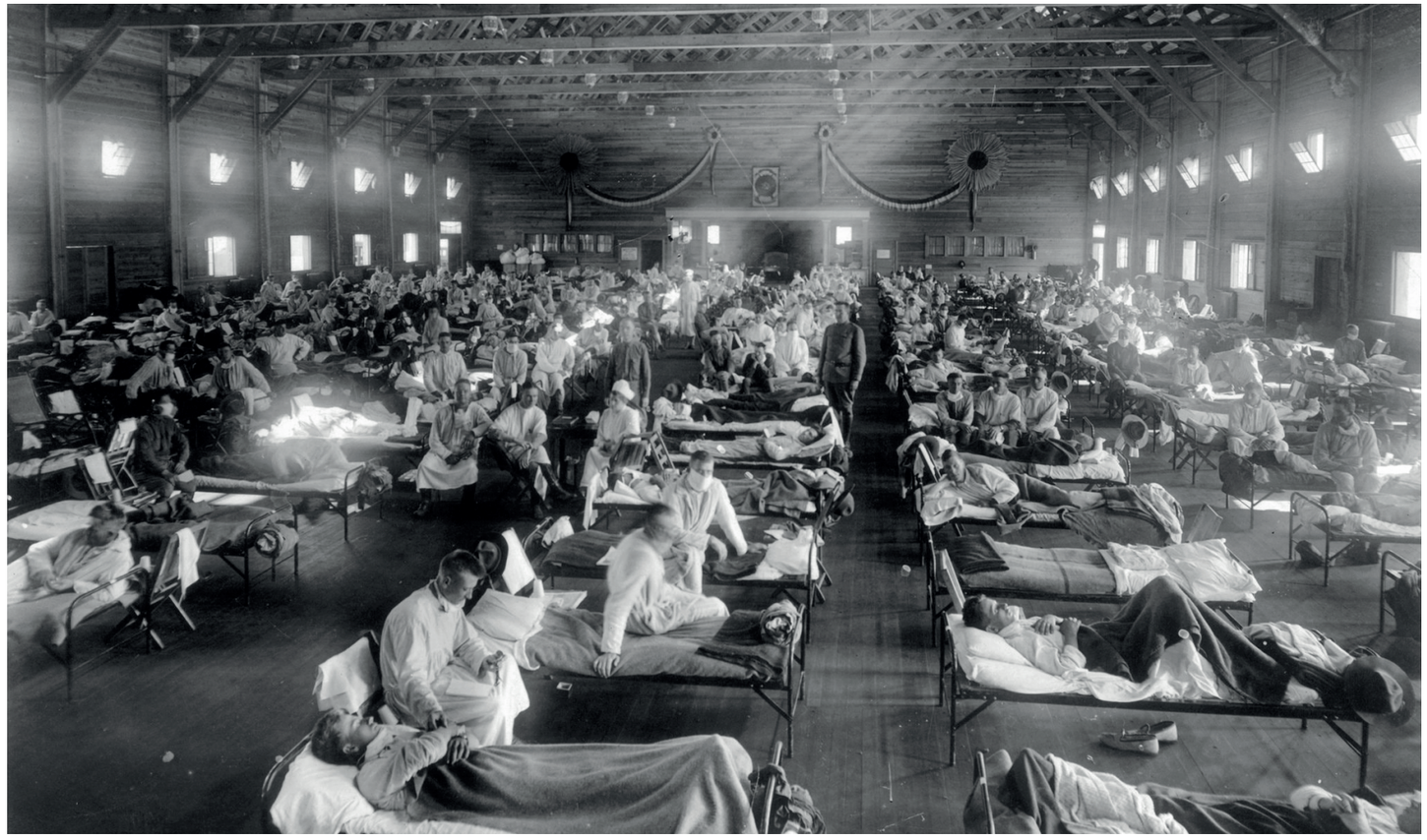
Year
2022 - 2025

Supervisors
Francesca De Filippi, Michele Bonino

Research Group
-

The ability to control the spread of infectious diseases has long been a concern for humanity. According to Currie1 architecture influenced through the history the art of healing, therefore the building environment should be added as an important part of the Hippocrates' equation that included: the disease, the patient and the physician.
Within the last decades significant improvements have been achieved in understanding transmission mechanisms, discovering that pathogens can transfer from person to person through the air we breathe, directly through the transfer of bodily fluids, or through contact with an intermediary source (fomites or vectors). Effective control of infectious diseases depends on intervening in the interplay between agent, host, and environmental factors. For any infectious disease, this interplay requires a specific linked sequence of events termed chain of infection, which include the infectious agent, reservoirs, portal of exit, modes of transmission, portal of entry and susceptible host.2 Breaking a link along the chain through one or more actions included in the Hierarchy of control model 3 will stop transmission of the infectious agent. According to this model, used to determine which actions will best reduce the exposure to an infectious pathogen, engineering control measures, including hospital configuration and design, are the third level of control after the elimination and substitution of the hazard.
In recent years, systematic literature reviews have identified key gaps in the evidence related to core components of infection prevention and control (IPC) calling for high-quality research. Building environment research is needed to optimize IPC measures able to mitigate the risk of nosocomial infection and balance other environmental harms 4 and emerging fields like evidence-based design are proving that environment design based on scientific research can affect patient outcomes (Ulrich et al., 2010). Creating standards to assess the quality of evidence for design strategies presents a unique challenge. Whereas rigorous controlled studies, such as randomized controlled trials, are available and highly regarded in medical research, most design interventions are multifactorial.
The overarching goal of this PhD is to investigate the role of design in improving IPC measures for epidemic prone diseases within healthcare facilities. The main research question is therefore: *How can design strategies improve IPC measures for epidemic prone diseases within healthcare facilities?*
The objectives of this research are:
1. Defining the relation between design strategies and IPC measures for epidemic prone diseases within healthcare facilities
2. Exploring the degree and the nature of impact that the design solutions analyzed can have on reducing the transmission of epidemic prone diseases within healthcare settings
3. Defining a theoretical framework and model for healthcare facilities to enable the identification and development of design criteria to reduce the risk of transmission of epidemic prone diseases.
The methodological approach that will be adopted to conduct the work is the case study theory.6 The PhD will be organized around 5 steps (research design, research preparation, data collection, analysis and sharing results) that will be connected in a verification process that allows to validate the methodological approach used, as well as the methods applied to carry out the research. The results of this investigation will set the premises for the definition of strategic approaches to evaluate and design healthcare facilities resilient to the transmission of epidemic prone diseases. This work will shed light on an ontological approach to healthcare facilities design and enable to open future multidisciplinary research paths merging building environment and medicine disciplines. Moreover, this PhD will support the health and the building environment sectors to create safer and healthier healthcare systems, settings and structures.

Currie, J. (2007). *The Fourth Factor A Historical Perspective on Architecture and Medicine.* AIA.
Seventer et al. (2016). Principles of Infectious Diseases: Transmission, Diagnosis, Prevention, and Control. *International Encyclopedia of Public Health.*
McDiarmid, M. (2014). Hazards of the Health Care Sector: Looking Beyond Infectious Disease. *Annals of Global Health.*
WHO (2021). *COVID-19: Occupational health and safety for health.*
Ulrich et al. (2010). *A conceptual framework for the domain of evidence-based design.* HERD.
Yin, R. (2018). *Case study Research and applications: Design and Methods.* SAGE.



Influenza victims crowd into an emergency hospital near Fort Riley Kansas in 1918
© National Museum of Health - AP

POWER: SPATIAL AND TEMPORAL MORPHOLOGIES OF THE LITHIUM-ION BATTERY SUPPLY CHAIN



Mitesh Dixit

Cycle
38° - PoliTo Grant

Year
2022 - 2025

Supervisors
Alessandro Armando, Francesca Frassoldati, Fabio Giulio Tonolo

Research Group
-

"Sir, the road to hell is paved with good intentions."
Samuel Johnson, 1775

The Lithium-Ion Battery (LIB) is the essential technology that will enable the transition to renewable energy. LIBs, like previous energy regimes - wood, fossil fuels, coal, and gas - have begun to redefine territories and jurisdictions for the nations, states, and corporations searching for the essential Critical Raw Material (CRM): Lithium . Unfortunately, the exponential demand for Lithium, primarily for Electric Vehicles (EVs), is grossly outpacing the industry's ability to extract it. In addition, due to market demands and the fact that lithium mining is a new industry, and each site requires a unique spatial plan, the methods, policies, and resources used for extraction and distribution have yet to be regulated or carefully studied . As a result, the extraction sites adversely affect local mining communities and their ecologies due to carbon-intensive machinery, significant use of water in areas with limited water reserves, and extraction techniques . For Architects to address and understand the actual and total environmental impact of the transition to a post-carbon planet, this research, by using the LIB as a material vector, seeks to connect the physical and political implications at the point of extraction of the critical element necessary for producing a technology to store the "clean" energy needed to save the planet. The work traces the element's life cycle from its extraction site to refinement, manufacturing, and waste. The methodology of the work follows the Finish Geographer Anssi Passi's TPSN model (Territory, Place, Scale, and Networks) to illustrate how territories are brought into being through extensive networks involving international accounting standards, maps, laws, digital infrastructures, technicians, and myriad other human and non-human actors .

Focusing on three lithium mines, each represents unique geologies, geographies, extraction techniques, labour, and ownership. This selection will identify and visualise varying extraction morphologies and their landscapes. Furthermore, the research will develop techniques to map planetary supply-chain morphologies from the point of material extraction. Employing 'territorial planning' a methodology integrating the quantitative methods of data science, geomatics, architecture, and urbanism, e.g., GIS, satellite imagery, mapping, digital forensics, geospatial analysis, etc., and the qualitative methods from geography and economics, e.g., interviewing, archival research, fieldwork, literature review, etc., the project will map 'new' forms, scales, and terrains, i.e., the operational landscapes of the LIB.

The project begins at extraction sites in Australia, Serbia, and Chile to understand the complete political, spatial, and environmental impacts of the production and use of LIBs; The project connects the physical and political effects at each of the critical thresholds in the global supply chain of LIBs. The result of the process reveals the planetary morphologies and total carbon impact of the LIBs supply chain from the point of material extraction, refinement, transportation, manufacturing, and waste. Architects must not conceive LIBs simply as a technology to enable a 'green energy' but as a critical agent in redefining the relations between nations, states, and corporations in search of symbolic and literal power. The research extends these arguments to architecture by evaluating how design can have a more active and transformative impact on the forces that shape a decarbonised built environment.

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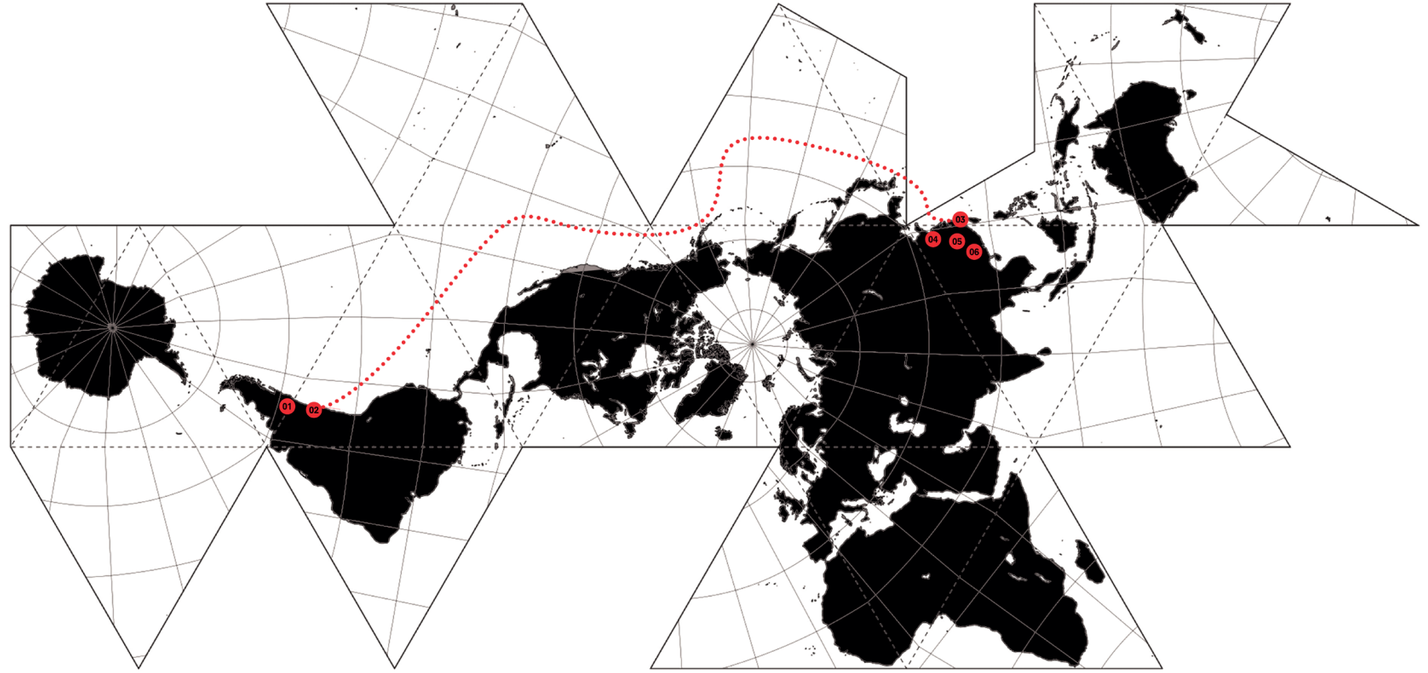

01. Salar de Atacama, Chile
- Duration
- Emissions kg CO_2e/TEU
- Distance km

02. Salar Atacama, Copiapó
- Duration 11 hours, 20 minutes
- Emissions 620 kg CO_2e/TEU
- Distance 827 km

03. Terminal Pacifico Sur (TPS)
- Duration 25 days, 18 hours, 1 minute
- Emissions 1425 kg CO_2e/TEU
- Distance 19254 km

04. Ningbo Meishan Island Int. Container Terminal
- Duration 1 day, 17 hours
- Emissions 80 kg CO_2e/TEU
- Distance 627 km

05. Fuzhou Int. Container Terminal (FICT)
- Duration 6 hours, 43 minutes
- Emissions 395 kg CO_2e/TEU
- Distance 433 km

06. Xinyu, Chengbei Subdistrict
- Duration 10 hours, 35 minutes
- Emissions 600 kg CO_2e/TEU
- Distance 658 km

Critical Thresholds within Global Supply Chain
© Mitesh Dixit

NEW TOOLS AND METHODOLOGIES IN THE DESIGN OF LONG-DISTANCE CYCLE PATHS: AN EXPERIMENT ON THE CYCLE PATH OF LAKE MAGGIORE



Andrea Gian Maria Gillone

Cycle
38° - PoliTo Co-funded Grant

Year
2022 - 2025

Supervisors
Riccardo Palma, Lorenzo Vignono

Research Group
-

With the Decree of the Ministry of Infrastructure and Transport dated 29/11/2018, *Progettazione e realizzazione di un sistema nazionale di ciclovie turistiche (SNCT)* , the great economic and socio-cultural potential of the Long-Distance Cycle Paths (LDCP) was recognized in Italy. On the other hand, the subsequent Directive 375, which governs the drafting of the technical-economic feasibility projects of national interest's cycle routes, presents fundamental problems. In addition to containing a series of inconsistencies of a technical nature, it does not seem to provide adequate indications, especially concerning the aspects linked to attractiveness and consequently to the requirements relating to the architectural and landscape quality of the cycle paths. The quantification of these requirements is treated with a completely superficial approach, generating difficulties in understanding, and applying the directive .

Consequently, the main PFTEs developed for the SNCT still need to be completed in the methods of territorial planning, omitting important architectural, urban, naturalistic, and economic-social aspects. Therefore, the methodological definition of an LDCP design tool is of fundamental importance. It is helpful for guiding professionals in drafting the project itself and ensuring that the best possible result is obtained.

Considering the inadequacy of the legislative context, can a specific case study assume the role of a significant field of experimentation for the precise and adequate definition of the technical and methodological requirements that should guide the project of long-distance cycle paths?

To answer this question, the research hypothesizes that the Piedmontese shore of Lake Maggiore, characterized by a historical, cultural, and environmental heritage of national importance, could represent a particularly effective context for tackling and hopefully solving most of the current critical issues. In its peculiarities, Lake Maggiore has a sustainable and varied mobility system that allows travel by train, boat, and some historical routes along the coast . Valuable panoramic points qualify the latter, connect a system of Romanesque churches and Borromeo interventions, intercept numerous Art Nouveau villas , and have systematic connections towards the lake, which, if connected to the waterways, would constitute intermodal exchange nodes .

Within this scenario, the research intends to test two hypotheses that can assume a general character.

The first concerns the possible role of cycle routes as

Facchinetti, G., & Miedico, C. (2015). *Di città in città. Insediamenti, strade e vie d'acqua da Milano alla Svizzera lungo la Mediolanum - Verbanus.* Arona: Lavrano s.a.s.

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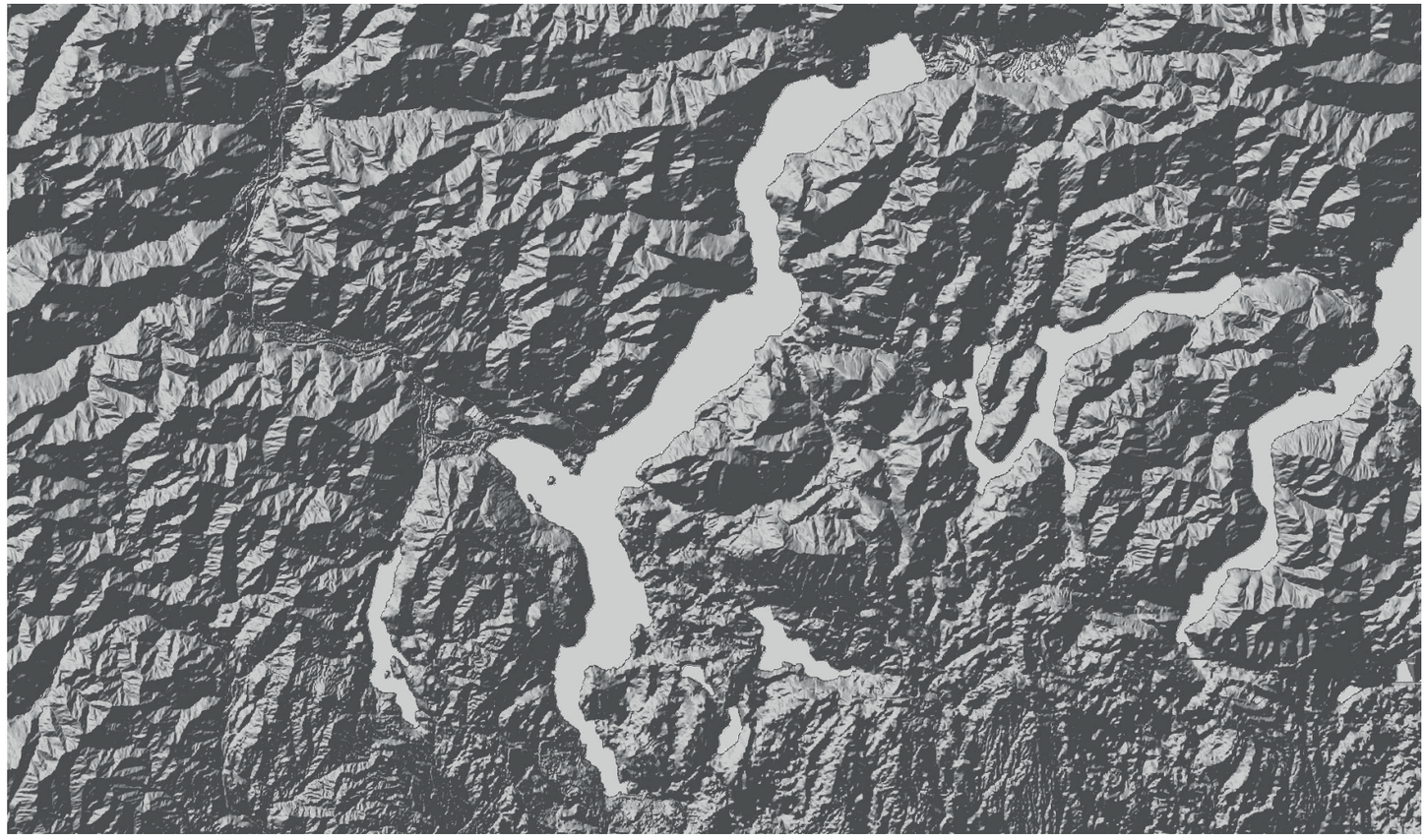

Image processed with GIS software of the DTM Helidem HD1 data, Piedmont Region Geoportal
© Andrea Gian Maria Gillone

a territorial axis capable of economically relaunching those fragile areas which, although adjacent to the touristically consolidated linear regions, are often obscured by them. In the case of Lake Maggiore, the question that the research asks is, therefore: can the routes and areas along the coast, thanks to the project of the cycle path, reveal their multiple identities and attractions, passing from the condition of "backs" concerning the famous and busy coast to that of new centralities?

The second hypothesis concerns the re-functionalization or co-functionalization of historic infrastructures for cycling purposes , which is one of the main objectives of Law 2/2018, which established the Bicitalia network of cycle routes of national interest. Since the analyzed territory lacks historical infrastructures capable of hosting a cycle path, the question, in this case, is: can the cycle path project assume the architectural-territorial model of the historical infrastructures even in their absence, recognizing systems composed of serial architectures in the places?

COLONIAL ECOLOGIES. PALM OIL, THE PLANTATION-FORM, AND THE ARCHITECTURES OF EXTRACTIVISM



Giulio Gonella

Cycle
38° - PoliTo Grant

Year
2022 - 2025

Supervisors
Camillo Boano

Research Group
-

In recent years, palm oil emerged as one of the most widespread and controversial commodity in the global market. In various forms, it is present in at least half of all the packaged goods sold in supermarkets worldwide, and the list of goods containing palm oil is endless, ranging from food products to cosmetics, soaps, and even electronic devices (Haiven, 2022). However, despite its pervasiveness, oil palm production is fairly concentrated: Malaysia and Indonesia alone currently account for the 85% of the global supplying of the oil.

As reported by many environmental studies, palm oil has recently been associated with labour exploitation, deforestation, and the degradation of animal habitats. The single species of palm (*Elaeis Guineensis*) that provides the oil is cultivated in the immense extensions of monocrop plantations, that are posing a significant threat to pre-existent vegetation, such as virgin forests and peatlands, and to the human and non-human lives associated with them (Robins, 2021).

Yet, critiques of oil palm plantations rarely, if ever, situate their ecological, political and spatial conditions within broader geo-historical relations. Even when they shed light on the ecological annihilations associated with plantations, they offer a limited narrative of how those processes had come into being. Namely, they fail to acknowledge that plantations are underpinned by racial, capitalist and colonial roots.

Against this backdrop, my research seeks to advance knowledge on the intimacies between the present disrupted ecologies of oil palm plantations, and the colonial legacy subtending their spatial and architectural schemes (Lowe, 2015). How did oil palm plantations emerge in the wake of the political ecologies of the Dutch empire in Indonesia? How does the plantation as a figure of spatial power underpins the enduring logic of extractivism in the so-called oil palm plantation zones?

By foregrounding the geo-histories and the modes of spatial ordering of the plantations, as well as the idea of 'nature' implied in them, I look at oil palm plantations in the wake of the terraforming project of the Kingdom of the Netherlands (Ghosh, 2021). Therefore, I argue that the ongoing threat that plantations are posing to human and non-human existences are a manifestation of what Elisabeth Povinelli (2021) indicates as the "ancestral present" of colonialism. Along this line, I consider oil palm plantations as emergences of a plantation-logic that is both immanent and transhistorical.

Methodologically, the research deploys the lens of extractivism as a way to see through the materialities of plantations; the concept is therefore intended in a double sense: as a process of material depletion of non-human existences, and as an ongoing epistemic violence that finds its roots in the coloniality of thought (Gómez-Barris, 2017). As such, the research positions as a possible contribution in the bourgeoning critical debate on the origins, structures, and epistemologies of the current climate crisis and ecological collapse, and its links to the project of Western colonial modernity and geo-spatial transformation (Yusoff, 2018).

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Haiven, M. (2022). *Palm oil: The grease of empire.* London: Pluto Press.

Lowe, L. (2015). *The intimacies of four continents.* Durham: Duke University Press.

Povinelli, E. A. (2021). *Between Gaia and ground: Four axioms of existence and the ancestral catastrophe of late liberarism.* Durham: Duke University Press.

Robins, J. (2021). *Oil palm: A global history.* Chapel Hill : University of North Carolina Press.

Yusoff, K. (2018). *A billion black Anthropocenes or none.* Minneapolis: Universityof Minnesota Press.



The western part of the island of Greater Java, 1718 (extract)
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COMPARISON AND REFLECTION ON THE DEVELOPMENT HISTORY STUDY OF THE WORLD AND CHINESE INDUSTRIAL HERITAGE CASES



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Cycle
38° - CSC Grant

Year
2022 - 2025

Supervisors
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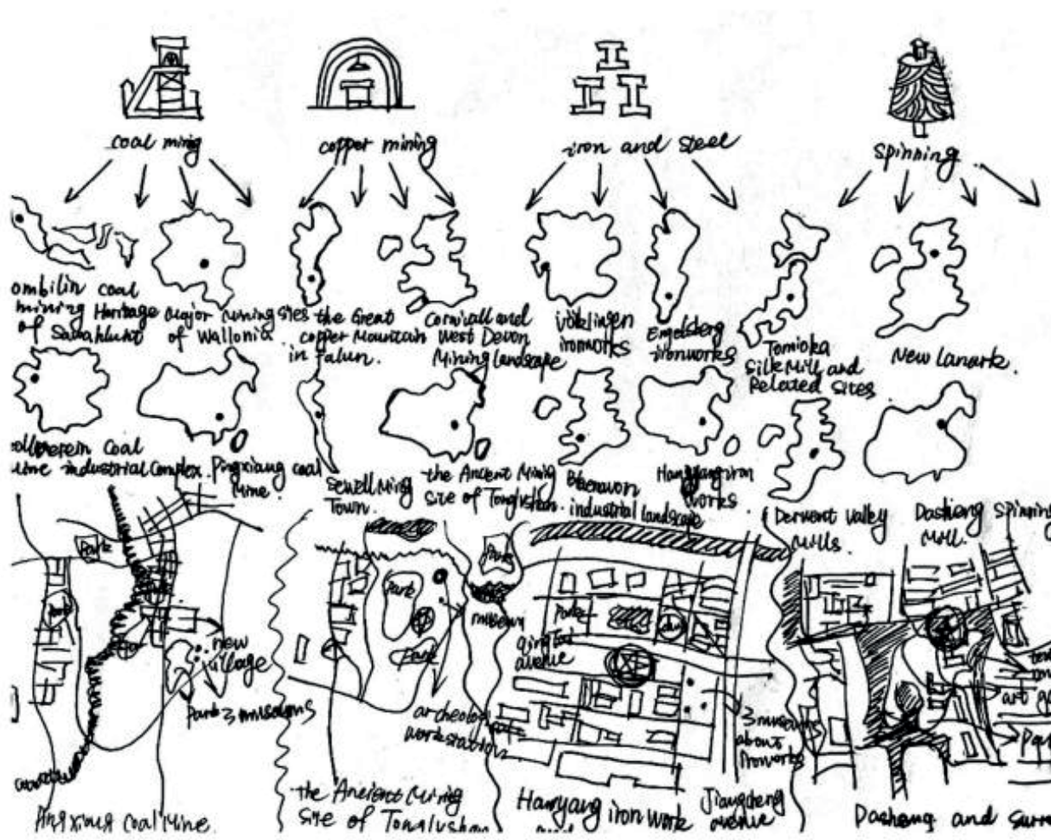
Research Group
History of Architecture

Internationally, the 44th World Heritage General Assembly was successfully held in Fuzhou from July 16 to 31, 2021, adopting the Fuzhou Declaration and considering a total of 36 new heritage nominations, of which 34 were approved for inscription on the World Heritage List and 3 inscribed projects achieved significant expansion. At present, China has 56 World Heritage sites, but only three broad industrial heritage sites, Qingcheng Mountain and Dujiangyan, the Grand Canal, and the Silk Road: The Road Network of the Chang'an-Tianshan Corridor, are on the World Heritage List, bearing witness to the long history and great achievements of ancient Chinese agricultural civilization. However, the post-industrial revolution industrial heritage in the narrow sense has always been a shortcoming of China's World Heritage, which is extremely mismatched with China's international status as the world's second largest economy and the most complete industrial category in the world, and which urgently needs to be compensated.

Domestically, in August 2021, the Ministry of Housing and Urban-Rural Development drafted the Notice on the Prevention of Large-scale Demolition and Construction in the Implementation of Urban Renewal Action, pointing out that "the implementation of urban renewal action should comply with the law of urban development, respect the wishes of the people, take the path of connotation and intensive, green and low-carbon development, change the way of urban development and construction, insist on" Stay to change the demolition" and to retain the use of upgrading the main, adhere to should stay as much as possible, to maintain the city's memory, to maintain the scale of the old city pattern, to continue the characteristics of the city style. Strictly control the demolition of large constructions, strengthen the repair and transformation, focus on improving the function, enhance the vitality of the city." Prevent urban renewal from being deformed and out of shape, strictly control large-scale demolition; prevent problems such as following the excessive real estate development and construction method, big demolition and big construction, and quick success and profit. Create a good condition and environment for the protection and utilization of industrial heritage, historical and cultural protection and heritage and urban renewal become the current dual opportunity for the protection and utilization of industrial heritage.

In the context of domestic and international policies, the industrial heritage of the World Heritage List and the Chinese National Industrial Heritage List are compared to analyze the development history of the same category of heritage and the preparation and improvement direction for future inscriptions. The industrial heritage sites in the World Heritage List are classified and analyzed

Du Qibi. (2020). *Review and prospect of the research on "inscription" of modern industrial heritage in China[C].* The 11th Symposium on Industrial Architectural Heritage in China. Guangzhou: South China University of Technology Press, 2021: 11-23.
Liu Boying. (2017). Confusion and re-conceptualization of industrial heritage[J]. *Architectural Heritage*, 2017(01): 8-17.



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according to industrial categories. The cases of the same categories in the World and Chinese lists are selected. The analysis is divided into four categories: coal, copper, steel and spinning. Currently three potential foreign cases and one Chinese case are selected for each category, and the final 1-2 foreign cases for each category will be determined after returning to China for field research in July-August. Coal mining sites are Ombilin Coal Mining Heritage of Sawahlunt (Indonesia), Zollverein Coal Mine Industrial Complex in Essen (Germany), Major Mining Sites of Wallonia (Belgium), Pingxiang Coal Mine (China, Jiangxi), copper mining sites are Mining Area of the Great Copper Mountain in Falun (Sweden), Cornivall and West Devon Mining Landscape (England), Sewell Mining Town (Chile), the Ancient Mining Site of Tonglvshan (China, Hubei), Völklingen Ironworks (Germany), Engelsberg Ironworks (Sweden), Blaenavon Industrial Landscape (England), Hanyang Iron Works (China, Hubei), Spinning sites are Tomioka Silk Mill and Related Sites(Japan), New Lanark (England), Derwent Valley Mills (England), Dasheng Spinning Mill (China, Jiangsu).

THE CONSTRUCTION HISTORY OF THE EIGHT COLUMNS IN THE SICHUAN THEATER OF THE SOUTHERN SONG, DURING THE SONG-MONGOL WAR



Wen Huang

Cycle
38° - Visiting PhD/co-tutelle agreement

Year
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Supervisors
Edoardo Piccoli

Research Group
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The gates of the Yundingcheng, one of the Eight Columns, 2019
© Wen Huang

During the Song-Mongol War in the thirteenth century, the Southern Song built more than eighty mountain fortresses in various scales in the Sichuan Theater to defend against the Mongol cavalry. The old cities in the Southern Song's flat area were threatened or destroyed by Mongols during the quick social upheaval from peace to war, and the local administrations and troops were forced to relocate and construct new fortifications on mountaintops. The strongholds served as the new locations of local governments and were garrisoned by military forces, constituting a defense system. Mongols called the most important eight mountain fortresses the Eight Columns, which were planned by Yu Jie, the chief of the Sichuan Theater Military Intendancy during 1242-1252, including the Kuzhuai, the Diaoyucheng, the Baidicheng, the Yundingcheng, the Qingjucheng, the Dahuocheng, the Yunshancheng, and the Dehancheng. They served as both the typical examples and a crucial component of the defenses erected by the Eurasian nations against the Mongol invasion. Southern Song's armies and people in the Sichuan Theater fought the Mongols for more than fifteen years, dependent on the Eight Columns and other mountain fortresses. This conflict based on these mountain fortresses had a significant impact on the history of warfare in the medieval world, as the Möngke Khan death at the siege of Diaoyucheng in 1259 lead to the subsequent rupture of the united pan-Eurasian Mongolian empire.

The Eight Columns were given their characteristics of construction and space by the warfare in the thirteenth century, which was supported by the nations and inspired by innovations in military technology. The construction processes of the Eight Columns, including the destruction of old cities, and the relocation and construction of new fortresses, reflected how the fortifications were impacted by a specific war context. The Sichuan Eight Columns were planned to transform the topographical advantage into tactical advantage, to counter the massive Mongol armies with new military technologies. In order to defend themselves and thwart the Mongols, the planners used the mountains and rivers while choosing the locations for the fortifications. Due to the close connection with the Yangtze River and its tributaries, the Eight Columns and other fortresses evolved into a regional river defense system and a logistical network based on the river network in Sichuan Basin, which practiced the Southern Song's river defense strategy. Additionally, the construction of the Eight Columns throughout the war was conducted to the greatest extent in accordance with the Southern Song's construction policy, including the construction procedure and the construction standard.

May, T., & Hope, M. (Eds.). (2022). *The Mongol World*. London: Taylor & Francis.
K'uan-Chung, H., & Wright, D. (2000). Mountain Fortress Defence: The Experience of the Southern Song and Korea in Resisting the Mongol Invasions. In *Warfare in Chinese History* (pp. 222-251). Brill.
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Li, T李天鸣. (1988). *Songyuan Zhanshi* 宋元战史 *(The history of the Sung-Mongolia war)*. Shihuo Publish House.
Tackett, N. (2017). *The Origins of the Chinese Nation: Song China and the Forging of an East Asian World Order*. Cambridge: Cambridge University Press.

The research focuses on the 1227–1279 time frame, from the Mongol invasion of the Sichuan Theater until the end of the Southern Song, and explores the relationship between the Song–Mongol War and the history of the Eight Columns' construction. In order to illustrate the planning issues in theater dimensions and the construction histories in case studies for the Eight Columns, this research combines the perspective of war history to explain how Song's defensive strategy in the Sichuan Theater and Yu Jie's military idea reacting to the war situation decides the site selection and spatial organization of the Eight Columns. The new field researches and the reanalysis of the archaeological reports in the case studies of the Eight Columns also provide the evidence to understand their construction processes and detailed morphological development.

LAND POLITICS IN THE URBAN-RURAL INTERFACE IN METROPOLITAN CITIES: A CASE STUDY OF REDEVELOPMENT OF URBAN VILLAGE IN GUANGZHOU



Shan Jia

Cycle
CSC Visiting PhD

Year
-

Supervisors
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Research Group
China Room

Urban village in metropolitan cities reveals a special urban-rural interface, representing outcomes of dual urbanization tracks in China (Liu & Zhang, 2020). For one thing, state-led urban sprawl during rapid urbanization gave rise to the emergence of urban villages in inner cities in China, where the government expropriated farmland to convert to urban use while bypassing rural settlement to reduce compensation costs. For another, urban villages rely more and more on a non-agriculture economy while maintaining rural administration in urban continuity at the same time. Conflicts between land-loss peasants and the state during land expropriation have been observed and researched widely. Exposed to the trend of land commodification since the late 1990s (Xu et al., 2009), the renovation of urban villages faces more complex challenges regarding justifying collective land right in rural-to-urban transformation.

From the perspective of the institution, the 1986 Land Administrative Law of the People's Republic of China stipulates that urban land belongs to the state while land in villages and outskirts belongs to the village collective, laying the foundation of a peculiar dual urban-rural land ownership system. Though ownership of collective land is clear, other rights of collective land have been considered ambiguous and incomplete (Tian & Zhu, 2013). For one thing, the entity of the collective has three levels of hierarchy; how much land each level owns is not clearly delineated. For another, the right to transform collective land use to non-agriculture use is strictly controlled by the state. According to the property rights school, which pursues maximising economic efficiency (Haila,2015), it is these attributes of collective land right in urban villages that result in land rent dissipation and facilitate disordered land rent competition (Zhu & Hu, 2009); thus clearly defined land rights to achieve higher land use efficiency is advocated vividly. The 'Three Oldies' policy (renovation of old towns, old factories and old villages) issued by Guangdong province was a breakthrough in law, it is a formal institutional change to prompt the clarification and redistribution of collective land right and later, the policies changed according to changing situations.

From the perspective of practice, urban villagers are considered to get a fortune through redevelopment in the public discourse and in fact, this image is totally different from previous weak land-loss peasants losing their subsistence. How are they empowered to get such huge profits, and how are these profits related to land? Under the given institutional arrangement, the redevelopment efficiency is pretty low in Guangzhou, and the disparity is huge among different villages that after 10 years of the policy, only less than 10 villages were redeveloped successfully.

Apart from research only concerned with the institutional framework of the land redevelopment of urban villages, complicated land politics during the redevelopment is rarely revealed in detail, and the role of social actors is not fully discussed. What causes the institutional change and how are various actors actually reacting to this institutional arrangement, and how this interaction further induce institutional change? This research mainly aims to figure out how did certain urban villages, in reality, gain pent-up land rent during redevelopment, what the role played by institutions and corresponding stakeholders, and how they are empowered by an on-the-ground investigation into the redevelopment of an urban village in Guangzhou, China.

Haila, A. (2015). *Urban land rent: Singapore as a property state.* New York: John Wiley & Sons.

Liu, S., & Zhang, Y. (2020). Cities without slums China's land regime and dual-track urbanization. *Cities*, 101, 102652.

Tian, L., & Zhu, J. (2013). Clarification of collective land rights and its impact on non-agricultural land use in the Pearl River Delta of China: A case of Shunde. *Cities*, 35, 190-199.

Xu, J., Yeh, A., & Wu, F. (2009). Land commodification New land development and politics in China since the late 1990s. *International Journal of Urban and Regional Research*, 33(4), 890-913.

Zhu, J., & Hu, T. (2009). Disordered land-rent competition in China's periurbanization case study of Beiqijia Township, Beijing. *Environment and Planning A*, 41(7), 1629-1646.



Renovated houses for urban villagers
© Shan Jia



Valentina Labriola

Cycle
38° - PoliTo Grant / Joint PhD Tsinghua

Year
2022 - 2025

Supervisors
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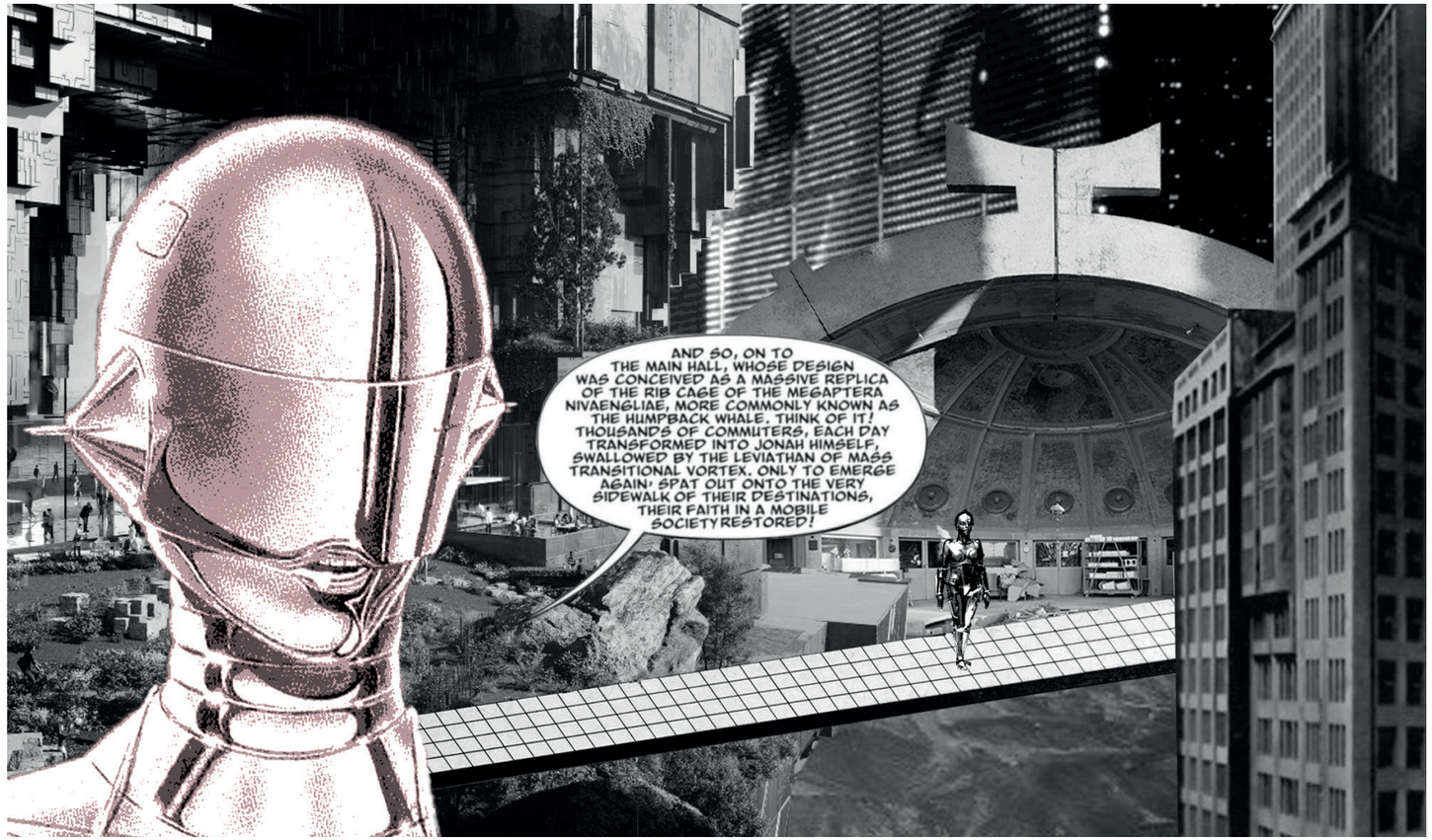
Research Group
China Room

What will be the form of the future is a mantra that has driven the design production of most architects over the centuries. The eternal quest for the perfect city, an unattainable utopia that has taken on ever-new forms and connotations, still obsesses architects today. Utopias refer to the aspirations and visions of individuals or groups who seek to bring about a transformative change in society by challenging the present reality. Throughout history, architects have been crucial in promoting and interpreting those various movements by designing unreal spaces. Although the designs may have evolved through time, the architects' mission is still to cultivate a dialogue between idealised concepts and architectural designs in their diverse expressions. From the pure and peaceful representation of the 'Città ideale' (Unknown, 1480-1490) to the disruptive image of a new society in the project of 'The Line' (Vv.Aa., 2021), the aim has always been to form a nonexistent space that challenges the current norms.
The revolutionary ideas that design brings about are closely connected to the historical contexts in which they came out. New cities are the architects' way of addressing the problems of the time, or a drastic representation of ideals or values. One specific way in which spatial design has served utopia is by imagining the space for a new society, which marked particular moments in the history of the XX century, such as the centralised Soviet experience (De Magistris & Scotti, 2018) or intentional communities, among which Arcosanti is one of the most known examples (Dunn & Cureton, 2020). Architecture, as well as literature and cinema, shares an aesthetic interest in imagining alternatives to the human condition (Butt, 2018). However, although it is the architects' mission to imagine and design a better future, dystopian outcomes of technological dreams or social engineering have been frequently shaped by science fiction, whose visualisation reflects on the human ways of life and their spaces. In science fiction, human behaviour and the consequences of human actions are frequently explored. For example, the short story 'Billennium' by Ballard (Ballard, 1962) showcases a future where overpopulation forces people to reside in cramped cubicles. This scenario resembles present-day living conditions in densely populated urban areas, like the famous Mong Kok district in Hong Kong or the North East district in New Delhi. Topics such as extreme living conditions and human isolation are commonly found in the current science fiction literature, where the authors stress how their writing is a way of discussing contemporary issues. For instance, the renowned Chinese writer Hao Jingfang explains that her work as a professional economist, conducting surveys in tech factories throughout China, affected her short story 'Folding Beijing' (Hao, 2016), and many of her other writings. People's working conditions, and their worries about technology, inspired her works on a futuristic China that is very close to the contemporary.
In this context, the research aims to understand how 'projects' of the future could embrace technological innovations and their interlocking impacts on social life within a single grand narrative. Throughout a study of contemporary architecture utopias and an analysis of how ecology discourses filtered in these urban images, the thesis will investigate different models of the cities of the future to define today's trends, and how they have changed. The definition of those dreams and nightmares will start from the design features promoted by architectural magazines (whether intended as actual pre-figuration of the future, or not) and from an overview of science-fiction production to prefigure some key elements which will guide the analysis. The definition of international case studies and field research will eventually set the scene for present-day architecture and things yet to come.



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Vv.Aa. (Announced in 2021, probably construction in 2030). *The Line, Neom* (Saudi Arabia) - https://www.neom.com/en-us/regions/theline.
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THE CHINESE WORDS OF THE CITY AND THE WORDS OF THE CHINESE CITY. A SEMANTIC APPROACH TO THE CHINESE URBAN LEXICON



Federico Madaro

Cycle
38° - PoliTo Grant / Joint PhD Tsinghua / DM351-2022 Heritage

Year
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History of Architecture, Transitional Morphologies Joint Research Unit

The praxis of the academic research, often under the constraints of time-sensitive and object-oriented productivity standards, does not usually give much weight to the question of the interlingual communication efficacy, taking the interchangeability of words and phrases in different languages for granted. The almost universal adoption of the English language as a modern *lingua franca* of the sciences mainly based on quantitative data, is, as a matter of fact, functional to the rapid circulation and sharing of the scientific achievements, no matter what the mother-tongue of the researchers is.
What happens, though, in the cases of branches of knowledge strongly dependent on the clarity of exposition and definitions, for example, architecture or urban design? Are general, even universal, concepts, theoretically easy to understand and translate in any language, such as 'house', 'block', 'district', 'city' etc., the ultimate notions researchers can take for granted for the production of a universally acceptable scholarly discourse? How does the cultural context influence the semantic reference of common terms of architecture and urban design in the case of cultures very distant from each other, such as the Italian and the Chinese ones? The stress on the importance of the language issue aims to provide this field of research with a stronger linguistic awareness, especially in the case of China, where the peculiarity of the language cannot be neglected in order to build a stronger epistemological framework for the scientific research.
In more practical terms, the basic questions of my research are: can we apply to the Chinese context the same concepts that we give for granted in the Western world? Do the signifiers of different languages refer to the same signified? If not, what kind of epistemic consequences does the semantic misalignment bear to the contents of the research? And furthermore: how do metaphors relative to different cultural contexts influence the understanding of apparently overlapping lemmata?
In order to answer these questions, I will focus my attention on a set of exemplary words in Chinese (a basic Chinese glossary of the city *in fieri*) on the model of the *mots de la ville* (see Christian Topalov, Laurent Coudroy de Lille, Jean-Charles Depaule, Brigitte Marin [eds.], *L'aventure des mots de la ville à travers le temps, les langues, les sociétes,* Paris, 2010), analysing their etymology and their semantic evolution from the first appearance in the ancient Chinese sources to their use in contemporary scientific literature. I will then try to discriminate between the concepts of 'fuzziness', 'vagueness', 'generality', and 'ambiguity', which are often generically and interchangeably referred to as synonymous to indicate an approximate notion. The use of these conceptual categories in the analysis of the Chinese terminology will constitute a methodological framework for the application of the semantic rules to the words of the glossary. In the case of the most general (thus most controversial) concepts, I will try to verify the correctness of their semantic traits, submitting a survey test to two sets of Chinese mother-tongue participants, one composed of competent participants (students, scholars, professionals etc.) and one composed by non-competent participants. The test will be conducted through some images of architectural and urban objects taken from a visual database of the Chinese city I will build during my period of study in China. The results of the test will hopefully contribute to a better understanding of the semantic field covered by the definitions of each object.

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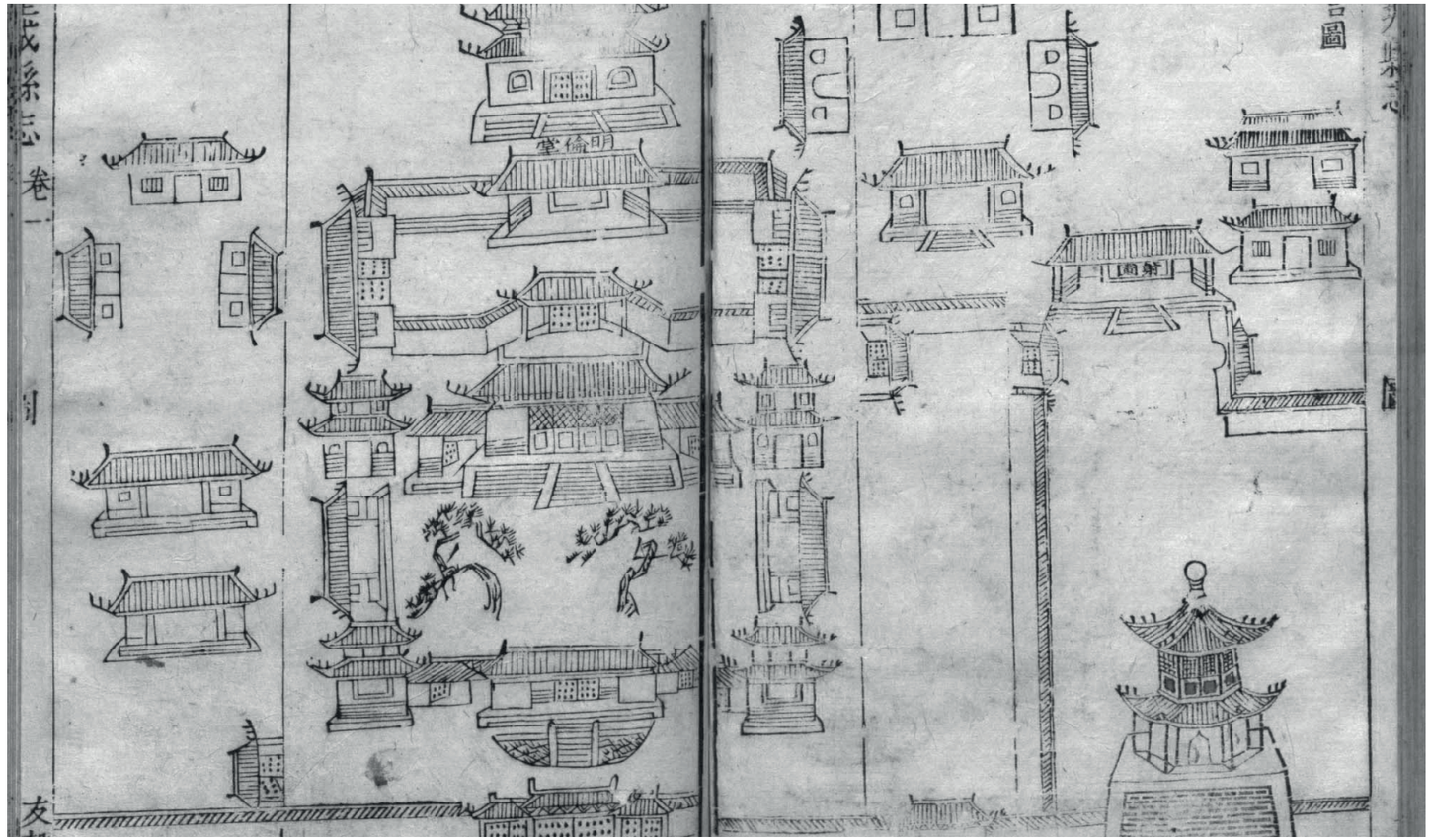

歷城縣志 : 十六卷 Licheng xian zhi: shiliu juan (Licheng District Chronicle: vol. 16), 1640
© Chinese Rare Book Collection (Library of Congress)

HOUSING THE SINGLES. MODELS, POLICIES, AND EXPERIMENTATIONS IN THE ITALIAN DOMESTIC CULTURE AND SPACE, 1930-50



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Cycle
38° - PoliTo Grant

Year
2022 - 2025

Supervisors
Gaia Caramellino

Research Group
History of Architecture

In the first half of the 20th century, singleness was in the spotlight of a vibrant architectural debate as it frequently featured in the principal architectural media of the time, including magazines, exhibitions, and congresses. The rapid industrialization process at the turn of the century encouraged the emergence of new household patterns and lifestyles for which there was no accommodation in the housing market, thus requiring the definition of new models such as dormitories, boarding houses, hostels, and minimal dwellings, targeting heterogeneous social classes (Eckhold Sassin, 2020; Eisen, 2012). The popularity of those models peaked in the 1930s, principally in German-speaking countries, France, the UK, Czechoslovakia, and the USSR where houses and interiors designed for single people became the epitome of modernity and progress (Schmid et al., 2019). In those same years, a different position emerged in Italy. The projects and models circulating in the media were imbued with fascist rhetoric and motivated by an ideological propaganda significantly oriented towards the notion of the nuclear family and strict gender norms (Bellassai, 2007; Casciato, 2000). However, a closer analysis reveals that these proposals also feature houses and interiors designed for singles, as proved, among others, by the *Progetto di casa in serie per scapoli* (1934) by Guido Fiorini and the *Stanza per un uomo* (1936) designed by Franco Albini. Further, similar examples can also be traced in the post-war context, permeating the culture of the Italian economic miracle.

The significance of these projects and their conception in the Italian context have thus far been overlooked by most surveys of the history of Italian residential architecture and undervalued in the academic literature, despite their importance to the history of housing. Indeed, scholarship has primarily focused on housing programmes tailored to the needs of Italian families, neglecting single-person households. So, to what extent has the condition of singleness, through the cultural industries and the international debate, succeeded in permeating the Italian architectural debate and thus in reframing design culture and home-related narratives between the 1930s and the 1950s? This research aims to challenge existing approaches that consider the history of housing in Italy as solely centred on the nuclear family model by examining the different representations, imageries, and media coverage of housing programmes, houses, and interiors designed for single people from the 1930s to the 1950s. This chronology provides insight into the continuity and discontinuity of debates about new housing forms in Italy between the pre-war and post-war periods and a reflection on the narratives and lexicon associated with these models from both typological-architectural and social perspectives.

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Eckhold Sassin, E. (2020). *Single People and Mass Housing in Germany*, 1850–1930. Bloomsbury Visual Arts.
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Schmid, S., Eberle, D., & Hugentobler, M. (2019). *A History of Collective Living*. Basel: Birkhäuser.



Crimella (1936). VI Triennale, Mostra dell'arredamento, Stanza per un uomo di Franco Albini.
© Fondazione La Triennale di Milano

The research draws on the geographies and cultural matrices that shaped the Italian experience and explores different interpretative keys, ranging from the codification of models and imageries to the normative framework. The approach to the theme is firmly grounded in the methods, strategies, and sources of historical research, and it also encompasses a range of studies and fields of research that have approached the topic from the perspectives of interior and design history, social history, and more. This study intends to decipher and illustrate the representations associated with singleness by combining research on secondary and existing sources with a novel perspective on some archival materials, highlighting the richness of this hitherto unexplored theme, the common threads, and the international dimension of the debate in Italy. Ultimately, this study offers an original contribution to the history of housing and interiors, intending to influence the current debate on the conception and circulation of non-normative patterns of habitation in Italy and elsewhere.

ENTRE-DEUX. THE CONSTRUCTION OF EXCHANGING PLACES IN THE METRO-MOUNTAIN TERRITORIES AS DEVICES OF URBAN-MOUNTAIN REBALANCING



Federica Serra

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38° - CRT/DAD/FULL Co-funded Grant

Year
2022 - 2025

Supervisors
Antonio De Rossi

Research Group
IAM - Istitute of Mountain Architecture, FULL - Future Urban Legacy Lab

A well-established historical narrative has led us to look at city and the mountain as opposing concepts governed by imbalanced and disadvantageous relationships. Indeed, the mountain territory is exploited for energy, tourism, and labor by the urban areas.
In recent decades, economic, environmental, and political changes have challenged this oppositional narrative and revealed its flaws, especially in managing the Covid-19 pandemic at a territorial scale. It became evident that the separation and functional specialization of territories resulting from the past planning policies have weakened both mountainous and urban areas, especially in the metro-mountain region where they intersect.
While the mountain has suffered from a subordinate relationship with the city, becoming a place that needs to be "adopted" with a lack of planning for the future development, the density of the city has reduced its attractiveness highlighting the negative aspects of urban life such as pollution, unemployment, and insecurity.
As a negative representation of increasingly blurred boundaries between the city and the mountain, the emergence of the metro-mountain territory exemplifies recent social and economic crises. It is a consequence of policies and development programs that have ignored or even exacerbated the differences between the city and the mountain disregarding their complementary and mutually beneficial relationship and the spaces that accommodate them.
In Italy, where 12 out of 14 metropolitan cities include mountainous areas, and many provincial capitals (with more than 50,000 inhabitants) are within 15 km of a mountain region, the in-between spaces, known as "entre-deux," have been crucial for the country's industrial development since the mid-20th century.
However, by the end of the last century, these intermediate areas seemed to lose their centrality as a result of the economic decline and the migration of the younger generations to cities and highlands. Today, the need for a new balance between the city and the mountain offers a second chance to metro-mountain territories, becoming a stage for new opportunities in local development.
This geographical and territorial scenario, where the in-between lands assume strategic importance, extends beyond Italy. Numerous cities and metropolises along the Alps have crucial connections with neighboring mountain areas. The result is an alpine city-territory that incorporates mountain territorial systems into a spread urban morphology, that acts as a cohesive and transitional space for metro-mountain areas.
Within this complex territorial, economic, and political context, architectural practices play a crucial role in shaping the connection between different areas. It is indeed possible to envision architectural interventions in the "in-between areas" as transformative spaces that can activate mutually beneficial relationships and foster a healthy dependency between the city and mountain regions.
This research focuses on the urban-mountain relationship in the Western Alps, encompassing three nations: Italy, France and Switzerland. The focus is on analyzing how architectural practices within these intermediate territories have generated new connections and cooperative frameworks between the city and the mountain.
The study seeks to understand how architectural interventions can act as catalysts for change, facilitating the exchange of ideas, resources, and experiences between urban and mountain communities, promoting interaction, collaboration, and mutual support. The research examines successful examples of urban-mountain synergy, where architectural interventions have revitalized intermediate territories and established exchanging relationships. By identifying and analyzing these case studies, the research aims to provide examples that can influence future architectural practices and policies, supporting balanced and mutually beneficial urban-mountain relationships in the Western Alps and beyond.

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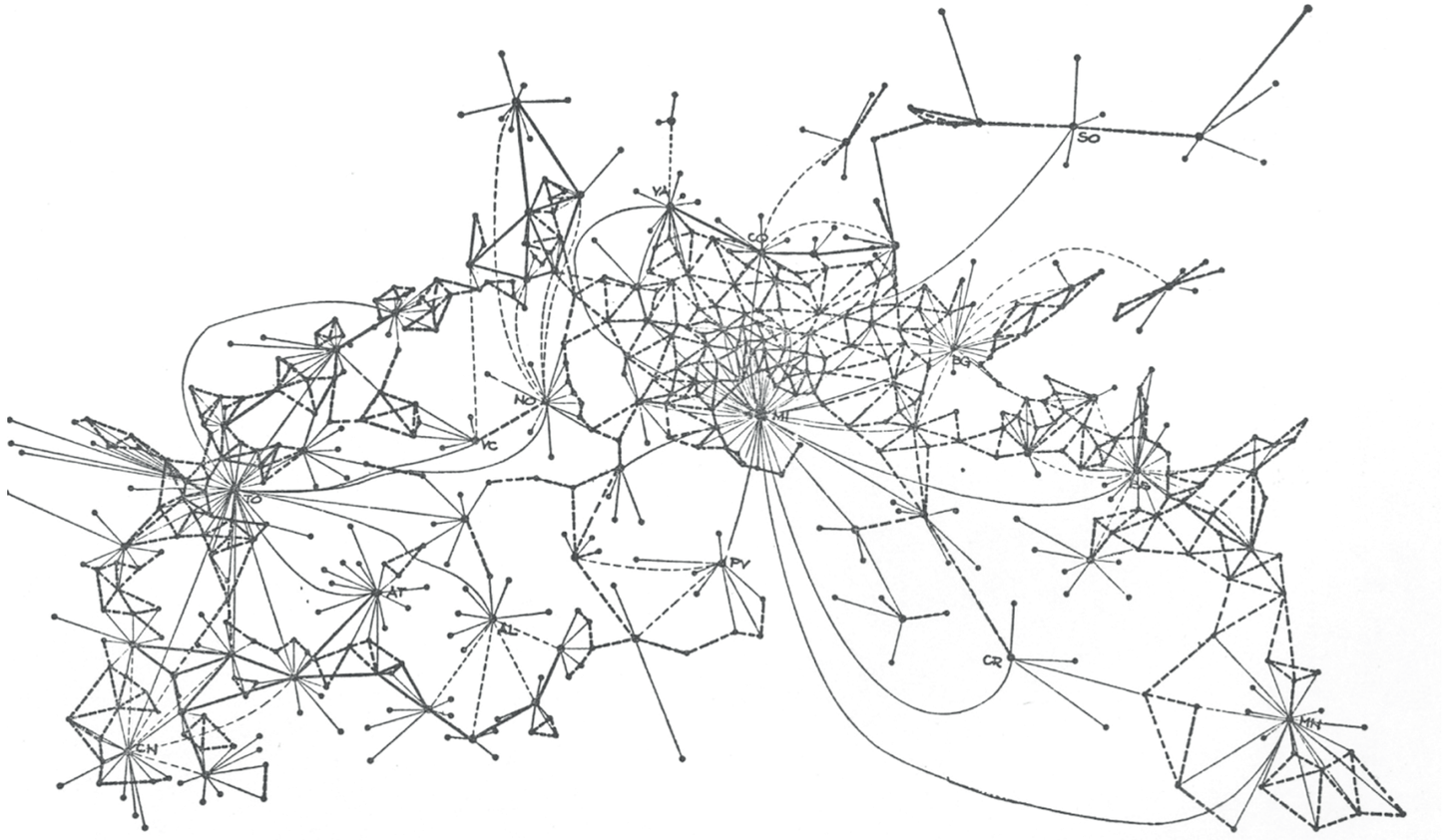
De Rossi, A., Mascino, L. (2020), Per un progetto metromontano, in *Domus*, n.1052, pp.70-75.
Sega, R. (2018), *Nuove ecologie alpine: Industrializzazione e costruzione della città-territorio*, Unpublished Doctoral Dissertation. EPFL Losanna.



Strutture urbane reticolari in Piemonte e Lombardia, relazioni di interdipendenza
© Giuseppe Dematteis

BROKEN SHAPES. EXPLORING BORDER TRANSITIONAL MORPHOLOGY AND THE URBANIZATION FORCES OF ARTIFICIAL DISCONTINUITIES



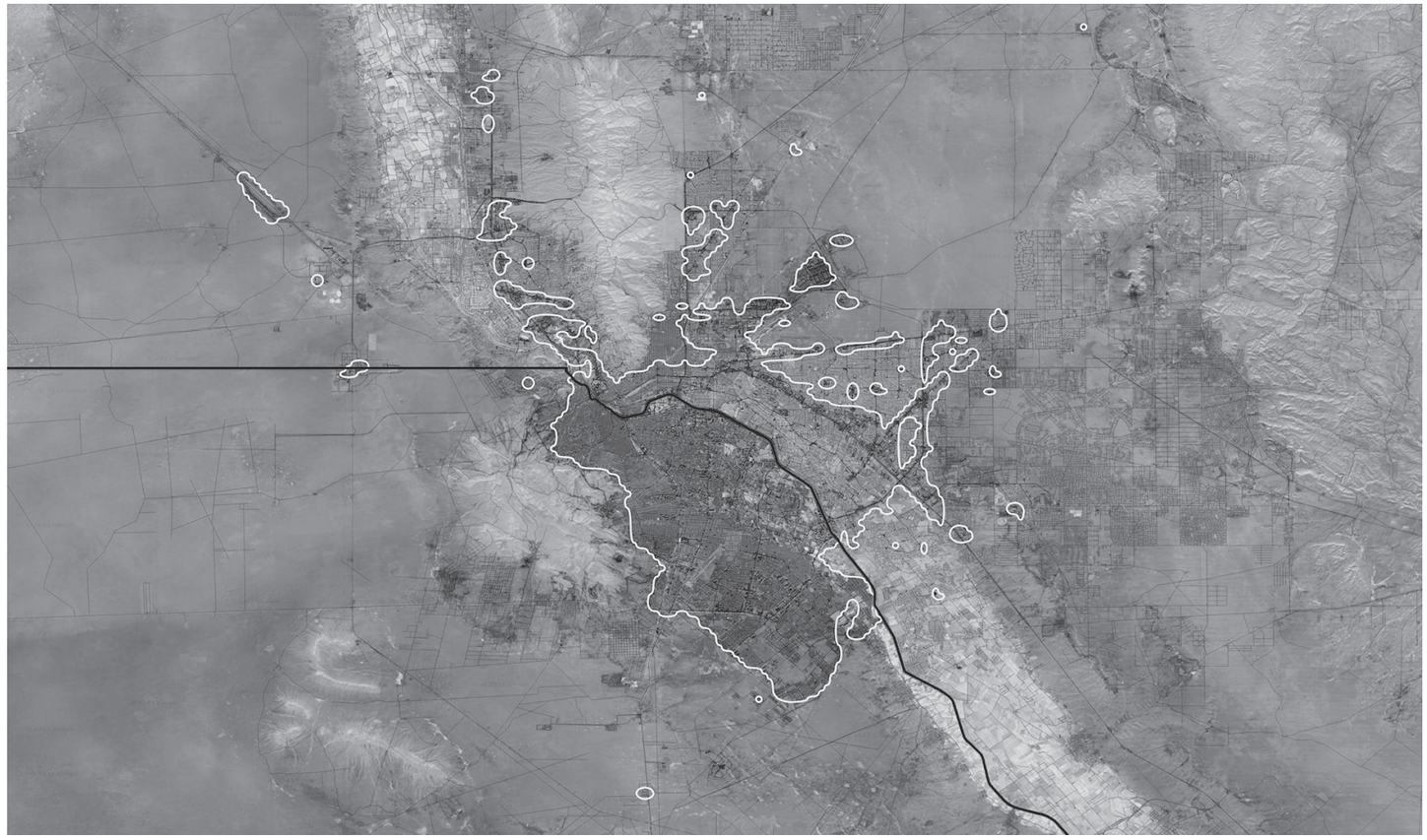
Laura Villa Baroncelli

Cycle
38° - PoliTo Grant DM351 - 2022 Public Administration

Year
2022 - 2025

Supervisors
Marco Trisciuoglio, Luigi Buzzacchi

Research Group
Transitional Morphologies Joint Research Unit



Ciudad Juárez / El Paso – 2021, Boundaries via VIIRS Annual VNL V2 (average), predefined threshold: minimum brightness 35 or higher

Despite the costs of fortifications being large while the benefits seem questionable (Vernon and Zimmermann, 2020) the construction of border walls has continued to increase in recent years at the fastest rate in history. Are they effective? Without a cost-benefit analysis, it is difficult to assess the effectiveness of border walls beyond their narrative. These measures seem more like political statements than efficient solutions when examined closely. According to geopolitician Elisabeth Vallet (2021), the caveat could lie in the fact that the construction of a border wall assumes its impermeability and does not consider adaptability. By ignoring what she calls the "evaporation effect" of the wall in space and time, constructions tend to reinforce the narrative of walling success "while concealing the spatial spillover and adaptive behaviors triggered by the existence of the wall".

How do border walls, intended as artificial discontinuities, shape, and are shaped by, the borderland's spatial practices and material realities? How does power operate in their production, dismantling, and reproduction? Implicit here there is the idea that walls are deep determinants and Foucauldian *énoncés*. Fundamental factors that shape anthropogenic processes over the long term, even after their removal, walls leave behind traces (Du and Zhang, 2018) that continue to influence human dynamics.

Do these effects extend beyond the immediate areas directly affected by the wall? If so, what circumstances influence the extent of these effects?

Migration paths seem historically, socially, and economically well-defined. Thus, we can expect that equilibrium combinations will be quite stable over time, at least until an event makes some options too costly to stay the same. Furthermore, due to the strength of pulling factors, it is reasonable to assume that when a wall is constructed, individuals would likely attempt to adjust their crossing point before changing their final destination (Dobbin, Allen & Morten, 2018). Cities with spatial inequality, on average, have worse characteristics than less segregated ones. Certain regions experiencing a massive arrival of migrants are developing informal settlements intensifying urbanization patterns, and all the environmental challenges accompanying it. If the construction of a wall alters migration patterns, would this impact segregation in cities where the wall does not exist?

The difficulty of this analysis is mainly due to omitted variable bias and endogenous factors that are difficult to isolate. The idea is that the morphologies of a particular urban form, which we will refer to as *broken shape*, might be used to isolate plausibly exogenous variations to analyze the causal effects of constructing a wall on anthropogenic processes. Because along the same border a wall can be announced and built, can be announced and not built, or neither of those, this could allow using specific locations as counterfactuals.

Finally, social transformations are generally faster than physical ones. Hence, the need to focus on dynamic aspects, including those with high frequency, and building upon recent developing literature (Harari, 2020), nighttime light intensity data seems to be an appropriate tool to explore spatial heterogeneity and to derive detailed indicators of transitional urban morphology.

If each case is different, they all share an intrinsic question about how to codevelop space. By combining theoretical insights with practical analysis, this research aims to contribute to the development of more effective social policies and design practices that address the complex and interwoven challenges borderland communities face.

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Harari, M. (2020). Cities in Bad Shape: Urban Geometry in India. *American Economic Review,* 110(8), pp. 2377–2421.

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INVENTING FUTURE PEOPLE-CENTERED CITIES. THE STUDY ON MORPHOLOGICAL PARAMETRIC APPROACH IN ARCHITECTURE AND URBAN DESIGN



Hongye Wu

Cycle
38° - CSC Grant

Year
2022 - 2025

Supervisors
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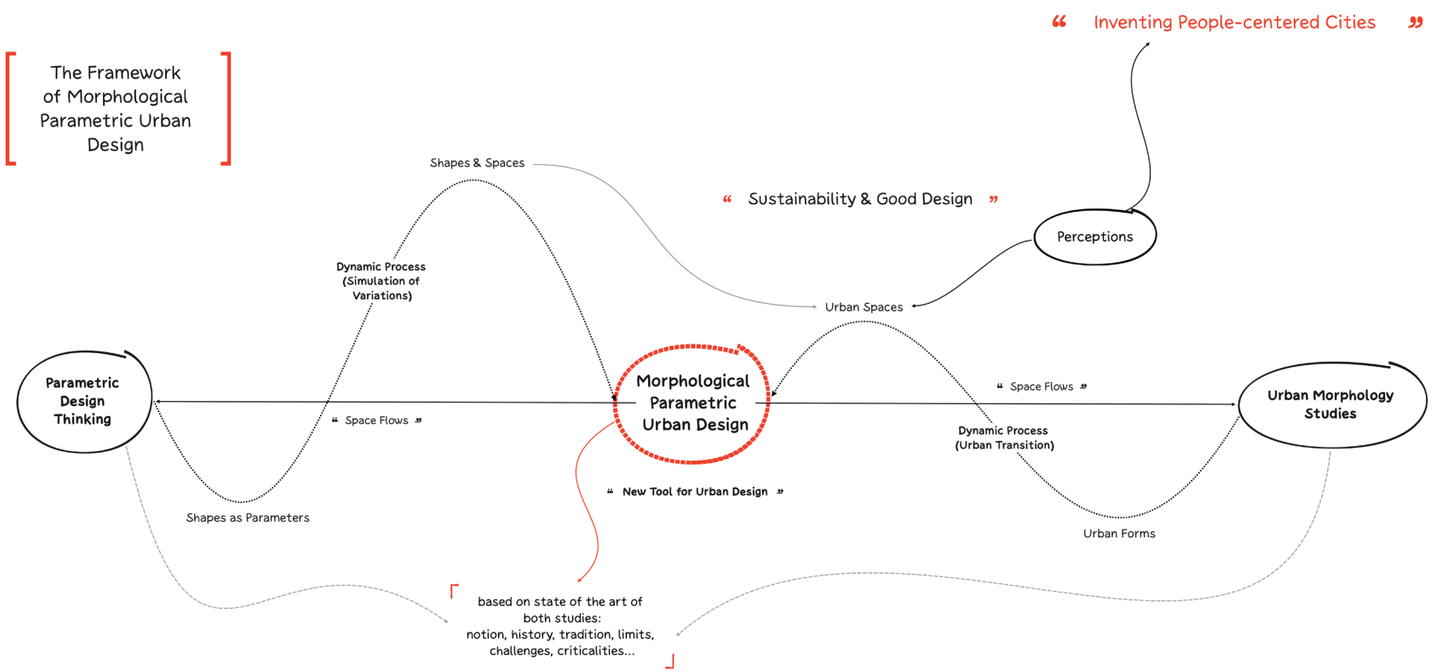
Transitional Morphologies Joint Research Unit

It's exciting and inspiring to see how quickly digital technologies are progressing in this age, but it's also more difficult for designers and researchers to address their roles in this trend given how quickly artificial intelligence is being mobilized and how it's changing our society. In the meantime, nowadays the task of architecture and urban design is more challenging as it has to deal with its relationship with social diversity and even conflicts, which are becoming even more complex. Furthermore, it is impossible to ignore the urban environment and its societal context when researching and designing objects at any scale, from macro to meso to micro (both present and past). As a result, we must examine and study these objects in a larger context, such as the city, district, block, and neighborhood. Additionally, there are urban and architectural spaces present wherever social activities occur, indicating that society and people are always associated with spaces. These spaces aim to physically inhabit people as well as to inhabit their *perceptions* of those who are involved. In order to better address these realities in the fields of architecture and urban design, this study will look for a new framework by blending several relevant disciplines. The morphological approach to design and research may be extremely important in this regard. The study of investigating the urban forms of cities from maps, especially from the ground floor, is essentially helpful to observe not only the architectural and urban spaces but the spaces in between where life happens. *Spaces flow*, from inside to outside. More significantly, transitional urban morphologies are a practical conceptual tool for analyzing the urban form of modern cities in the context of their historical development, not only from the past to the present but also by taking a look at potential future configurations of urban planning and design (Trisciuoglio et al., 2021). Therefore, the study of transitional urban morphology would be beneficial for better understanding and mapping cities as well as for contributing to design future cities and architecture afterwards.

Particularly in terms of parametric design thinking, it implies that the parameters serve as essential components and variations throughout the design process for all types of designs, including architectural and urban design. In the digital age, advanced computational techniques empowered designers' abilities to realize and even arouse their ideas by simulating endless potential solutions and overcoming the constraints in the simulation of complex forms and patterns in the earlier age. In parallel with the development of digital technology, the model of design thinking has transitioned from cognitive models to computational models to the model of parametric design thinking (Oxman, 2017, 4-5). Simultaneously, in contemporary architecture and urban design, new frameworks emerged that have radically redefined the traditional conceptions of design, the built environment, and the roles of both designers and researchers. In this sense, it is essential to keep updating chronologically the epistemology and methodology of architecture and urban design. *This study intends to bridge urban morphology studies (including the transitional morphological thinking as well) and parametric design thinking, proposing that there is a possibility to bring the advantages of both studies together for studying cities and for better designing people-centered cities in the future.* The morphological design approach may guide, supply, and contribute to the "function heuristics" of parametric design, while parametric design thinking can help to enrich the diversity of the morphogenesis in urban morphologic design. The current work is to suggest a morphological parametric approach to urban design and architecture. It is a promising study that crosses and unites different disciplines to engage in and contribute to the *participatory design process*, as well as to build an advanced design framework for designing future *people-entered cities*.



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Oxman, R. (2017). Thinking difference: Theories and models of parametric design thinking. *Design Studies*, 52, pp. 4–39.
Schumacher, P. (2011). *The Autopoiesis of Architecture, Volume I: A New Framework for Architecture.* Hoboken: John Wiley & Sons.
Schumacher, P. (2011). *The Autopoiesis of Architecture, Volume II: A New Agenda for Architecture.* Hoboken: John Wiley & Sons.
Trisciuoglio, M., Barosio, M., Ricchiardi, A., Tulumen, Z., Crapolicchio, M., & Gugliotta, R. (2021). Transitional Morphologies and Urban Forms: Generation and Regeneration Processes. *An Agenda. Sustainability*, 13(11), 6233.

THE URBAN FORM OF MODERN LUOYANG



Junxian Wu

Cycle
38° - Visiting PhD/co-tutelle agreement

Year
-

Supervisors
Marco Trisciuoglio, Gang Yu

Research Group
Transitional Morphologies Joint Research Unit

Luoyang, the capital city of 13 dynasties in ancient China, has undergone a dramatic change in the last 100 years. From a feudal empire to a communist country, the urban form of Luoyang has evolved in conjunction with China's society, economy, and politics.

In the late Qing dynasty, Luoyang kept a typical urban form like other pre-modern Chinese cities. The city wall defined the scope, which remained steady for a long time. Unlike the Western world, city concepts differed in ancient China. In the latter, both the countryside and cities held equal importance for civilization. Cities acted as a bridge between rural areas and the Court, with scholar-officials actively engaging with people in both settings. Additionally, the traditional idea of "advocating agriculture but restraining commerce" hindered the development of Chinese cities. The fiscal input of the empire primarily relied on agricultural taxes (Li, 2019) rather than industrial and business taxes prevalent in cities. As a result, similar to many other cities in ancient China, Luoyang's boundaries did not expand significantly over the course of 900 years.

Entering the modern age, the first transformation in Luoyang's urban form occurred during the Republic of China. Following the collapse of the Qing dynasty, warlords gained control over various regions of the country. Due to its strategic location, transportation networks, and historical significance, Luoyang became an ideal site for establishing a military camp. With the construction of the "*Xigong* Camp," Luoyang transitioned from a conventional city to a political and military hub. Notably, the influential warlord *Wu Peifu* aimed to "occupy Luoyang and unify China."(Feng, 2020) To garner support, warlords allocated substantial budgets to infrastructure development, including transportation, education, and sanitation (Li, 2019). These policies propelled the modernization and urbanization process in China. However, Luoyang's progress was hindered during wartime due to the Japanese invasion.

After 1949, Luoyang transformed from a military and political center into a socialist industrial settlement. Communist China focused on industrial development, and Luoyang became a key planning city in the First Five-Year Plan (Li, 2016). A new industrial city was built away from the old city during this period. The establishment of the People's Republic of China provided a stable domestic environment for urban development. Consequently, Luoyang experienced its first instance of modern urban planning, setting a framework for the city's future development in the following decades. The urban practices in Luoyang before the 1960s exhibited characteristics of a socialist city, playing a vital role in forging a new lifestyle in modern China.

Li, H. (2019). *The Making of the Modern Chinese State: 1600–1950*. New York: Routledge.
Feng, QX.(2020). Discuss on WU Peifu and Luoyang XUN YUE SHI SHU. *Journal of National Museum of China*, 2020(02), pp.131-147.
Li, H.(2016). *The Planning of Eight New Industrial Cities*. Beijing: China Architecture & Building Press.
Skinner, G. W. (1995). *The city in late imperial China*. SMC Publishing.



Socialist industrial settlement in Luoyang
© Junxian Wu

This research aims to examine the morphological transition of Luoyang, integrating it with urban history to establish a comprehensive understanding of the city's development process. Numerous topics are relevant to this study, including the modernization process of China, socialist cities, and the application of Western urban study methodologies. Significantly, this research endeavors to facilitate a transcultural study of Chinese cities, which may provide a useful way to understand Chinese cities, architecture, and their relations with society and politics.

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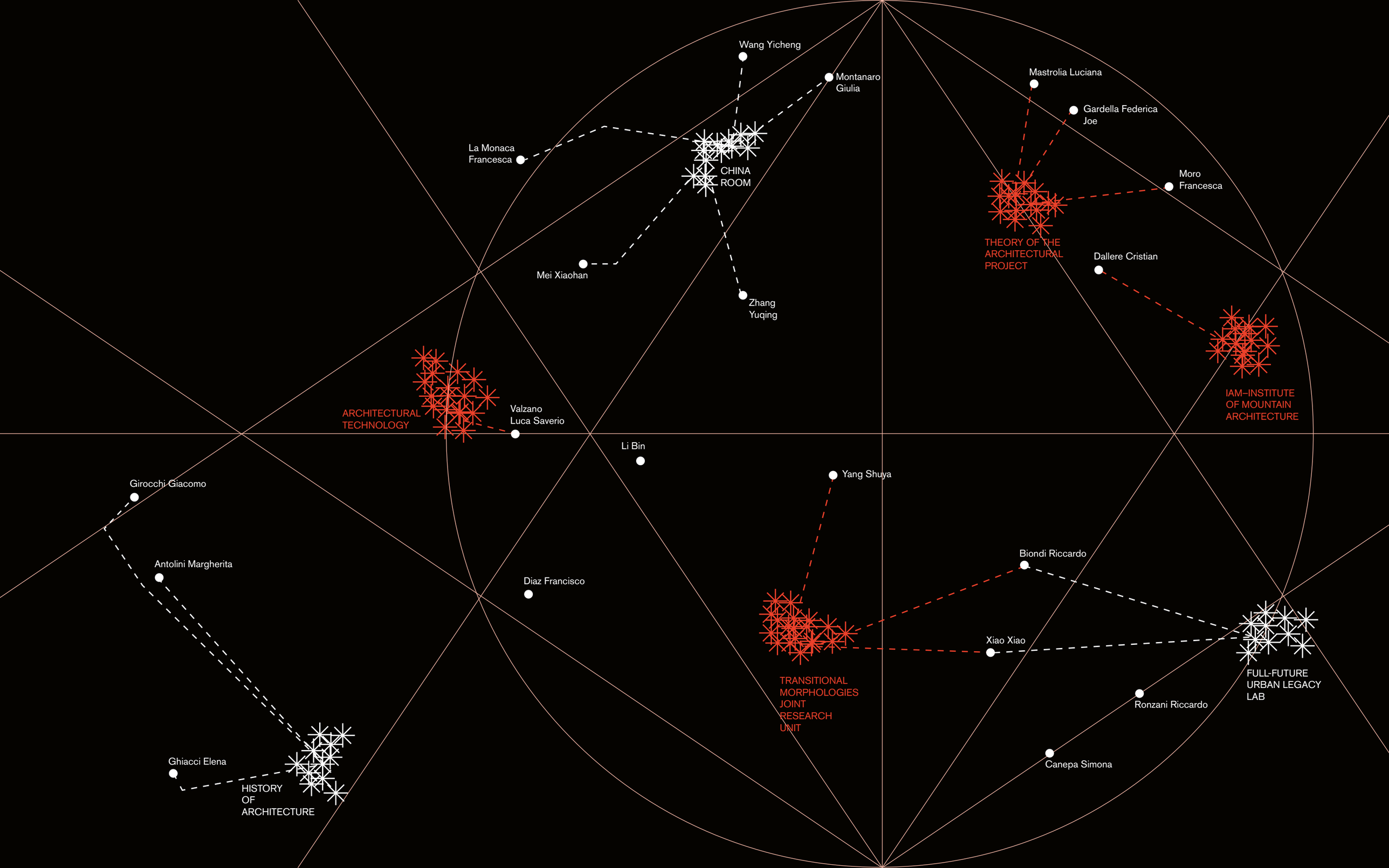
XXXVII
CYCLE


Wang Yicheng
Montanaro Giulia
La Monaca Francesca
CHINA ROOM
Mei Xiaohan
Zhang Yuqing
Mastrolia Luciana
Gardella Federica Joe
Moro Francesca
THEORY OF THE ARCHITECTURAL PROJECT
Dallere Cristian
IAM–INSTITUTE OF MOUNTAIN ARCHITECTURE
ARCHITECTURAL TECHNOLOGY
Valzano Luca Saverio
Li Bin
Yang Shuya
Girocchi Giacomo
Antolini Margherita
Diaz Francisco
Biondi Riccardo
Xiao Xiao
TRANSITIONAL MORPHOLOGIES JOINT RESEARCH UNIT
FULL-FUTURE URBAN LEGACY LAB
Ronzani Riccardo
Canepa Simona
Ghiacci Elena
HISTORY OF ARCHITECTURE

CARDINAL OTTOBONI'S LITURGICAL SCENOGRAPHIES AND SETTINGS BETWEEN 1689 AND 1740



Margherita Antolini

Cycle
37° - PoliTo Grant

Year
2021 - 2024

Supervisors
Carlo Mambriani

Research Group
History of Architecture

The scope of celebrations, theater and scenography in eighteenth-century Rome is an already widely explored field that has been studied from different points of view, reflecting how complex this artistic, social and political phenomenon is.

Being vice-chancellor of the Church, patron of the French crown, theater aficionado, collector, arcadian shepherd and author, cardinal Pietro Ottoboni (1667-1740) holds a special role in this wide milieu. Among the artists under his patronage there are Arcangelo Corelli, Alessandro and Domenico Scarlatti, Francesco Trevisani, Simone Felice Delino, Nicola Michetti, Filippo Juvarra and Ludovico Rusconi Sassi.

The studies about the cardinal have been summed up recently during the conference *Alla corte della Cancelleria: Pietro Ottoboni e la politica delle arti nella Roma del Settecento* (Accademia di San Luca, Rome 2020). Biographical and collectorship issues are clear, as well as the vast musical and painting patronage, and there seems to be a growing interest in questions of cultural diplomacy and diffusion of taste. In the architectural field the main contributions are focused on the transformations of the Palazzo della Cancelleria, especially regarding the different theaters and scenographies that were built during the 50 years long residence of the cardinal, with detailed analysis of the production linked to Juvarra's presence at the Ottoboni court (1709-1714).

The same attention has not been reserved to the study of liturgical settings, namely the Forty Hours devotions, a festive occasion promoted by the cardinal over fifty consecutive years as commendatory of the Basilica di San Lorenzo in Damaso by commissioning apparatuses for the same church.

The research starts from this historiographical gap, exploiting the possibility of dealing with such a continuous phenomenon, both for a period and homogeneous in typology, space of application, and client. The aim is to highlight not only the mind behind them, but also their reception from the public, as well as the evolution of the typology and questions of stagecraft and reuse of components in a very specific building site. Spanning over half a century in the roman scene, religious scenographies – just as their prophane counterparts – can help to clarify the role of the relationships woven between the cardinal, religious orders and ecclesiastical institutions which, in parallel to cultural diplomacy strategies, have catalyzed the meeting of architects with wealthy international clients.

The analysis, while assuming the point of view of architecture, concerns the event in its entirety both in terms of scale and artistic-cultural expressions. Starting from the marvelous *Machine* as architectural and sculptural elements, the field of investigation is extended not only to the sacred space as a whole, but also to the urban space, represented by courtyard, squares and streets as stage of processions, and suburban, namely villas and abbeys. Great attention is paid to the collaboration between the arts, and in particular between architecture and music, main passion of the client, and between artists and craftsmen.

The proposed research intends to return an organic reading of the apparatuses commissioned for liturgical occasions by cardinal Pietro Ottoboni from 1689 to 1740, ranging from the formal and liturgical aspects to the technical and professional organization of the settings, with the aim of combining the deep knowledge of the artifacts with the diachronic vision of the cardinal's patronage.

The work is structured in four sections. The first part deals with the framing of the field of study, the current state of the art, and establishes the problems and methodologies of investigation. Given the complexity of the questions and the overlaying of interpretive registers, it was decided not to follow a purely chronological narration but rather to divide the contents in two thematic sections: *Part 2* assumes the point of view of the client in order to outline his politics of the arts, the iconographic choices, and the relationship with arts and artists, while *Part 3* presents the outcomes of the research on the materiality of the apparatuses and their construction, dealing with issues of material culture and stagecraft.

The almost complete conservation of the *Computisteria Ottoboni*, in fact, opens the possibility of investigating the practical aspects linked to the preparation of liturgical occasions sponsored by the vice-chancellor. After a description of the construction and decorative chronology of the church of San Lorenzo in Damaso and of the state of the same in the period under study, *Chapter 6* deals with the times, means and organization of the construction site for the installations for *Quarantore*. In addition to defining the professional responsibilities and recurring practices on the construction site, the question of the reuse and transformation of scenographic elements is introduced, which concerns both the structural components and the decorative apparatuses, as detailed in *Chapter 7*. At this juncture the research focuses on the role of architecture in service of music, and on the link between the eighteenth-century representative practice of Corellian imprint and the morphology of the space dedicated to music. Finally, the last part of the thesis is dedicated to the apparatuses as to say to all those informations complementary to the research that remain excluded from the discussion due to narrative needs.

THE EVIDENCE OF THE CITY. MAKING THE CASE FOR A DATA-ORIENTED URBAN MORPHOLOGY



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As society keeps moving towards unprecedented levels of urbanization, cities are explored as sources of solutions for the challenges that the urbanized world poses. The New Urban Agenda presents urban design as one of the five pillars that can help implement principles to improve the quality of urban life and suggests evidence-based approaches as valuable methods to provide higher degrees of predictability to city plans and policies (United Nations, 2017).

Evidence-based approaches in design fields are described as operational models where credible and reliable facts, research findings, and field observations inform choices taken by designers (Hamilton & Watkins, 2009). The implications of these ideas - from the need to establish what constitutes reliable evidence to the significance of merging an analytical approach to intuitive design - inform the underlying assumption of this work of research, that is, the collection of data and the use of modern analysis tools must intertwine the existing methods to read and design the urban form.

After introducing its framework, methods, and purpose, the research explores the concept of evidence-based approaches: from early Evidence-Based Medicine (EBM) to the emergence of the idea of evidence in design disciplines, eventually resulting in Evidence-Based Design (EBD).

EBM developed extensively to abandon anecdotal ways of diagnosing and prognosis patients, and it established a rigorous method that uses practical and theoretical knowledge as inputs to medical decisions (Sackett et al., 1996). The well-structured model of evidence-based medicine, its theoretical basis, and its steps, have been the aimed standard in the efforts to establish the Evidence-Based Design process.

Following the study of Roger Ulrich (1984) on the influence of spatial features in hospital rooms on the patients' recovery, EBD has been applied in the last two decades in healthcare design, office design, and landscape design, onto which researchers have developed a field literature addressing mainly two groups of questions, namely the feasibility of the evidence-based approach in real-life practices, and the theoretical foundation of evidence to base design procedures.

The first group concerns the possibility of the so-called chain of logic in architectural practice, meaning the link between credible research findings, their critical interpretation, and the production of a design concept with expected results which, confirmed in post-occupancy evaluations, assess the reliability of the project as future base evidence. These investigations raise questions on the introduction of research knowledge and an open-access attitude to design practices, both necessary to establish a proper evidence-based process.

Nevertheless, this research only hypothesizes a chain of logic for the urban process. Then it draws on the second group of literature to focus on the analytical step of EBD and to answer the following questions: What are the issues with conventional design? How does EBD critically respond to it? What is the definition of evidence compared to data, proof, and information?

The second part of the work addresses the existing methods to analyze urban form, bringing forward an exploration of the theories of the urban morphology field on the underlying question: What is the predisposition of these methods to highlight, analyze, or process data to measure spatial and social characters of the urban environment?

The research answers arranging around the groups of quantitative data, qualitative data, and spatial information, all the various contributions to the study of city form: from the well-established approaches in urban morphology - the geographical approach, the process-typological approach, space syntax analysis - to the texts that searched for answers on the right ways of studying and designing the city, like the works from Kevin Lynch, Christopher Alexander, Jane Jacobs, Jan Gehl, Bill Hillier.

As the role of urban designers lies in providing people with spaces they can engage with and feel comfortable in, such responsibility cannot be entrusted only to their intuition, the latter needs to look for confirmations and solidity in evident data. The challenging task of evidence-based urban design would consist of being a predictor for the performance of social behaviours within certain forms, simultaneously the most and the least evident character of cities. In this regard, the research also draws on theories from social sciences that provide methodologies to study place-behaviour relations, such as affordance theory, place attachment theory, or sense of place theory (Cushing & Miller, 2020), all aiming at a broader objective of the work to investigate how an evidence-based approach could measure the connection of the city to oneself. To do so, the work moves onto a section dedicated to case studies where spatial and social parameters are measured in different urban contexts, with different morphological models and producing diverse outcomes, verifying the feasibility of a data analysis to produce evidence for urban design.

The research concludes with a critical discussion of the observations collected in the previous chapters. It discusses the twofold operation brought forward: enriching the discourse around evidence with an exploration of evidence-based *urban* design and orientating the urban morphology field towards the inevitable inclusion of data for the design process.

Advancing an analytical theory to adjust conventional design does not prescribe projects to a set of given solutions; reason is already involved in design as much as intuition, and more than the latter, it can liberate architecture from concealed paradigms. It is the price for architectural freedom (Hillier, 2004).

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INHABITING THE PRISON. THE SPACES OF EVERYDAY LIFE IN DETENTION



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C.C. Lorusso e Cutugno di Torino: area colloqui all'aperto



Seconda C.R. di Milano Bollate: corridoio sezione detentiva femminile

Starting from the statement that prison represents the most significant social removal of our times because it tends to be considered as something belonging to a sphere separate from everyday reality, the research, structured in five chapters, investigates prison spaces as places of shared living. The first chapter analyses the two words that give the research its title, inhabiting and prison. It's possible to define inhabiting in different ways: it is the essence of the home (Bachelard, 1975), it is the purpose of building and the principle of existence (Heidegger, 1991), it is to establish a relationship between man and the environment (Norberg-Schulz, 1984), it is to choose a place to live based on an affinity (Nouvel, 2022), it is an experience (Legnante, 2016); definitions with a positive connotation, but the prisoner does not choose the place where to live, nor the people with whom to share spaces because he is not a free person. The prison is, in fact, the place where people are imprisoned because they are condemned or awaiting trial: Goffman (1968) defined it as a total institution, Foucault (2001) as a heterotopia, Sommer (1974) as a hard architecture, Leder (1992) as a home in reversed caricature. Prison is also the only inhabited public building in which the state is in charge of people (Santangelo, 2018), which the law defines more specifically as a house of imprisonment, a custody house, or a workhouse: behind the word 'house' are connoted places and spaces that refer to the theme of living. The second chapter outlines the relationship between punishment and prison in history. Knowing the evolution of the prison building allows us to analyse the relationship between the social institution, the model of detention, the architectural form, and the place where it is located. The history of detention and prison architecture as a deprivation of personal freedom is a recent one: with the Renaissance treatise writers, the prison took on the value of a building typology, but it was not until the mid-18th century that it began to have physical autonomy when reflection on the purposes of detention by jurists, philanthropists, philosophers and economists and the abandonment of corporal punishment led to the need to build structures expressly intended for the treatment of prisoners separate from the palaces of justice. Based on the differentiation of inmates into classes, control, and work, the new prison buildings used three main typologies that remained constant throughout the 19th century: rectangular, radial, and circular/polygonal, within which the ideal model of the Panopticon was placed. Subsequently, there was a progressive breakdown of architectural models resulting from using several prison systems. This gave rise to the court, telegraph pole, open campus, and differentiated building types, more responsive to the needs of individual nations that were beginning to structure their penal systems. The third chapter focuses on Italy: it covers a period that begins with the Unification and ends with the sentence imposed by the Strasbourg Court for subjecting some prisoners to inhuman and degrading treatment in violation of Article 3 of the European Convention on Human Rights. In addition to the time, the thread that runs through the chapter is the body of legislation, laws, decrees, penal codes, prison regulations, and judgments that sometimes highlight progressive thrusts and, other times, a return to the past. The same happened in the field of architecture: the prison buildings designed in the 1965-1975 decade saw an attempt to consider the prison not only from an afflictive point of view but also from a rehabilitative one, as envisaged by the Constitution: Ridolfi and Lenci designed the jail as a place to experience the spaces of punishment and not as a place to share the punishment of spaces; Michelucci wished the prison to be less closed and more open towards the urban area where it was located, arguing that the prison should be built for men and not against them. The advent of terrorism, however, led the authorities to prioritise the concept of security and consequently to design 'container' buildings. Since the 1990s, overcrowding has become the common denominator in most institutions, with severe repercussions for the living conditions of inmates, agents, and operators, i.e. the entire population 'living' inside prison complexes, as well as family members visiting inmates. The fourth chapter investigates how prison construction has often overlooked and underestimated the role that the dimensions of spaces, ratios, and proportions can have on prisoners' physical and psychic well-being. The designer's task is to work on that fine line that establishes the limit between space and well-being so that sleeping rooms transform cohabitation from a condition of intolerance and discomfort to an opportunity for mutual enrichment, community spaces foster socialisation activities among inmates, and training and workspaces help prepare for future reintegration into society, as already happens in some European countries. It is necessary to rethink the architecture of prison spaces in terms of quality and respect for the dignity of prisoners: the institutional round tables of the States General of Penal Execution and the Commission for Penitentiary Architecture, the workshops organised by some schools of architecture (Turin, Milan, Rome, Naples), have shown how it is possible, even in prison, to place space with its furnishings, materials, colours and lights at the centre of the project, as a space to be lived in that respects constitutional and legal rules that have so far found little application in practice. The fifth chapter is the testimony of the Italian prison reality through the analysis of the writings of some prison directors and that of the doctoral student who had the opportunity to visit some prisons and observe the everyday life of detention in the internal, external and in-between spaces.

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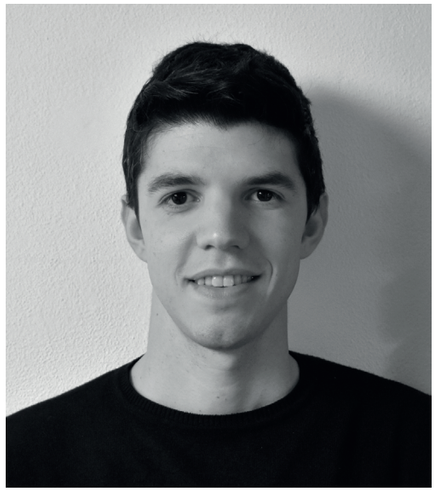
HOLZBAU. TIMBER AS A TOOL FOR INTERPRETING THE ARCHITECTURAL PRODUCTION IN VORARLBERG OVER THE LAST 25 YEARS



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During the last century, starting from the 1930s, wood, understood here as a building material, was almost totally replaced by materials such as concrete and, to a lesser extent, by steel. This phenomenon can be described by dealing with many aspects. The complex legislation and modernist influences have been decisive in eclipsing wood culture in a marginal position in the construction world.

We are in a historical period in which timber construction is experiencing a critical paradigm shift; the beginning of the 21st century has paved the way for more significant technological innovation with the evolution of engineered wood, for example, Cross Laminated Timber and numerical control machines. In addition to the essential innovations in the field of technical standards, wood has returned forcefully to establish itself and develop as a building material.

Wood, by definition, is a material of natural origin; it is renewable, therefore, privileged for enhancing local production and the circular economy. Precisely because of its natural character, it is an anisotropic material; this aspect is the reason that justifies the need for in-depth knowledge of the material aimed at its use in construction. The application of wood in construction, at this time, shows, on the one hand, a growing interest from professionals and clients. On the other, it requires a conscious and responsible approach capable of filling the knowledge gap that has persisted for a long time. Entering the subject, one immediately realizes how necessary spatialized knowledge is in all wood-related areas, from the material's chemistry to silviculture and forest management practices up to more specific processes. To further justify the tangibility of this area is also the now evident lack of training in the field of wooden construction. Today there is a need to rebuild a new culture of wood to address the significant need for regulatory references, specific legislation, training courses and workers. Addressing these aspects is central to building solid foundations so that wood can establish itself as a building material, forming part of a complete supply chain and where knowledge becomes the cornerstone of the process.

The introductory part of the research aims to outline a geographical and cultural perimeter of the research, a territory that can solicit reasoning around the use of wood is the Alpine territory, an environment rich in raw materials and where technological innovation always remains firmly rooted in the culture and craftsmanship of processes; think, for example, of the historical and visionary carpentry of Austrian Vorarlberg. It is easily understood that wooden construction is strongly linked to a specific region's environmental, cultural, political and economic issues. Therefore, the geographical definition of the Alps represents a challenge since the borders are variable, for reasons of an economic, cultural and social nature, but also of a geological and climatic nature. Werner Bätzing states that this variety of factors implies no static and immutable definition of the Alps (Bätzing, 1987). Therefore, every study, whether of an architectural, social or economic nature, must start from analyses and interpretations based on regions to relate the object of research with a space, a society and an economic and cultural system. Speaking of wooden buildings, going beyond the national border within a changing geographical perimeter is essential. For this reason, the thesis takes its first steps within an emblematic region and subject of considerable interest on the part of architectural criticism: Vorarlberg. In recent decades, this region has continuously developed new methods of processing and exploiting wood, creating a whole chain of value creation that ranges from forest management and wood processing to contemporary building culture (Hofmeister, 2019).

After an introduction to contextualise the research work from a geographical and cultural point of view, the thesis develops into six chapters. The first chapter will define the imaginaries and meanings of timber construction in the case study region. Next, the topic of the timber production system will be addressed. In this sense, the research will have a solid applied character. Understanding the dynamics and directions of technological innovation within the region and in the most important research centres in the Alpine environment will also be essential. Not a secondary topic will be that of wood as an engine for local development; the Vorarlberg region has one of the most efficient systems at the European level for the valorization and promotion of the local wood industry. In the fifth chapter, a selection and reading of architectures within the region will be made, and recurring forms, building systems, and relationships between the material and the space design will be analysed. Finally, comparisons will be made with other Alpine regions that, for different reasons, stimulate specific considerations.

Therefore, the research question can move towards understanding how the engineering, industrialization and innovation of wood are reverberating on architectural production, the economy, society and the cultural dimension. The exemplary case of Vorarlberg is configured as a good practice capable of constituting a cultural basis for comparing with other Alpine regions, bringing out central issues for understanding the phenomenon linked to the design of timber buildings.

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Abbundhalle, Reuthe, Vorarlberg, Hermann Kaufmann, 1990
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Pfarrhaus, Krumbach, Vorarlberg, Bernardo Bader, 2014
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PUBLIC AGENCY: THE ENCOUNTER BETWEEN ARCHITECTURE AND THE WELFARE STATE IN THE CITY CENTER. LONDON, MEXICO, SANTIAGO.



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With the cold war as a backdrop, the second half of the twentieth century witnessed the rise and fall of several models of State governance. One of them, the Welfare State (WS), enjoyed its peak in the Western bloc in the three decades between the end of WWII and the rise of neoliberalism in the mid-seventies. In general terms, this form of government—that guaranteed significant welfare thresholds to its constituencies within a democratic framework—was based on an active, non-totalitarian State intervening in the economy to ensure the promised welfare.

Adopted by many Western democracies in Europe and some countries of the so-called "developing world," this model of State gave architecture a privileged position to deploy its capacities. The WS not only considered architecture (housing and services) as part of the basic "welfare" it should offer to its citizens but also opened the possibility for architects to rethink entire parts of the existing cities, prompting the design of new modern urban models that show a different path for developing the city.

This relationship between architecture and the Welfare State becomes evident in some cases from different geographies. Unlike projects developed in cheaper, peripheral locations, the examples analysed in this research present a mix of programs—housing, commerce, services, urban facilities, or culture—whose reach went beyond the contours of the site, to the city scale. Located in privileged positions, surrounded by the existing city, they stand out due to the contrast they establish in terms of urban fabric, city structure, openness, height, or verticality. Buildings didn't enclose the site and had more than one public façade, enabling a different relationship between built form and open spaces. Formal isolation was no longer reserved for monuments because air, light, and views could also be available for city dwellers. Thus, these projects not only considered the city as something to be designed through architecture but also enabled new forms of urban life.

However, instead of becoming the norm, only a few cases worldwide achieved the full potential of the alliance between the WS and architecture. That they had found in the WS fertile ground to thrive shouldn't be seen as a coincidence, neither should it be that the rise of neoliberalism has cut those endeavours. Not only were historical, political, social, economic, or cultural conditions aligned to materialise them, but perhaps these very projects helped boost these conditions. Although the WS is mainly a redefinition of the State's role in the economy, it seemed to have found an ally in architecture since it considered the city as one of the primary sites where welfare was to be implemented and visible.

Thus: How and why did the relationship between State and Architecture happen? What were the terms of the agreement? What were the tools, institutions, and materializations of such a relationship? And, why did it not continue?

The hypothesis proposes that was a mutual benefit relationship between architecture and the WS: the former helped legitimize the latter and vice versa. That is, not only architecture approached the State to get larger commissions and have significant interventions in the city, but also, the WS needed architecture to provide a material and urban image of what this government modality could achieve.

However, to prove this idea, there is a methodological problem: how to make this relationship visible? How to outline the feedback loop between two entities? In order to establish the link between architecture and WS through the city, the research will analyse three case studies that, in different contexts, show the full potentialities of this symbiosis. However, to avoid the trap of just comparing cases, the thesis will start defining the map of conceptual coordinates over which the symbiosis can be established. Thus, the cases will help delineate the research object—not to prove it nor to be the object but instead outline it, as if we would try to find the least common multiple among a series of numbers. Since the investigation is framed within architecture, it also aims to create a yet inexistent object of thought as well as a specific way to look at it. Also, as the hypothesis establishes a symbiotic relationship between two entities, the research will have to look for its components, dynamics, mechanisms, and effects.

The thesis is structured in three parts, each containing three chapters. The first, "The notion of the public," seeks to establish the conceptual map for the discussion; Chapter 1 examines the distinction between the public and the private; Chapter 2 focuses on the question of the State; and Chapter 3 establishes the intellectual ties that join architecture, city and the WS. Part 2, "The structure of the public," analyses some institutional tools the WS invented to deal with the city; Chapter 4 looks at the LCC in London, UK; Chapter 5 focuses on the case of Banobras in Mexico; and Chapter 6 studies the CORMU in Chile. Part 3 deepens into "The form of the public" by analysing specific materializations of the link between architecture and the WS. Chapter 7 will present the Barbican Centre in London; Chapter 8 will see the case of Tlatelolco in Mexico City; and then Chapter 9 will focus on the San Borja Remodelling in Chile. Finally, through the idea of "The content of the public," the conclusions will observe the feedback loop between architecture and the WS and its lessons.

This research partakes in debates largely present in architectural history. For instance, architecture's connection with the State, its intervention in designing the city, questions of land property, and also the very notion of the public. In the end, it is not just that architecture has established a relationship with the State through public agencies. Rather, in the cases this thesis analyses, architecture helped legitimize the State. In other words, architecture had a public agency.

HYBRID AGENCY. ARCHITECTURAL DESIGN THEORIES AND PRACTICE WITHIN THE DIGITAL TURN



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Year
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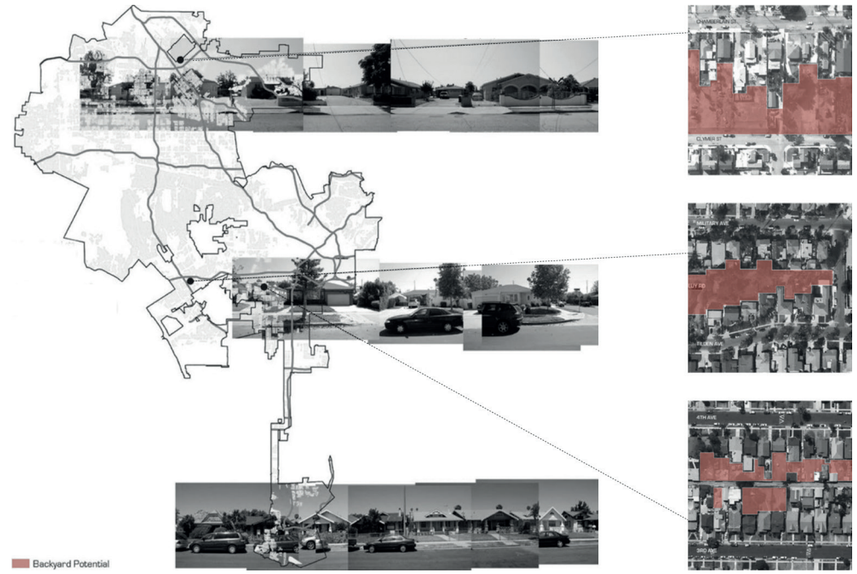

Backyard Homes - Pacoima 10k Project, cityLAB-UCLA
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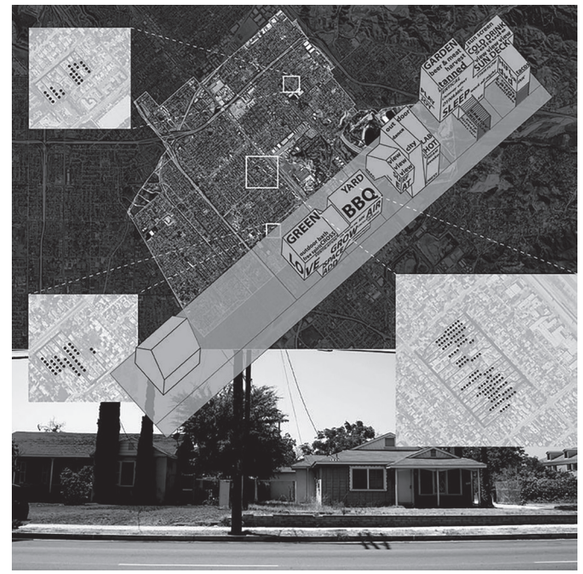

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Over the past few decades, the emergence and proliferation of digital technologies have led to a continuous mutation of the architectural design practice in its production, exchange, transmission, and legitimization, and the Covid-19 pandemic has stood as an accelerator of this process. In the international discourse, this transformation has been interpreted as a moment of discontinuity, variously referred to as the technological revolution, digital turn, documentary revolution, datafication, and more. In this period, the exponential rise in documentary capital and technical mediums has triggered a renegotiation of the entities and practices involved in the design process. This research explores this moment of transition, focusing on architectural design practices developed in university research centres. The goal is to investigate the impact and effects of incorporating digital technologies on research processes, seeking to understand if and where innovation occurs. In practical terms, the study adopts the operational perspective of Science and Technology Studies to observe case studies of research architectural design practices, exploiting an ethnographic approach to observation to unfold the project action in its sociotechnical dimension.

The fascination for the digital

By the XXI century, the issue of digitization and computational approaches to design has shaped architectural discourse. Several scholars of the history and impact of the digital in architecture (Antonie Picon, Mario Carpo, Greg Lynn, Molly Wright Steenson, Philip F. Yuan, Neil Leach, Daniel Cardoso Llach, Rivka and Robert Oxman, among others) have documented the rapid growth of technical and scientific acquisitions that has occurred since the second half of the twentieth century, identifying the emerging technologies and tools that have contributed to the transformation of the architectural practice, from the irruption, within research projects, of numerical control and CAD systems, the applications of cybernetics and artificial intelligence on architecture, the Internet of Things, and Big Data, etc. Drawing on Daniel Cardoso Llach (2015), this research seeks to contrast the two frames that coexist and dominate technological discourses on architectural design: autonomy, according to which technologies with their intelligence can act as surrogates for architects, and neutrality, whereby technologies are passive tools executors of designers' intentionality. Implicit in both cases is the dichotomy between the human, bearer of a priori values, and the optimizing technology, executor of facts, in a framework of separation between human evolution and technical optimization.

Unfold complexity through the sociotechnical lens

To advance an alternative position, avoiding any finalist misunderstanding, the research is developed according to a multidisciplinary approach that considers the architectural design project as a specific field of inquiry. Two theoretical frameworks are crucial in building the methodological structure of the work: the operational approach of Science and Technology Studies - in its 'architectural' developments referable to Bruno Latour and Albena Yaneva (2009, 2012) - and the document theory of philosopher Maurizio Ferraris (2009). The sociotechnical perspective reveals architectural design as a complex practice, intended not as attributed to or dependent on intentional subjectivity, but co-produced through hybrid networks of alliances, mediations and translations, which build through contingent actions the agency of the project. At the same time, the document theory narrows the object of observation and analysis to the document entity, endowed with specific operating characteristics and its own agency independent of the author. This methodology makes it possible to reveal what happens when the project is immersed in an inevitably messy and unpredictable reality, making visible the politics of digital technologies and how they act in contingent situations by reconfiguring the project's networks of human and nonhuman actors.

What happens inside the laboratories of the architectural project?

The observation focuses on some academic research centres (or laboratories) in architectural design, both at the Polytechnic University of Turin and at international partner universities, through periods as a Visiting Researcher. During two months of fieldwork at the University of California Los Angeles (UCLA) in the cityLAB research centre directed by Prof. Dana Cuff, I sought the transformative role of digital technologies in their design practices through participatory observation of an ongoing project, as well as interviews and archival research. An emblematic example I encountered concerns the 'Backyards Homes' project's initial stages. In 2007, the development of a study of the Pacoima single-family neighbourhood in Los Angeles coincided with the diffusion of Google Earth technology. The adoption of this medium in the research practice unveiled the vast built stock in private backyards, encompassing an asset which had been hidden away from the human eye's street view. The striking transformative effect of the technology used laid the groundwork for the research project that later amended the single-family unit legislation in California (Cuff et al. 2010). I also followed the "researchers in the making" during a new research project that began in the winter of 2023, tracing through close ethnographical observations how the project strategy was constructed through a heterogeneous and hybrid network of human and nonhuman actors in constant motion and expansion, in a collective process of negotiation.

To conclude, this work aims to contribute to the international debate on the practice of architectural design with the rapid evolution of digital technologies, challenging conventional narratives of digital-architecture by articulating instead discourse about technology that allows us to unfold the contingent and situated nature of the practice.

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THE DUTCH MYTHS. IMAGERIES OF ARCHITECTURAL CULTURE OF THE NETHERLANDS IN POSTWAR ITALY (19XX-1980)



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37° - PoliTo Grant

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The research aims to understand the peculiarities of the critical fortune of the Dutch architectural culture in Italy during the thirty years that followed the Second World War, reconstructing the different narratives that Italian historians, critics, and intellectuals contributed to affirm. This context represents a fertile ground for theoretical-critical production in the design field, whose protagonists, often referring to international experiences, constructed imageries to legitimize certain positions through architecture periodicals and cultural events.

While intersecting multiple keys of interpretation, the study chooses to use the myth paradigm as its main interpretative slant, the outcomes of which can be identified in the context it proposes to explore.

The research work takes part in the broader strand of study concerning the circulation of ideas, models, theories, and knowledge in the field of architecture and urbanism between different geographical contexts during the 20th century, problematizing their various interpretations and questioning their limits in the specific case. Starting from the moments of tension and crisis that favor or condition the relationship between contexts, the study observes the stratification of trajectories and timeframes inherent to it; it pays particular attention to the role of criticism, as an active filter of information, and considers a plurality of vectors such as exhibitions, privileged occasions for encounters between cultures and vehicle for diplomatic messages, periodicals and trade publications, sites for the representation of imaginaries and a vector for ideologies.

From a publicist and archival study, it emerges how Italian architects, urban planners, and historians analyzed, deconstructed, and manipulated the Dutch scenario according to three strands of debate: artistic avant-garde, urban design, and historiography - which can be considered a meta-level that intersects the first two throughout the considered timeframe. Through a critical analysis it is possible to ascertain recurring imageries of The Netherlands, addressed both to a specialized audience and to a generalist one. These myths are nourished over the years by the adoption of cultural and socio-economic policies, reflecting a bipolarity in the themes of interest; if the critical fortune of *De Stijl*, although closely linked to the architectural question, can be traced back to the current of research for the re-evaluation of the experience of the first European avant-garde motivated by solid cultural investment, the reflection on urban design and on historiography are instead supported by operational intentions and research in the socio-economic sphere.

The first part of the thesis will introduce the general topic, its timeframe, questions and methodologies of research. It will investigate the definition of myth and its implications, and propose historiography as the major interpretative frame focusing on the role of historians and critics in the construction of imageries. The second part proposes to deepen some of the emerged myths produced by Italian critics: “The Avant-garde Holland”, theatre of the achievement of a parallel social and artistic modernity, “The planner Holland”, whose experience is described in Ernesto Nathan Rogers’ “Casabella Continuità” and Giovanni Astengo’s “Urbanistica” from theoretical and institutional points of view, and “The Welfare State”, determined by the success of a new social ideal of architecture promoted by Aldo van Eyck, Jaap Bakema and Johannes van den Broek.

The narrative of each myth is conveyed by specific chronologies, which derive from a selection of publications or events that contributed to establishing every imagery. If it is difficult to pinpoint a common beginning in the construction of the multiple narratives, it is possible to identify in 1980 a precise moment of caesura concerning the themes of the debate on architecture dealt with previously. That year for the first time, Rem Koolhaas was invited to participate in the Venice Biennale, entitled by Paolo Portoghesi “The Presence of the Past”. Inaugurating a heated debate on Postmodernism and establishing itself on the international scene, the exhibition marks a radical change in the issues of architecture and its role. The victory of US-style neo-liberalism pushes the discipline towards a global market perspective, leading to a progressive loss of the social value it has assumed in the postwar period in favor of a consumerist design vision.

Precisely in a context that suggests a synchronic vision of history, Koolhaas places himself in apparent discontinuity with the past, seeking new principles to guide the discipline and moving away from the tradition of his own country. Therefore, the image of Dutch architectural culture that emerges departs from what Italian historians and critics had observed with great interest up until the leaden years, generating the consolidation of a new myth: “The Paradise of the project”, a liberal country with a young generation of designers on the rise, that would reach its peak in what Bart Lootsma will define in 2000 as *SuperDutch*.

Problematizing the concept of myth, its formation, audience, and purposes, the research aims to understand how cultural identities that emerged in one context are absorbed, hybridized, or misunderstood in a second, through what means and for what reasons. By tracing the narratives of the imageries of Dutch culture, which were constructed in post-World War II Italy, and by identifying key-role moments and figures, the study interrogates their thresholds and temporal gaps, posing questions of continuity and discontinuity with antecedent experiences.

Lastly, the work aims to understand the specificity of the critical fortune of the Dutch case in Italy, contributing to the prominence of architecture as a medium that favors the exchange between cultural identities and a place of contact between different theoretical and design positions through the mediating role of criticism.

MEMORY, NARRATIVES AND RHETORICS: THE ROLE OF ARCHITECTURE. TURIN, FIAT, FROM THE CRISIS TO DEINDUSTRIALIZATION (1970-2006)



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The thesis intends to historicize the last fifty years of cultural debate on the destiny of Turin's automotive heritage through the critical analysis of the production of memories, rhetoric and narratives. To this end, the work aims to analyze the role and presence of architecture in the communication conveyed, at different scales, by the automotive industry itself.

In fact, it is appropriate to keep in mind how often the automotive theme has also appeared in areas apparently not attributable to it: from fiction to art exhibitions, from public initiatives to newspapers. Many of the cultural expressions of the recent fifty years have seen different attempts at narrative strategies relating to the past of the automotive industry.

The chronology begins in the years of the energy and industrial crisis, around 1970, and ends at the beginning of the 21st century. The energy crisis of the seventies and the consequent slowdown of mass motorization lead to a crisis in the industry of the sector; the effects are devastating not only for Turin but for the whole country. In a crisis that has perhaps never been overcome, the so-called *marcia dei quarantamila* (lit. march of the forty thousand) - on 14 October 1980 an impressive number of Fiat cadres and officials took to the streets to even demonstrate their no longer invisible presence - represents the most emblematic point of the anti-union protest, with a subversion of the paradigm in the negotiation between Fiat and the State. The ultimate political and not just rhetorical meaning of the movement, resulting from the numerous changes in the balance of power, is reported by appreciable media and scientific coverage, of heterogeneous origin and destination.

The places of production once again become protagonists, albeit purely indirect ones, of a debate that immediately acquires the value of definitive social rupture. It is of extraordinary interest to highlight the various registers employed to stage the architecture of the industrial plant and its annexes, aiming to identify strategies and shared by management, as well as by the wider public. The sources taken into consideration can therefore be many, handwritten and printed, in a panorama that goes from newspapers to the grey literature of the house organs. Much of the material that has survived these years is kept in the archive of the *Centro Storico Fiat* in Turin, an extremely orderly repository of a memory that once again confirms itself not only as a business but as an entire city.

In particular, the documentation collected in the *Fiat Relazioni Esterne* dossiers during the years identified represents a large and rather constant sample of writings and images over time. It is a "perpetual press review", on a daily basis, which intercepts articles of interest to the company: the fonds are organized by topic and follow the chronological order. The origin - also geographical - of the collection is very vast, proving that the company's interests often extend beyond the national border.

The investigation of the content of these sources defines actors and languages, from which it is possible to outline strategies and tactics; in turn, the critical and stylistic analysis defines rhetoric and politics that lie behind the narrative and representational choices. With great effectiveness, the semantic and paratextual analysis allows to highlight a duality of register: almost summary and sparse in representations as regards the generalist press; very detailed and scientifically accurate regarding grey literature.

The sources highlight how Fiat polarizes the narrative in the automotive industry. The economic and political power of the brand is on the rise in these years, as demonstrated by the history of its systematic acquisitions in the productive and financial context: firstly urban, then Italian, finally global. The archives of the acquired companies converge in many cases with that of Fiat, even physically: this is the fate of Lancia, Diatto and many others, which is the motive why Centro Storico Fiat in Turin remains the only essential *company archive* relating to the automotive industry.

Nonetheless, the Turin house seems to continue to build its image above all on the two plants of Lingotto and Mirafiori, building a narrative made up of insights and images also diffused in the general press. The other buildings, factories and plants are represented with a duality: (almost) absent in the newspapers, detailed like Lingotto and Mirafiori in the internal technical press. The two main factories of the Turin house have catalysed all the narrative and representative attention, relegating the other realities to sources and memories of the insiders. These *other plants* do not seem (willfully?) to be part of the collective memory and identity of the city.

The concept of *collective memory* has often been abused, precisely in connection with great political narratives or exploitations such as those reserved for Lingotto and Mirafiori. This attitude, whose political value is now transparent, is one of the main driving forces behind practices that are exclusionary and destructive for the memory of the city, as shown by the numerous urban voids, deprived even of their own cultural memory, of their own history. Thus, the research intends to explore two parallel, apparently non-communicating paths: on the one hand, the narration carried out on the two large Fiat production plants, soon reduced to a model of epic, if not mythological, reconstruction, and, on the other , retrace the policies that guide non-representation and then investigate the link between narrative voids and the corresponding establishments considered secondary, whose disposal was favored by the exploitation of one's memory or, better, memory loss.

BORROWED LANDSCAPE: REDISCOVERING “ORIGINALITY” FROM MIMICRY, A JOURNEY TO THE CHINESE CONTEMPORARY ARCHITECTURAL LANDSCAPE.



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The ‘borrowed landscape’ is a Chinese garden design method in which the designed space is enhanced through elements of the external landscape.
In its original theory, the principle of “borrowing scenery” (Jie jing 借景) allows the incorporation of distant landscapes, creating an illusionary expansion of the space that eradicates the rigid boundaries that traditionally separate interior and exterior spaces.
Starting from this concept, the contemporary development of the notion points to the Chinese diffuse architectural attitude of “borrowing” landscapes that are distant in time and space.
The research aims to verify whether the garden design concept of “borrowing” may extend to how outdoor space is conceived in real estate housing design. The existence of countless examples of almost caricatured projects inspired by European or American stylistic features and reviving traditional Chinese architecture has prompted a fervent debate on the quality and legitimacy of such operations.
The topic of authenticity and originality is deconstructed to gain an understanding of how the reinvention of aesthetic canons and historical values allowed Chinese design to navigate the uncertain landscapes of commercial estates.
Today several Chinese developers have turned to architectural mimicry to project an image of modernity and sophistication. In these architectural projects, even if the results are sometimes considered kitsch or of low value, there exists an endeavor to encapsulate the quintessence of these replicated styles, which sometimes create illusory realities in which authenticity and hyperreality merge into a fabricated atmosphere that promises the experience of cultural tradition.
The ongoing discourse regarding the delicate equilibrium between replication and originality, as well as the dynamic interplay between reality and artfully constructed ambiances in architecture, inevitably opens the discussion to the acceptability of certain operations which, on the one hand, are the result of a desire of discovering the culture of countries, and on the other, follow strictly commercial interests that have slight to do with sensitivity to national history.
The same is true in China for both local and foreign replicas, which have become an intriguing attraction for consumers who perceive the Western landscape and cities of the imperial past, as epitomes of quality, wealth, and well-being, signifying the achievement of a high economic and social status.
The notion of the image and imaginary takes on a distinct meaning, wherein the ideal becomes the foundation for creating the space by replicating architectural elements that generate immersive experiences, which, as designed for the pleasure of the public, inevitably turn out to be “counterfeited” or “fake”, where the intent is to reproduce the original context and time.
To better be able to understand this panorama, the first part of the thesis will focus on first synthesizing the landscape of the real estate market, to then discern the question of originality and copying, to reasonably evaluate the merit of the evolution process of architecture and the ongoing landscape in China.
The entirely negative interpretation of copying will be seen here as superficial, so the question of imitation and representation will be deconstructed in all possible outcomes.
The culture of copying is not historically alien to either Europe or China as a method for acquiring and seizing knowledge, although the philosophical and cultural tradition translates into two different visions of imitation and representation.
In China historically, the ability to create good copy is a hallmark and indicator of technological superiority, and perfecting the copy makes it possible to reach the essence of the original; in Europe, emulating the master makes it still conceivable to achieve beauty, skills, and understanding nature.
Only recently has the concept of emulation been stigmatized and replaced by the notion of originality as the leading quality criterion.
This rejection of copying is likely due to a view from the age of industrialization, in which copyright is seen as unassailable because of the ease with which products can be reproduced, without considering instead the innumerable phenomena that generate currents, through the processes of appropriation, incorporation, discovery, and replication.
Turning to architecture and using the example of the historical Chinese garden as an emblem of the relationship between space and representation, the thesis will focus in-depth on contemporary Chinese tendencies of replication. The question of originality and the value of imitation will be discussed through the trend of Shanzai architecture (Shanzhai Jianzhu 山寨建筑) and New Chinese Style (Xin Zhongshi 新中式) to understand how the reinvention of aesthetic canons and historical values leads to the evolution of national design in the current panorama.
To conclude, the term “borrowed landscape” here refers to all those methods of replication, copying, mimicry, and imitation of distant landscapes that have been incorporated into the designed space and that have enabled the development of alternative architecture brought the Chinese landscape of project and planning, to a progress that is internationally recognized as remarkable.
Through a collection of case studies, interviews, a literature review, and an analysis of trade and general magazines, the thesis will first attempt to understand how the historical values of Chinese design and the aesthetic-experimental perception of space have led to the contemporary culture of copying in architecture today, and then to identify the changes in the real estate market, to the point of re-appropriating the elements of traditional architectural culture, to discover how the emerging generation of designers is excelling at capturing the themes of a globalized millennial culture combining historical, artistic, and technological influences with a forward-looking perspective.

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Chinese architecture market trends: re-invention of European and Chinese classical style
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SUSTAINABLE DESIGN BASED ON HEALTHY ENVIRONMENT AND ENERGY USE IN RESIDENTIAL COMMUNITIES



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Year
-

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-



↑ Yuedao residential community in Jiangmen, China



Gazzera residential community in Aosta, Italy ↓

Research cases
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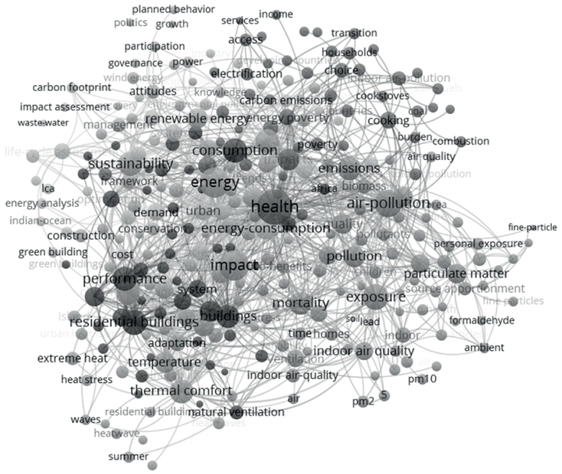

Research status
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This research focuses on sustainable design based on healthy environment and energy use in residential communities. The whole thesis contains six chapters.

Chapter 1, Introduction, shows the background, objects, methods, research targets, research significance and research framework. Human activity for health is inevitably accompanied by energy consumption. The more fossil energy consumption with carbon emissions, the more intensified climate change will occur. Climate change, including global warming, stimulates humans to use more energy to deal with the problems. However, this vicious circle should be broken. Global warming reached 1.1℃ above 1850-1900 in 2011-2020 according to the Synthesis Report of the IPCC (Intergovernmental Panel on Climate Change) Sixth Assessment Report (AR6) published on March 19, 2023. Moreover, based on *Our World in Data*, the remaining years of global coal, gas and oil are only 139, 49 and 54, respectively, from 2020. The residential sector is the third highest energy consumer, following the industrial and transportation sectors. It contains vast energy saving and producing potentials. Therefore, the research focuses on residential communities, which remain the majority globally. Based on qualitative, quantitative and mixed methods, the research tries to contribute to solving problems by sustainable design.

Chapter 2, Research Status, contains three aspects of developing concepts, current standards and research projects. The developing concepts focus on sustainable design, healthy environment and energy use, which can be traced back to the 1970s, especially in the Report of the United Nations Conference on the Human Environment in 1972. Even though some concepts were generated earlier than this, this research aimed to clarify that the development of these issues is still not mature at all. So the research should be paid attention. The related applicable standards in health and energy aspects, such as WELL, LEED and others, have been analyzed. The sorted-out contents will support the following research cases application. Moreover, the research projects in practice will help understand the state of the art about sustainable design demonstrations worldwide. Therefore, combining theory and practice will be helpful for a comprehensive conclusion.

Chapter 3 from the *full life cycle concern, different levels focus*, and open source and reduce expenditure aspects to figure out the design principles. The *full life cycle* for sustainable development, whether for health or energy conservation, is essential, especially for the Architecture major. A good architectural design will help achieve these goals and solve the problems once and for all. Moreover, the different scale objectives should apply different methods. Therefore, the three levels of the community plan, architecture design, and detail implementation should pay attention. Importantly, *open source and reduced expenditure* are needed to achieve a healthy environment and energy conservation. This design principle is established based on the passive, active and renewable-combined design.

Chapter 4, Design Methods. Based on the design principles, the design methods should be clear. The first is the *matrix design method*, which aims to analyze the design principles further to condense the design methods that this research needs. The three design principles are cross researched each other. After the analysis, the *different levels focus* interact with *open source and reduce expenditure* in the design stage of *full life cycle concern* left for establishing the matrix design method. However, only using the matrix design method to achieve the research goals is insufficient. The design plans can be multiple. Therefore, the *multiple design decision making* based on the Analytic Hierarchy Process (AHP) / Analytic Network Process (ANP) of multiple-criteria decision analysis (MCDA) is used to purify a plan from the multiple plans. However, the AHP / ANP of MCDA generally chooses one from the limited options. Therefore, *multi-design optimization* is established based on multi-objective optimization. It aims to get the Pareto Front Solutions by the software to attempt to choose the optimal one from countless options. Thus, the design methods are established for the following research.

Chapter 5, Research Cases. This chapter tries to apply the design principles and methods to the projects. On the one hand, it was achieving theory combined with practice. On the other hand, it used some projects to check the validity of research results, although some projects cannot be built up due to actual conditions. The first project is a residential building that got the first prize in Fangyuan Design Competition designed by the author. Even though this is only an architectural competition, it represents the approval of relevant experts for the content of the competition. This project applied the matrix design method for the passive aspect at the architectural design level. The second research case is the 2022 Solar Decathlon Europe residential community. This project was analyzed and discussed by *multiple design decision making* method based on the onsite investigation and literature review. The third project is Gazzera Residential Community which applied the *multi-design optimization* method under the guidance of supervisors based on onsite monitoring and interview. In short, this chapter applies and tests the above research results in some cases.

Finally, Chapter 6 makes the discussion and conclusion from contributions, limitations and summary aspects. This research is trying to apply sustainable design in healthy environment with proper energy use for residential communities to achieve sustainable development in the future.

Li, B., Zhang, Y., Liu, X., Caneparo, L., Guo, W., & Meng, Q. (2022). Sustainable Renovation on Aosta Residential Building for Carbon Neutrality. *Proceedings of Climate Change and Environmental Sustainability (CCES) 2nd Edition.*

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POLITICS OF ARCHITECTURE. DESIGN STRATEGIES WITHIN BUREAUCRATIC CONSTRICTIONS



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Year
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Supervisors
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Research Group
Theory of the Architectural Project

The primary intent of this research is to explore the relationship between architectural practice and policy measures in Italy within the specific case of the 110% Superbonus. The investigation originates from the following question: does the activity of architects involve only dealing with stunning and attractive projects, or is it a practice that primarily responds to contingency and, therefore, creeps into even the most "technical" conditions?

From ecological policies to the ecology of design practice.
In recent years, Italy and all other European countries have been called upon to identify and implement strategies for the "ecological transition," that is, the path aimed at achieving climate neutrality. This process also involves the intervention of architecture.
Italy has an extensive and often energy-inefficient building stock (Bellicini, 2022). In recent decades, modes of intervention in the area have changed: there has been a gradual concentration on the issues of rehabilitation and redevelopment of the existing building stock. Politically, there has been the emergence of a 'bonus season,' or a series of measures enacted in a few years, that incentivize the redevelopment of the built heritage through discounts and tax breaks. The roundup of bonuses sees its culmination in the Superbonus 110% that arrives in Italy in 2020 as the flagship strategy on the energy front of the PNRR, i.e., the document by which the country is called upon to communicate to Europe the strategies it intends to put in place to respond to the most relevant climate and economic issues.
Within this scenario, it is not easy to identify the place of the figure of the architect. On the one hand, there is almost the exclusion from the enjoyment of the economic benefits of the Superbonus; on the other, both the refusal of many professionals, for more often than not ideological issues, to deal with the type of intervention in question, and the adherence of a conspicuous component of the category that has dedicated an entire period of its activity, ending up specializing in this field.
It is of undoubted interest to explore these aspects further to understand better what role the figure of the architect plays in such specific contexts.

Is the Superbonus architecture?
This research protrudes to a twofold purpose: on a large scale, it is the intention to research and make evident the connections between the evolution of the policy measure and the practice of architects; on a micro scale it aims to understand, through the observation and deployment of the practice of the firms and the study of their projects,

Armando, A., Durbiano, G. (2017). *Teoria del progetto architettonico. Dai disegni agli effetti,* Carocci Editore, Roma,
Bellicini, L. (2022). Il mercato del rinnovo edilizio residenziale, nuovi e vecchi driver per il settore delle costruzioni, in *TECHNE Journal of Technology for Architecture and Environment,* volume 24, 26-32.
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how it is possible to make architecture through the application of such specific and stringent forms of intervention.
The reasons for the choice of the 110% Superbonus are thus threefold: the contingent nature of the case; its structural complexity and evolution over time; and its being inscribed in a broader, decades-long issue that concerns, in general, one of the main ways of doing architecture today, namely attention to ecological transition and intervention in the built environment (Bellicini, 2022).

Exploring and describing architects' practice. A method of inquiry.
The empirical part of the research takes place in four Italian cities: Turin, Milan, Venice and Naples. These are very different cities in terms of historical, geographical and urban characteristics. An attempt will be made to understand whether these differences have in some way affected the implementation of the measure differently or, on the contrary, whether common trends of approach and/or effects achieved can be recognized.
The instrument chosen for data retrieval is that of the interview, following a criterion of analysis that does not put any critical pre-reading ahead of what was found in the field: it will be the narratives and materials collected that will direct toward appropriate conclusions. (Latour, 2005).
The interview revolves around a specific object: architectural projects. It is planned, at first, to involve the owner of the firm and later the professional who has followed the project most personally, both from a technical and bureaucratic point of view.
The main interest is to understand how architects "inter-act" with the political dimension of the measure, what the moments of contact between the evolution of a legislative measure and the action of designers are and how they occur. It also seeks to understand whether the application of this specific measure has somehow optimized and/or changed certain stages of design, whether it has involved different actors than those present in previous projects, and how the "collective" of actors involved in the design and implementation process has changed (Latour, 2005). Accordingly, an attempt is made to recognize "design styles with Superbonus."

The project as a "socio-technical object."
The underlying assumption is that architecture is a "collective process of negotiation, in which a variety of non-human entities (materials, models, software, renderings) take part" (Yaneva, 2018).
The theoretical framework starts from architectural design theory, with a primary focus on the issue of the "describability of architectural practice" and the conception of design as a "socio-technical object," the result of a decomposable process (Armando, Durbiano, 2017).
In a design process that is as intricate in its contingent aspects as it is in the norms established in the political context, it seems particularly interesting to research, observe, and document the architect's ability to interpret in different ways what a norm establishes, in order to creep into its folds and make them act as a function of the success of a project.

SPONTANEOUS ROUTE CHOICE MECHANISM IN SUBTERRANEAN SPACE



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Year
2021 - 2024

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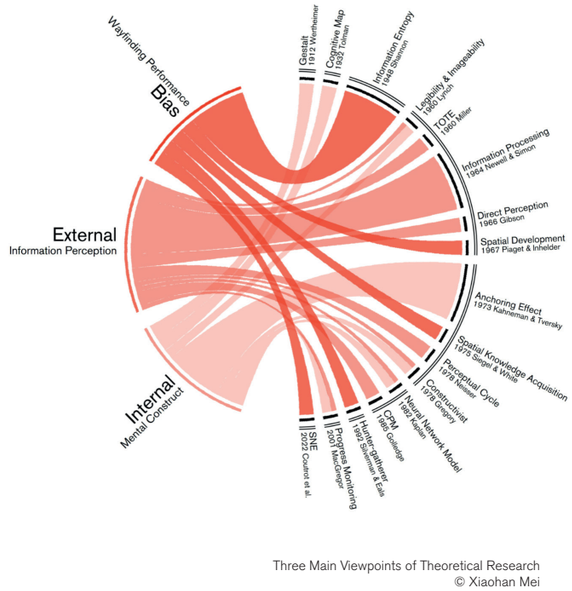
Research Group
China Room



Three Main Viewpoints of Theoretical Research
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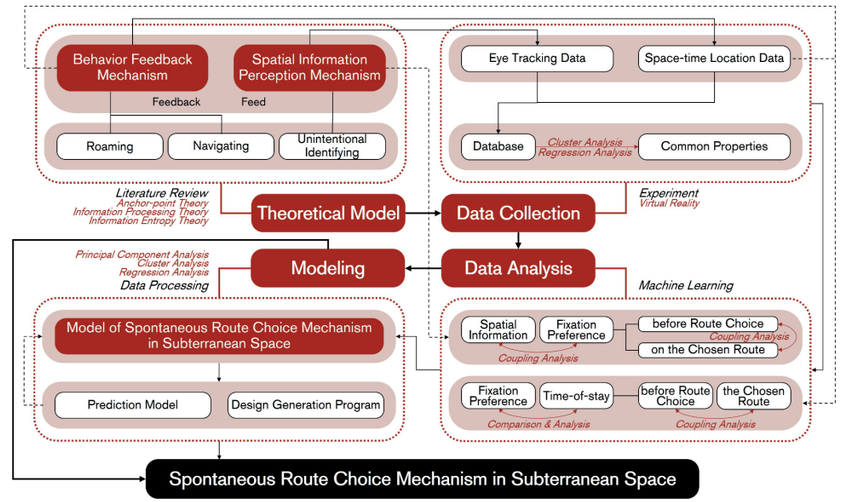

Technical Methods
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With the acceleration of urbanization, the emphasis of urban construction in China has shifted from quantity to quality, and the above-ground space in China's major first-tier cities shows a trend of approaching its maximum capacity. Consequently, subterranean space has become one of the hot fields of construction investment in China to alleviate the imbalance between land availability and demand. However, some fundamental characteristics of earlier subterranean space affect people's spatial experience, and disorientation is one of the wicked problems which might partly dominate the unfavorable perception of indoor space including subterranean space. To respond to this problem and enhance the spatial experience from a design standpoint, it's necessary to clarify how individuals make their choice at the intersections in subterranean space and why they spontaneously choose these routes. Moreover, combining with the development of ergonomic technology, Urban Ergonomics is attempting to predict the spatial experience using ergonomic measurements to support the design process of urban-architectural space in an accurate and quantitative way (Zhang et al., 2022), which provides methodology basis to explore the spontaneous route choice mechanism from the user-end. Therefore, this study aims to discuss the spontaneous route choice mechanism in subterranean space using positivistic methods, then applies the mechanism to predict people's route choices and provide guidance for subterranean space design. Meanwhile, the following questions are anticipated to be answered: 1) How to describe the process of spatial cognition when choosing route if there is a commonness of the spontaneous route choice mechanism? 2) How does spatial information affect people's spontaneous route choice in subterranean space? 3) How to predict the spontaneous route choice in subterranean space, and how to apply the mechanism to subterranean space design intervention? Although *Pedestrian Route Choice* has been separated from *Navigation* and *Legibility*, the two traditional and commensal topics in urban-architecture research, previous studies mostly focused on representing and simulating the pedestrian route choice results, or attributing to some spatial elements corresponding design details, ignoring the mechanism of the spontaneous route choice process that explains how people recognize and perceive these elements and provide their feedback. In the interim, there were some studies offering this study theoretical and methodological support. On the one hand, anchor-point theory and information processing theory (Simon & Newell, 1964) were the two dominant viewpoints of spatial cognitive mechanism in wayfinding field, and information entropy theory was regarded as a way to explain the wayfinding performance bias (Coutrot et al., 2022) (Fig 1). On the other hand, eye tracking was used to measure the fixation preference in the process that spatial information feeds people, and space-time location was frequently used to measure the chosen route and the time spent on choosing, both of which show the potential of exploring the route choice mechanism by using ergonomic measurements. Accordingly, this study will construct a theoretical model to reduce the dimension of the whole process of spontaneous route choice and divide it into three kinds of processing: unintentional identifying, navigating and roaming. Eye tracking data can help to analyze the unintentional identifying process, from which spatial information perception mechanism will be discussed, and space-time location data can help to analyze the navigating process and roaming process, corresponding to behavior feedback mechanism. Subsequently, this study will explore the basic properties of spontaneous route choice in subterranean space through processing eye tracking data and space-time location data gathered during experiments to test the presupposition that there is a commonness of the distribution of the ergonomic measurement data during the route choice and to suggest the potential dominant spatial information features. For spatial information perception mechanism during the unintentional identifying process, this study will focus on the eye tracking data to find out the fixation preferences on different part of the intersection in subterranean space and the relationship between them. For behavior feedback mechanism during the navigating and roaming process, this study will induce the time-of-stay series patterns before route choice and comprehensively analyze these patterns and the choice results, through space-time location data processing. Finally, by comprehensively analyzing the two parts of mechanism and the theoretical support, the model of spontaneous route choice mechanism in subterranean space can be summarized and constructed (Fig 2). Meanwhile, the theoretical model based on anchor-point theory, information processing theory and information entropy theory proposed at the beginning of this study will be tested. This study will also explore the application of the mechanism obtained, including establishing a prediction model on spontaneous route choice in subterranean space by machine learning, and trying to construct a design generation program of subterranean space applying the route choice preferences. The model is planned to be applied to some built subterranean space to test the effectiveness by comparing the route choices made by the model and by the subjects, as well as some projects still in the design stage to provide empirical evidence for design strategy comparison. Generally speaking, this study will innovatively construct and test the model on spontaneous route choice mechanism in subterranean space through positivistic experiments and ergonomic analysis. Based on the systematic analysis of the entire spontaneous route choice process, this study will also form a prediction model and a design generation program for high-quality subterranean space design.

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UNFOLDING TRANSNATIONAL CONSTRUCTION TECHNIQUES: CONSTRUCTION EXPLORATIONS TOWARDS POSSIBLE ALTERNATIVE MODERNITIES IN CHINA



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Cycle
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Year
2021 - 2024

Supervisors
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Research Group
China Room

This PhD research intends to investigate ongoing dynamics related to the increasingly deep recurring construction explorations from the last generation of designers in the Chinese architectural context. Architects are looking for original responses to the huge issue of the entire Chinese construction industry. Since Chinese architecture today is affected by different issues deriving from urbanisation at an unprecedented rate, some architects are developing strategies to respond to today's building quality conditions. The issue became an asset: Rather than aiming for the perfection of high-tech construction techniques, the contemporary generation of Chinese architects is not focusing only on high-tech resolution but looking for the most suitable one, usually shifting the focus to low-tech solutions. The design starts by rethinking construction techniques and materiality concerning the context and the lowered skills of the manufacturing workers, capable of operating manual rather than mechanised or industrialised tools. Nearly one-third of China's 200 million migrant workers are employed by the construction industry: It is a rural labour force that built urban China. The result is simpler building systems that reject unnecessary technification. They are preferred to construction techniques commonly used in the building industry and are easy to control in the construction process since they tolerate imperfection to guarantee better construction quality. A strong dichotomy exists between the increased control of the architectural design and the construction process today, and the affordances given by many construction contexts, especially building environments with limited available means in developing countries or where there is a young construction industry. Only a minority of the world has become highly technocratic systems: this is part of today's construction industry critique. The globalisation of techniques led to a diffusion of constructive culture through manuals, which led to an interpretation of the technique as a "totaliser" of architecture (Petriccione 2021), radically transforming the relationship between practices and local context, affecting architectural practice today. In China, planners get sustained by two decades of rural-oriented policies of Rural Revitalization Strategic Plans to mitigate the rural-urban gap. Additionally, the non-urbanised area encompasses a cultural dimension released from the burden of urban codes, regulations, and requirements, which generate design limitations. It puts designers in the condition of more freely experimenting with site relationships, buildings' typologies, and architectural languages. From this perspective, the rural past and contemporary redevelopment became a compelling showcase for many Chinese architects eager to test cutting-edge design approaches also to learn from. Material and construction techniques experimentation worldwide found space in the countryside: in China, it has been widely and deeply needed. During the 2013 National People's Congress, the central government recognised the vast environmental problems, social inequities, and urban-rural disparity resulting from the vast scale and rapid development speed. The research takes as references architectural responses that had extracted ideas from their rural contexts, materialising them into meaningful reflections on the evolving condition of China's countryside. Working with local communities, these projects are imbued with the wisdoms of their respective region's cultural heritage and traditional craft and aim to contribute to their sites' cultural and economic development through inventive and contemporary architectural approaches. In those situations, the building industry and the architectural profession have played a key role in facilitating the understanding of the real possibilities of who will build it to achieve the best possible result in terms of architectural quality and sustainability. Architecture has never been simply about producing a form or demonstrating technologies. Each era's creation serves to reflect the culture and ethics of the times: "Technology is culture", and "construction choices" were always "historically determined", as Construction History teaches us (Picon, 2005). Architects learnt from these experiences and innovatively are testing different techniques to complete large-scale buildings with high construction quality and experimenting with a substantial reinterpretation of traditional construction techniques and local manufacturing knowledge, responding to an external framework of architectural practices that construct the system of China's architectural profession. To have their projects built, architects must work within that system. An interesting case study can be identified in Gong Dong architect's construction consciousness in operations, where manipulations of "materials" can explain the ongoing deep research in managing the construction process. Today, from the lens of the post-Anthropocene discourse, there are many materials that we are going to rethink. There is a need to investigate material use through construction techniques tightly connected to the local context and the workers' conditions in a specific environmental model. It is a real happening that could address contemporary discussions about technological universalism and plurality: an opportunity to open the possibility of reappropriating and redirecting modern technology along alternate trajectories sustainable on the entire spectrum around the concept. The underlying scope seeks to enrich methods relating to contexts where the construction industry is not aligned with modernist development. Therefore, instead of implementing it on the same matrix of a single construction approach, which proved inflexible and unsustainable, we need to find answers deriving from specificities although the unstoppable global technological exchanges processes.

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URBAN ERGONOMICS AND TECHNOLOGY IN THE MAKING OF ARCHITECTURE



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Research Group
Theory of the Architectural Project

The topic of this Ph.D. research lies in the development of the Chinese-born Urban Ergonomics discipline and method for designing, focused on studying spatial strategies to address the issues of megacities. The methodology identifies a series of features that reduce the efficacy of architectural action and introduces human behavioural data as a potential source of information that would allow the construction of descriptive models to interlink human experience to urban morphology. The effort made by Urban Ergonomics and similar data-driven researches lies in integrating data analysis and synthesis into the process of making architecture: this represents this research's key node of investigation. Within a socio-technical framework on architecture as a design process and adopting an ethnographical approach to observe these researches, this Ph.D. research sets out to investigate what the technological dimension of the project of architecture is and in what terms the introduction of data modifies it. This Ph.D. research aims to observe Urban Ergonomics and similar current data-driven design methodologies with a pragmatical perspective, unfolding their technical dimension within the project of architecture. Given their ongoing nature and drawing on Bruno Latour's works, the technical work behind them can be made visible by adopting ethnography as an observational tool.

What is Urban Ergonomics?
Rose in the Chinese context, Urban Ergonomics identifies human spatial experience as the focal point to building its methodology, starting from a series of issues: analysing the poor quality of urban space, resolving the irreproducibility and subjectivity of traditional design methods, comprehending the links between human behaviour and the urban form. To address this ensemble of matters, multiple pieces of literature are reviewed and hierarchically considered, which brings to the definition of taxonomies of problems, behaviours, urban scales, and inscription devices: all forming knowledge on human bodies, to be inscribed into the application of the method. Parallel to this, a method for analysing space is defined by decomposition through activity segmentation, mobility configurations, and pace definition. Within this set of parameters, human behavioural data is inserted, thus producing a graphic analytical map.
The relevance of data is nowadays vastly recognised as a potential resource to develop urban environments. Within Urban Ergonomics, specific types of data are selected to understand human behaviour in urban space. This attitude, however, is sizably present in many current researches investigating the depth held by data on architectural practices. Therefore, within the limits of this Ph.D. research, a selection of parallel case studies is defined to grasp the research object better and represent a larger picture of interests and actions towards the application of data in architecture.

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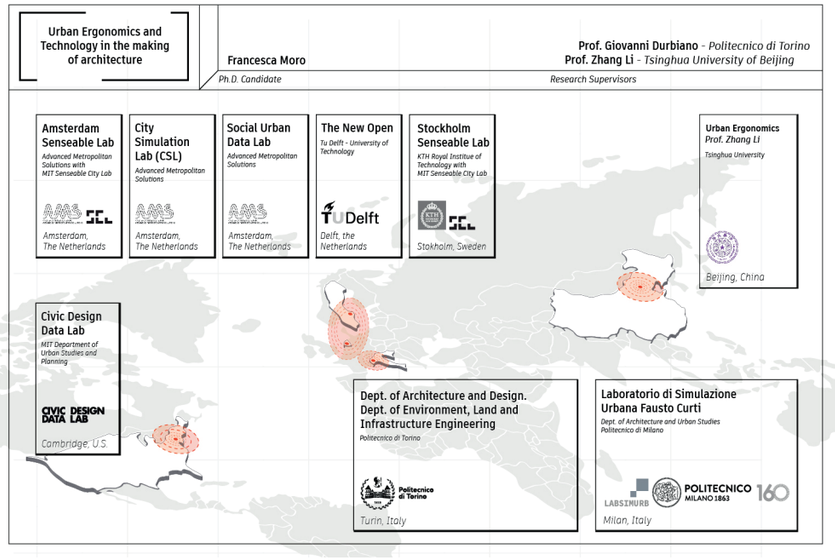

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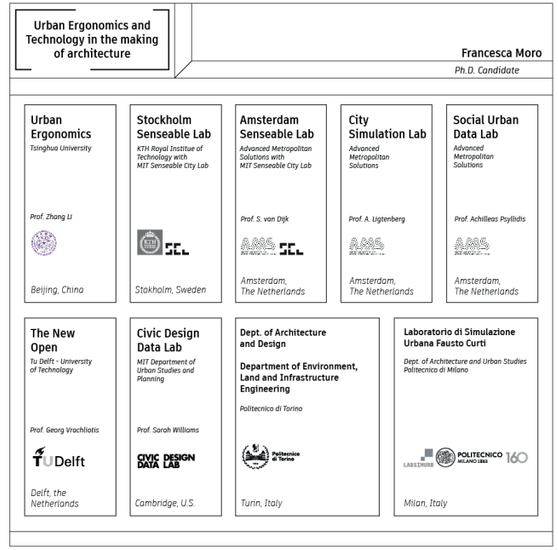

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Reconnecting practice and technology in architecture.
The Urban Ergonomics method entails a rationalist approach, where the dichotomies of cause-and-effect, society and nature, and subject and object are implied. Assuming human behaviour is natural and universal, objectively measured behaviour is deemed natural and universal as well. Therefore, the latter can be synthesised to inform descriptive models valid for all human beings to produce the design of space: a relationship of causality holds together behaviour and form. In Urban Ergonomics, technology is the set of tools employed to observe and register human experience, translating it into quantitative data. These implications place Urban Ergonomics in a specific discourse on knowledge and technology, which will be accounted for in this research.
However, this research will cut across these dichotomies and adopt the lens of Bruno Latour's pragmatist and relational perspective. Indeed, with this lens, Urban Ergonomics deploys many aspects that lead toward an innovative conception of technology in architecture. In this socio-technical framework, architecture is studied as a social practice, and the purification of domains is left in favour of understanding the entanglements of actors creating hybrids, giving weight to objects, practices and instruments.
Urban Ergonomics works towards constructing facts on human data and employs instruments or inscription devices to register human behaviour into signs or data. A new legitimacy for data is thus produced: it can be read as a non-human and pivotal actor in making architecture. This non-human nature represents a turning point in understanding Urban Ergonomics' analytical tool as a complex socio-technical object. Indeed, its conception is centred on the data that informs it and impacts the chains of mediators through which design action takes place. Several implications follow: the nature of inscription devices influences the types of data to be collected and its non-neutrality, materiality and durability; this part of the research will be focused on unfolding these questions.
In this last section, the research will cover the reading of Urban Ergonomics' analytical tool as a complex socio-technical object in the process of its concretisation. Technology is understood here as the autonomous and anonymous system of practices through which human relationships are mediated, produced and regulated. The relevancy of data-driven research like Urban Ergonomics lies in the degree of automatisation that can derive from integrating data toward design action: data starts to represent a form of potentially conducive knowledge on human behaviour flourishing into a socio-technical object capable of transforming people's behaviour and space through partially automatic technical procedures.

ENERGY LANDSCAPES. THE DESIGN OF LANDSCAPE ARCHITECTURE BY THE SHAPE OF ENERGY INFRA-STRUCTURE



Riccardo Ronzani

Cycle
37° - CRT/DAD Co-funded Grant

Year
2021 - 2024

Supervisors
Elena Vigliocco, Matteo Robiglio

Research Group
-

Energy production responds to fundamental human needs, therefore, since ancient times, buildings and facilities aimed at producing energy have drawn new shapes on the territories and infrastructure landscapes (Smil, 1994). Through time, societies have become more and more energy intensive. Nowadays, climate change and increasing energetic demand push international policies to ensure sufficient and sustainable energy production.
Renewable energy plants greatly impact the landscapes, caused by their extension and the high level of technology that characterise the elements (Apostol et al., 2017). Usually negatively evaluated (Allemand, 2021), this impact causes a conflict between those who defend the preservation of the natural landscape, and those who prioritise the ecological and environmental emergency (Folléa, 2019).
The research aims to bring an original contribution to this complex debate through design activity.
The main key issues are:
- what can be an innovative conception of "Energyscape"?
- how can the shape of energy infrastructures re-design the contemporary territories?
- can the architectural project of power plants become a tool for re-imagining new landscapes for the future?

The research ambition is to identify scalable design strategies for the project of new large-scale renewable energy plants to overcome the current "landscaping practice", as it is defined by Bertrand Folléa (in Allemand, 2021).
From a methodological point of view the study adopts a research-by-design method. The contribution by Rob Roggema (2016) is particularly interesting because it offers a general and graphical scheme of the research methodology. It combines a more analytical part (useful, for example, for the state of the art and the case studies analysis) to a design phase oriented to the solution of the very complex and multi-variable problems, as the landscape project is.
The research is structured in four main sections that investigate the topic at different levels, from a more theoretical to a more practical point of view.
The first section deals with the "Theoretical Framework" about the concept of landscape and the different definitions that have been given to it.
After the general framework on the topic, the role of architecture in landscape design is investigated by taking into consideration the more contemplative attitude on the one side; on the other side, the man's role is compared to the actor's perspective, a *homo-faber* who constantly modifies the landscape.
The final parts of this section analyse the contemporary discussion on the topic. Within the scientific debate that embraces the more conservative positions and the others, more oriented to the innovation of contemporary landscapes (Corner, 1999), the research aims to demonstrate that the transformation of the landscape through the inclusion of large and high-tech facilities can also be an opportunity for re-imagining the aesthetical and cultural values that it promotes.
The second section, "Energy and Landscape: stories of a relationship", introduces the topic of energy and aims to describe how the sites of energy production have been related to the construction of traditional or extraordinary landscapes across history (Sijmons, 2014). A critical timeline systematises the interpretations and representations of the landscape in different eras, with the main events, and inventions concerning energy. National and international regulations are also considered. An inventory of energy infrastructures and technologies promoted by recent energy autonomy policies and sustainable development directions are listed in the core of the chapter. For each of them, the main features, the inherent constraints, and the transformative potential of the architectural project are studied.
The third section explores selected energy landscapes through the individuation, the analysis and finally the comparison of case studies. Case studies are selected on the basis of the main current trends and the most promising future prospects. They are graphically described by an abacus of tangible elements that compose the landscape, and an abacus of energy elements in the landscape. Then, the definition of 7 criteria (Soil Consumption – Temporariness – Infrastructures – Green – Permeability – Visual Permeability – Attractiveness) allows the comparison between the cases.
The multicriteria comparison outlines the best practices and the main criticalities that the projects should consider, suggesting possible strategies and opportunities.
The fourth section is dedicated to the design application. In this case, the construction of new energy landscapes becomes an opportunity not only for assuring a sustainable provision of energy, but also for overpassing the marginality, the depletion, and the monotony of a fragile territory.
The renewable energies developed in the project are wind energy and solar energy. Other energy landscapes can be selected, analysed, and re-designed to study the most relevant trends defined by national and international policies.
In conclusion, the main impact is on the contemporary attitude in energy plants design activity; the idea is that the standardisation in the project of new renewable power plants assures profit maximisation, but at the same time, it limits the possibility of producing a high-quality landscape project. The research project's ambition is to contribute to the definition of "energyscapes" as new landscape typologies whose cultural values could be acknowledged, shared, and enjoyed (Picchi, 2022).
From a scientific point of view, the research investigates a topic that can be linked to other studies among the international academic context. It also intercepts the main goals of the European Green Deal and the ONU Agenda 2030, and it includes the instances and the debates promoted by associations and organisations for the preservation of landscape quality.

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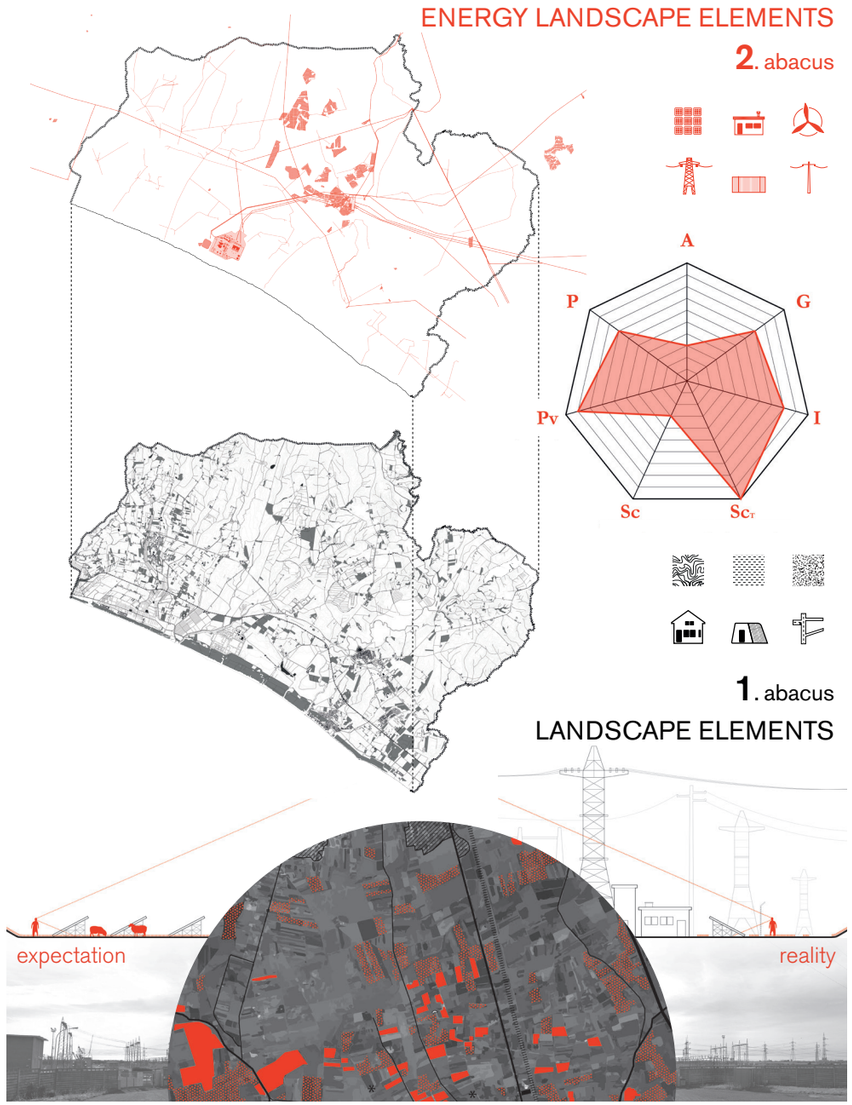

Schematization of main research reasons outlined by an example of case study analysis
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BIOMIMETIC ARCHITECTURE: ADAPTIVE BUILDING ENVELOPES IN COMPLEX BUILDINGS



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Supervisors
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Research Group
Architectural Technology

Cultural Background

The causes of climate change are several, complex and interconnected and that they largely depend on the anthropic action on the ecosystem. Although urban centres occupy only 3% of the planet's surface, they are the places where most of human activities are concentrated and, on a global level, they are responsible for a considerable expenditure of energy and for a significant emission into the atmosphere of climate-altering gases. Currently, more than half of the world's population resides in urban centres, while some projections indicate that the rate of global urbanization will reach 60% by 2030, with a significant increase in Countries with arid or tropical climates. It will determine, by 2060, the substantial balance between the energy needs for summer cooling and that for winter heating (Ecorys, 2014).Therefore, the management of the metabolism of the built environment represents a problem that requires the identification of solutions capable of significantly reducing the consumption of resources and the anthropic environmental impact. In the practice which progressively consolidated, the design approach for the mitigation of urban impact and climate change mainly refers to sustainability achieved through not adaptive technical solutions. However, through the adoption of a new conception, which requires the building organism to perform new and multiple functions through the acquisition of adaptive and autopoietic capabilities as they were defined by Humberto Maturana and Francisco Varela (1985), it is possible to reduce energy demand, achieve indoor comfort and even give rise to regenerative processes, remedying past and present environmental damage. The building can be conceived, according to systems thinking and the theory of complexity, as a self-organizing node of a wider self-organizing system, characterized by mutual and multiple relationships and interactions between the built environment, ecosystem and inhabitants. This conception can drive technological innovation and architectural design and suggests to exploit the biomimetic analytical approach, introduced in the scientific literature in the '60s and which has become, over the last few decades, a topic of growing interest thanks to numerous studies including those of Benyus (1997), Vincent (2006) and Jeronimidis (2012), whose domain consists in the investigation of functional processes in the natural world in order to emulate them in the technical-scientific field.

Objectives of the research

Traditionally, biomimetic in architectural design has been addressed and limited, in most of the cases, to zoomorphism, both formal and structural, neglecting many other aspects related to functionality and even less to the exploitation of biological processes for energy-environmental issues. The imitation of nature for the transfer to architectural design has been declined, over time, first as a pure imitation of the form, therefore as bio-inspired investigation applied above all to the structural conception, finally, more recently, as an aware imitation of processes of adaptation of living organisms to external environmental actions. The research intends to establish whether it is possible to evolve the paradigm of biomimetic design in architecture, providing the building with unprecedented capabilities and giving life to a cognitive, adaptive and autopoietic organism, capable of taking part, as a symbiont, in wider and more widespread ecosystemic metabolic processes. The adaptability of a building organism is usually more evident in the design of its envelope as it is the interface for regulating the exchange of energy and matter with the external environment. This addresses the research towards the study of adaptive envelopes which are technological systems conceived to respond dynamically to environmental stresses and even trigger regenerative processes. They are among the most topical technological subjects in biomimetic architectural research. Thanks to new active functions, building envelope can optimize indoor well-being, reduce energy demand and even contribute to the ecosystem regeneration (IEA, 2013). Literature reports many experiences carried worldwide which, in order to achieve dynamic adaptation, exploit mechanical actuators (Fig. 1), the responsiveness of materials (Fig. 2) or the integration between technology and biology (Fig. 3). The research aims to draw a scientific framework to investigate how to reduce complexity and structural fragility of adaptive technological systems, improve their control capabilities, minimize energy expenditure for actuation and even generate power or enable positive ecological processes. The objective is to provide the architectural design with effective tools to make requirements and performance capabilities converge through responsive and regenerative processes inspired by biomimetics and identify some premises for the conception of new biomimetic adaptive envelope systems.

Methodology

Biomimetic research relies on a systemic methodology and assumes multidisciplinary know-how as a mandatory requirement for adequate design. It can inspire the design process from the conceptual phase to the subsequent stages. Thanks to multiple and multidisciplinary analytical and design methodologies including those developed by Janine Benyus, Achim Menges, Rupert Soar, Adrian Bejan and Sylvie Lorente or the implementation of the TRIZ heuristic method by Julian Vincent and Denis Cavallucci, research can be carried to achieve the evolution of the building organism. The critical analysis of biomimetic architectural projects, design methodologies, operating principles, through the identification of the strengths and weaknesses, will constitute the basis for achieving the objectives of the research.

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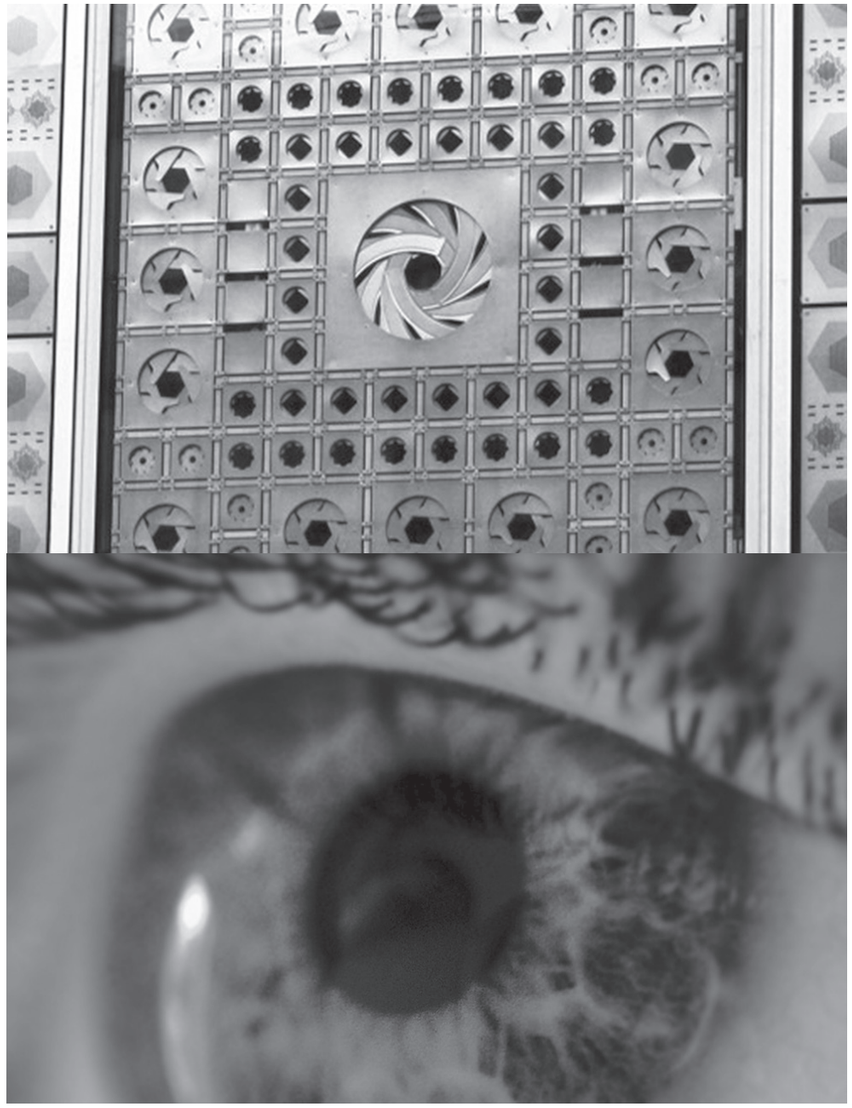
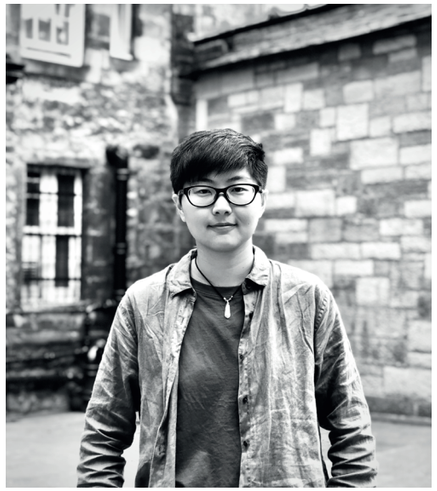


Jean Nouvel, Institute du Monde Arabe, Paris, 1987. Comparison between a module of the façade with a human eye © Luca Saverio Valzano

PERFORMANCE-ORIENTED DESIGN STRATEGY OF INDOOR ARENA ROOF SYSTEMS IN THE SUSTAINABLE CONTEXT



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37° - Visiting PhD/co-tutelle agreement

Year
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Supervisors
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China Room



The evolution of shelters has always been fundamentally driven by human needs and environmental demands. Concepts related to environmental sustainability, climate adaptation, and energy efficiency have become increasingly prominent in architecture, especially following the 1970s oil crisis (Brown, 2021; Olgyay et al., 2015). Presently, the pursuit of “Carbon Neutrality” symbolizes a global endeavor to mitigate climate change. The combined buildings and construction sectors contribute nearly a third of the total global final energy consumption and approximately 15% of direct CO2 emissions (IEA, 2021). This scenario poses an unprecedented challenge for architects. Transformations in energy structures and climate conditions necessitate not only the introduction of new design concepts but also the expansion of architectural knowledge. This evolution requires a shift in design processes and tools. Despite the skepticism expressed by some architects about emerging technologies and environmental design principles, their decisions during the design phase significantly impact a building’s environmental comfort and energy performance throughout its lifecycle. To an extent, architectural sustainability is a question of form. It cannot be realized solely through simplified data indicators or an array of ‘green’ technology add-ons. However, the performance-oriented design of intricate systems continues to be a complex task. This complexity arises from the inherent uncertainty of performance metrics (Hensel, 2013) and the time-intensive nature of most performance metric simulations using existing tools (Wortmann et al., 2015). As a result, performance calculations often struggle to keep up with the fast pace of architecture design iterations.

Large-scale public buildings present unique challenges due to their technical intricacy, high construction costs, stringent environmental quality standards, and intensive energy use, thereby encapsulating the difficulties of sustainable building performance design. The roof system is a pivotal element of the indoor arena’s core space, acting as a climatic barrier. Its structure, components, and materials, along with its large spans and areas, distinguish it from walls and other enclosures. The roof system directly impacts the spatial form of the indoor arena, as well as thermal and lighting adaptation and the utilization of renewable energy. This thesis explores the relationship between design elements (such as spatial form, components, and materials) and performance indicators (climate-adaptability, energy performance, and carbon performance) of a typical large-scale public building envelope - the indoor arena roof system. This exploration aims to provide performance-oriented design strategies for architects. Furthermore, this research delves into an integrated design method centered on rapid performance prediction within a constrained building design stage.

This research comprises three key segments. The initial segment includes a literature review and case investigation, divided into two chapters. The first chapter conducts a review and comparative analysis of performance-oriented design theories, methods, and tools. This analysis helps inform the selection of performance indices, the choice of research tools, and the experimental design. Since the concept of performance is extensively yet ambiguously used in architectural design, it is crucial to identify key performance elements (Wilde, 2018). A bibliometric approach provides technical support for this part of the research. Subsequently, we collected and analyzed data from nearly 100 internationally significant sporting event venues, including size, roof form, structural form, skylight type, materials, etc. Through this investigation and generalization, we extract design elements of the indoor arena roof system to support the establishment of research parameter models. The second segment of this research involves a qualitative and quantitative study on the correlation between design parameters and the sustainable performance of the indoor arena roof system. This section constructs parameter models and discusses the relevance of the indoor arena roof system’s spatial form, components, and materials to climate adaptability (thermal performance and lighting performance), energy performance (energy consumption and energy production potential), and carbon performance. The final segment of this research analyzes the results from the previous sections and conducts a sensitivity analysis of the design parameters impacting the sustainable performance of the roof system. The aim is to propose a performance-oriented design strategy for the indoor arena roof system. A multilayer neural network will also be deployed to create an agent model for mapping design parameters to numerical performance indicators. This research aims to systematically identify the primary factors influencing the performance of indoor arena roof systems in a sustainable context. It seeks to establish the correlation between the complex design elements of the roof system and building performance. Architectural design is driven by many unquantifiable factors based on site history, culture, economics, political policies, and architects’ ambitions, attempting to find the optimal solution through data and metrics challenging to execute. By establishing the connection between quantifiable performance indicators and design elements, this study provides a visible cognitive image for architects’ decisions in the design stage and attempts to propose a sustainable performance-oriented design strategy that can be efficiently conducted. Introducing a multilayer neural network agent model hopes to address the complexity and relative lag of performance simulation in the design process, enabling rapid performance feedback to assist architects in making informed design decisions.

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THE MATHEMATICS OF URBAN MORPHOLOGY. A CROSS-SCALE TOPOLOGICAL APPROACH TO ANALYZING MORPHOLOGICAL TRANSITIONS IN URBAN SPATIAL STRUCTURE



Xiao Xiao

Cycle
37° - CRT/DAD/FULL Co-funded Grant

Year
2021 - 2024

Supervisors
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The transition of Topological Networks of Xiaoxihu
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Calculation Graphs of Xiaoxihu Block in 1930s and 2010
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The research aims to explore a new way of describing urban spatial structure from the perspective of the cross-scale topological network combined with the graph machine learning. The research establishes a bridge between the field of urban morphology and advanced computational models, particularly Graph Isomorphism Networks (GINs) and Dynamic Graph Convolutional Neural Networks (DGCNN). While the bridge is the construction and application of cross-scale topological networks, an advancement that overcomes the limitations of traditional methods such as space syntax which were restricted to single-scale, either indoor or outdoor, models. Through the integrated use of historical morphological maps, mathematical models, neural networks, and data, the study will reveal the bottom-up evolution patterns of urban spatial networks at various scales, which will support urban design decisions in the future. The Introduction part lays the foundation by providing the necessary background and outlining the research objectives and questions. This chapter also introduces the methodological framework and the overall structure of the research. The first part and the second part review the existing studies on urban morphology, cross-scale topological networks, and the use of Graph Neural Networks in urban morphology. This review sets the stage for the novel methodological approach presented in this research. The third part, Methodology and Selected Cases, expounds on the construction of cross-scale topological networks, the generation of historical topological networks, and the application of Graph Isomorphism Networks (GINs) and Dynamic Graph Convolutional Neural Networks (DGCNN). This part also introduces the innovative concept of the Structure Evolution Degree, a metric designed to quantify the transitions of the urban spatial network: The first process of the core of this research is the transformation of urban morphology maps into cross-scale topological network graphs. This intricate process involves representing both outdoor urban spaces (like streets and plazas) and indoor function rooms as nodes, with their interconnections forming edges. By further categorizing these nodes into four distinct levels—Public spaces (streets), Front spaces, Courtyard spaces, and Functional room spaces—a layered topological network is established. The front space level as the transitional space connects the public space and private space to form the whole cross-scale topological network. This cross-scale representation successfully captures the inherent complexity and diversity of urban spatial structures across different scales, providing a comprehensive and realistic depiction of urban environments. Then the research furthers the utility of these cross-scale topological networks by generating historical representations for specified urban areas across different time periods. These networks are also enriched with the spatial data associated with each node, through the GIS software. This approach facilitates a detailed comparative analysis of urban morphological changes, allowing for a richer, temporal understanding of the dynamics of urban development. Upon the generation of these historical cross-scale topological networks, this research introduces the innovative 'Structure Evolution Degree.' This unique metric provides a quantitative representation of the transitions in the urban spatial network. The introduction of the Structure Evolution Degree enhances the analytical precision of the research and offers a robust tool for understanding, describing and comparing spatial changes across different urban areas and time periods. The research methodology is further distinguished by the application of GINs and DGCNN in the analysis of these networks. GINs, a type of graph neural network, are used to compare entire graphs. By identifying and encoding unique graph structures, GINs (Xu et al., 2019) enable the analysis of the global changes in the urban spatial structure over time. On the other hand, DGCNN, another innovative graph convolutional network (GCN), provides a more localized perspective. By aggregating and transforming local network features, DGCNN(Wang et al., 2019) allows for the identification of critical micro-level transitions. The combined application of GINs and DGCNN, along with the quantification provided by the Structure Evolution Degree, presents an unprecedented, nuanced view of morphological transitions across scales. The application of these computational models reveals intricate changes within the urban spatial structure, shedding light on the complex dynamics that shape urban environments. The results of this study are meticulously analyzed and presented through the use of subgraphs. These subgraphs effectively represent the evolution of cross-scale spatial relations across different periods. Each subgraph, derived from the GINs and DGCNN analysis, presents a detailed visualization of various transitional forms of urban spatial relationships, such as transitions from open street spaces to enclosed courtyard spaces or transformations of functional room spaces over time. This representation not only reveals transformative trends in urban spatial structures but also underscores the importance of considering multiple scales in urban morphological studies. The final part, the Conclusion, summarizes the key findings of the study. It discusses the theoretical and practical implications of these results for urban development and planning. It also acknowledges the potential limitations of the study and suggests areas for future research. By integrating cross-scale topological networks and the novel measure of Structure Evolution Degree, this study marks a significant stride in urban morphology research, heralding a new era of comprehensive, multi-scale urban spatial structure analysis.

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TYPO-MORPHOLOGICAL RESEARCH ON SMALL TOWN FORMS IN PEARL RIVER DELTA, CHINA



Shuya Yang

Cycle
37° - Visiting PhD/co-tutelle agreement

Year
-

Supervisors
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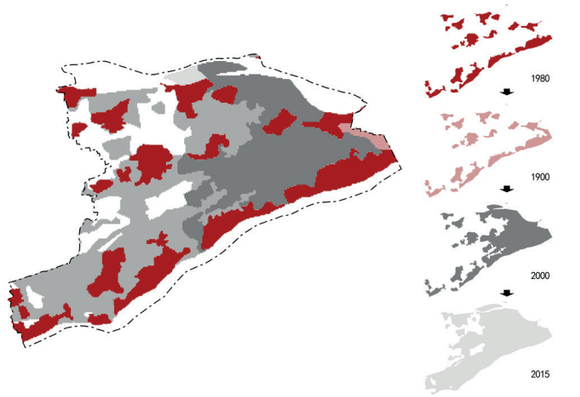
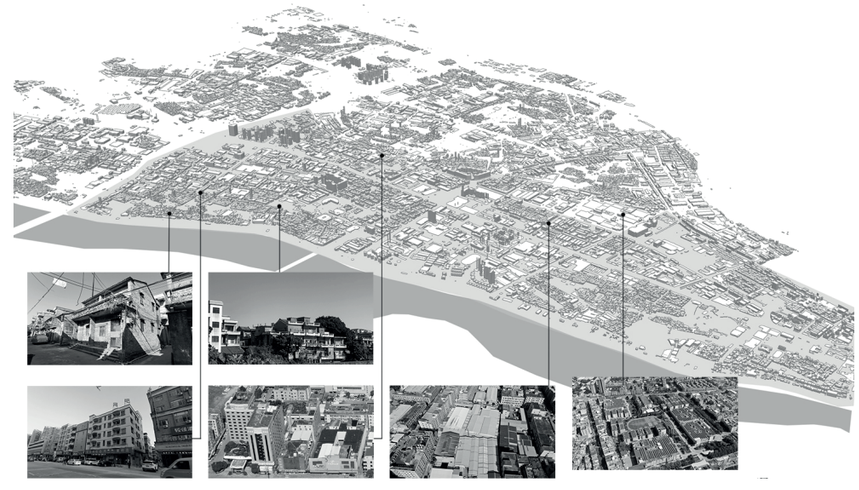
Research Group
Transitional Morphologies Joint Research Unit



Development process of the built-up area, the case of industrial town: Shijie
© Shuya Yang



The segments of typical town forms
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In the early years of China's reform and opening up, driven by the advantages of location, cheap labor and land, the "Three-plus-one" trading-mix enterprises took root in the Pearl River Delta(PRD) region, bringing opportunities for the development of PRD villages and towns. And from the 1980s, the PRD towns developed rapidly against the background of bottom-up rural industrialization and top-down administrative decentralization reforms. With the rapid increase in the non-agriculturalization of land and the disorderly expansion of collective construction land, small towns in the PRD have been "semi-urban and semi-rural" in a long time, with scattered and mixed land utilization and a patchy and fragmented spatial landscape. The disorderly expansion of "large quantity and low quality" industries has brought land resources to their upper limit, and the development direction of small towns has changed from sloppy growth to intensive growth. The top-down supply of the three-old transformation system and the bottom-up transformation of industries to upgrade themselves have also triggered the evolution of the spatial pattern of small towns. Feng Changchun proposes that the development of small towns under the new pattern is driven by four major drivers: policy, industry, society and space, with industry as the core driver and its upgrading and transformation directly driving the development process of small towns. As the material support base for small towns, space carries the concentration and flow of population and industry.

Most of the existing studies on the spatial aspects of small towns in the PRD region focus on the core areas of the PRD, such as Dongguan, Foshan and Zhongshan, where the economic level is high and the industrial characteristics are apparent. However, in the systematic combing of spatial studies on small towns, it can be found that due to differences in industrial development factors such as types of industries and sources of capital, the level of economic development in different regions of the PRD varies greatly, and small towns also present different spatial characteristics. Facing the transformation needs, spatial status and transformation exploration of small towns, it is necessary to carry out a systematic study of the built-up morphology of small towns, and clarify the morphological characteristics and development history of small towns in the PRD by means of classification and zoning. This will provide a basis for the future optimisation of small-town forms.

This study takes the physical form of small towns in the Pearl River Delta as its research object and analyses the spatial patterns and evolutionary mechanisms of small towns. The review of the development history and current state of small towns is the basis for future transformation. The research includes the development process, morphological types, spatial and temporal distribution, evolutionary characteristics and case empirical evidence of small towns in the PRD. The existing methods of spatial morphological analysis are based on the spatial morphology of matter and analyze the morphological evolution process and mechanism, which could provide this study's excellent theoretical basis and methodological support. Faced with large number of small towns, the types of towns are classified by considering form combination, town expansion and transition. And find out the characteristics of spatial distribution. Furthermore, I will select typical cases and analyze the morphological characteristics and transitional mechanisms on different scales from town to building. The research hierarchy of this study is determined as "town -- composition of plan units-- plan unit -- building" by referring to G. Caniggia, K. Kropf, and F. Chen. This research identifies the basic buildings and specialised buildings in small towns, then divides the types of plan units according to hierarchy analysis of buildings, plots, plot series, and blocks, explains the typological process of town fabric. The analysis of specific cases focuses on the developmental process and the mechanism of evolution.. Using the changes in China's land development system, particularly in the Pearl River Delta region, as a starting point, this study divides the spatial development of small towns into four periods: Phase 1 (1978-1988), a slow-growth phase at the beginning of the reform and opening up; Phase 2 (1988-2000), a period of rapid construction under multi-level government guidance and control; Phase 3 (2000-2009), a planning and regulation period following market intervention; and Phase 4 (after 2009), a period of stock land renewal and transformation. At different periods, small towns of different types exhibit distinct characteristics of urban expansion and form diverse spatial patterns. The development mechanism of land rights has become a significant driving force in shaping urban evolution, with various development subjects and policy orientations leading to substantial differences in the morphology of small towns.

With the research, I hope to provide a basis to promote the research on form optimization of small towns in PRD. This study takes the physical form of small towns in PRD as its research object and analyses the spatial patterns and evolutionary mechanisms of small towns. The review of the development history and current state of small towns is the basis for future transformation; therefore, this study has both theoretical and practical significance. At the academic level, a systematic review of the development history, morphological types and spatial and temporal distribution characteristics of small towns in the PRD enriches the study of small towns at a macro level. At the practical level, it can provide a basis for the development transformation and spatial planning of small towns in the PRD.

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CONSTRUCTION TECHNOLOGY OF THE COMMUNITY ENVIRONMENT FOR OLDER ADULTS



Yuqing Zhang

Cycle
37° - Visiting PhD/co-tutelle agreement

Year
-

Supervisors
Luca Caneparo, Qinglin Meng

Research Group
China Room

As we age, levels of physical and sensory abilities gradually decline. Some of the variability in the health of older adults is due to their physical and environment. In addition, different countries' community environment construction techniques need to be more adaptable to the changing needs of the aging population. Thus, there needs to be more research on the relationship between environmental construction technical requirements and the characteristics of the community's age-friendly environment and the potential of environmental construction technical requirements in improving the age-friendly community environment performance and comfort.

Part One: 'Introduction and theoretical background'.

Chapter 1 describes the research problem and research gap addressed in this thesis. It also defines the research aim and objectives, clarifies the research scope and outlines the thesis structure.

Chapter 2 reviews the methods for analysing older adults and environment comfort and discusses the influential factors on older adults and environment comfort. It first discusses the physical function characteristics and environmental needs of older adults, and then the elements and influencing factors of the age-friendly environment. The chapter then introduces the influencing factors of environmental comfort. Experimental methods for measuring environmental comfort are then discussed, and research gaps in environmental comfort for older adults are summarized.

Chapter 3 first presents the definition and focus of community environment. Techniques for community environment in different functional areas studies are then discussed, including their advantages and constraints. The chapter subsequently summarises the indicators for community environment performance assessment. This chapter further comprehensively discusses the factors affecting the performance of the community environment from the aspects of relevant normative documents, community environment classification schemes for different functional areas, and evaluation tools for the potential of community environment comfort. Finally, the research gaps in community environment studies are summarised.

Part Two: 'Methodologies for Analysing Construction Technology of the Community Environment for Older Adults'.

Chapter 4 proposes a framework for analysing age-friendly community environment performance and its impact on environmental comfort. And develops a age-friendly community environment classification scheme for facilitating community age-friendly environments analysis. The chapter begins with a statement of the unique contribution offered by the framework, followed by a detailed description of its structure and key components. The chapter then presents the age-friendly community environment classification scheme with a detailed description of its definition, criteria, protocol and implementation.

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Physical environment measurement in social housing, Aosta, Italy
© Yuqing Zhang

Chapter 5 details the case studies performed to analysed age-friendly community environment performance and its impact on environmental comfort. The chapter first describes the case study design. It then applies to the Aosta in Italy and the Guangzhou in China. Finally, the chapter presents the Environmental construction technology and Age-friendly Community Environment Characteristics of the two representative age-friendly community environments selected as case study areas for empirical study.

Chapter 6 describes the methods employed for data acquisition and data analysis. It defines the assessment indicators for community age-friendly environment and comfort and their respective data sources. A literature survey and a field campaign were selected as the approach for data acquisition; thus, the chapter details the literature survey protocol including document scope, types, and temporal protocol. And the chapter also details the field campaign protocols including spatial, temporal protocol and sensor requirement. Consistent with the protocols, the weather condition, campaign duration, measurement position and environmental sensor setup were determined.

Part Three: 'Findings on Construction Technology of the Community Environment for Older Adults'.

Chapter 7 presents the literature survey results and the field measurement campaign. The literature survey includes standards, guidelines, atlases, relevant normative documents, policy documents issued by governments and organizations, and related journal papers. Field measurement activities include research on the indoor and outdoor environment of the community.

Chapter 8 comparative analysis of Chinese and Italian communities. Compares the variation in Age-friendly community environment performance and comfort under different combinations of Environmental construction requirements and age-friendly community environment characteristics. Then conducted to estimate the potential of Environmental construction technology to improve community age-friendly environment comfort. The chapter finally presents the implications of the research findings and offers suggestions to improve the comfort of the environment.

Part Four: 'Conclusions and future work'.

Chapter 9 concludes this research and summarises the main research contributions and the significance of this thesis. It also discusses the limitations of this thesis and raises suggestions, improvements, and recommendations for further research.

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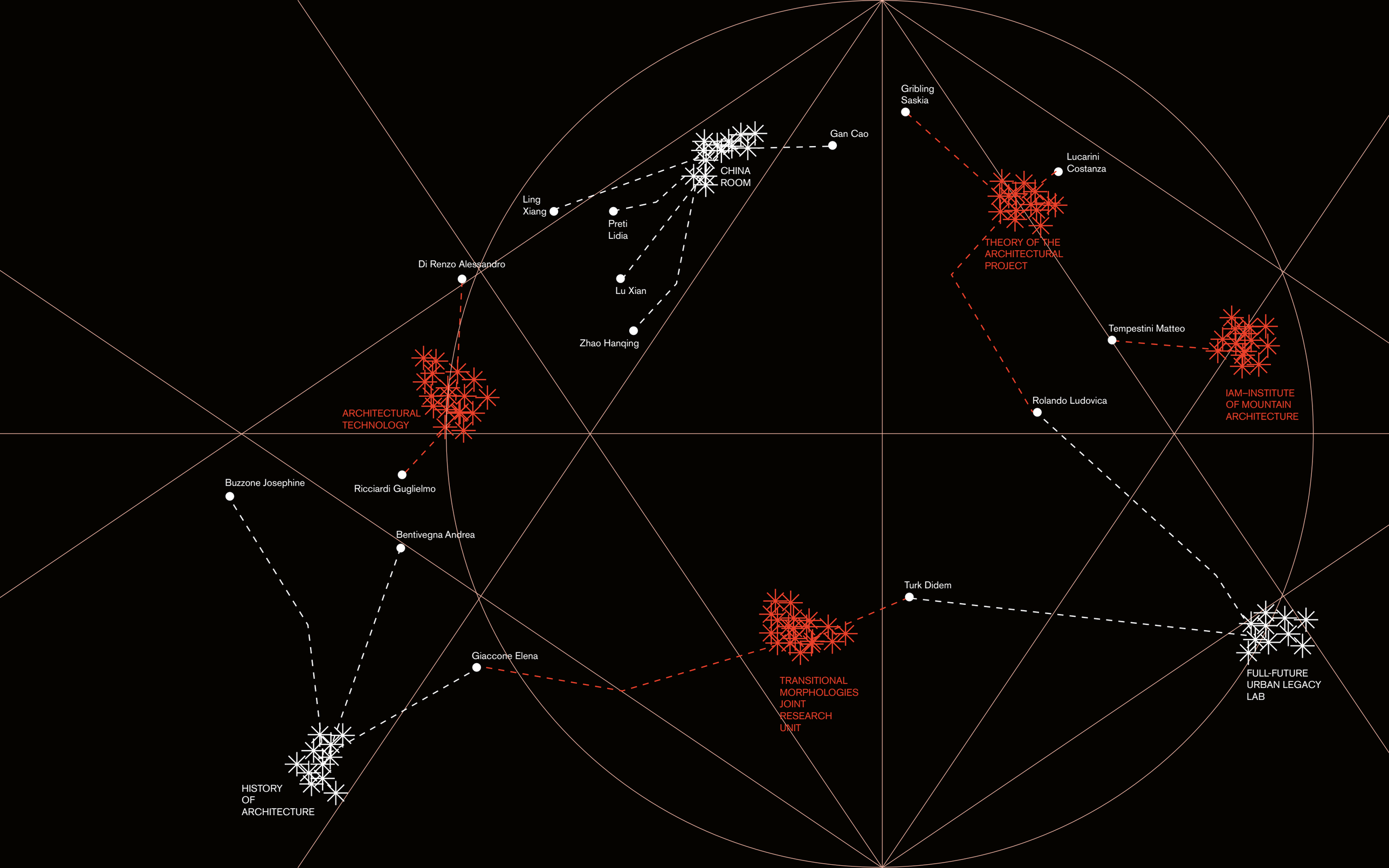
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Lu Xian
Tempestini Matteo
Zhao Hanqing
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Rolando Ludovica
Buzzone Josephine
Ricciardi Guglielmo
Bentivegna Andrea
Turk Didem
Giaccone Elena
TRANSITIONAL
MORPHOLOGIES
JOINT
RESEARCH
UNIT
FULL-FUTURE
URBAN LEGACY
LAB
HISTORY
OF
ARCHITECTURE



Andrea Luigi Bentivegna

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36° - PoliTo Grant

Year
2020 - 2023

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History of Architecture

Pio Piacentini (1846-1928) was one of the most successful architects of his time and author of some of the most important buildings in the new capital and, despite this, his fame was overshadowed by the dazzling professional rise of his son Marcello (1881-1960). Similarly, his critical success - first - and historiographical - then - was influenced by the cumbersome presence of a son so important to the point of relegating the father figure only to the background, barely outlined. Yet that of the Piacentini is, to all intents and purposes, one of the most illustrious genealogies of Roman architects. It is deemed necessary to investigate the figure of Pio Piacentini given that his story appears in some ways inseparable from that of his son. Therefore, this study wants to finally define his biographical and professional profile, inserting him in his time so as to understand his importance by adding decisive useful elements also to explain the precocious affirmation of the young Marcello.

The object of this work is, therefore, the figure of one of the most illustrious Roman architects of that peculiar historical period between the breach of Porta Pia and the advent of fascism. The city, which had become the capital, was the scene of a considerable building effort to provide it with the necessary infrastructure and government buildings. It was through these large construction sites that an attempt was made to transform the ancient image of Rome with new architectures. However, we were faced with an epochal situation which also transformed the operation into an attractive speculative opportunity.

In the first place, therefore, this investigation will examine precisely the historical context in which the professional life of Pio Piacentini takes place. A period in which the architectural debate was aimed at the formulation of a national style and for which Rome and its architects will have an important role. In fact, the new liberal state not only found itself building a new capital but at the same time had to do so "through an operation that we could define as architectural propaganda that would have had to compete with the monuments of the past while celebrating the values of the new homeland" (Berggren and Sjöstedt 1996, p. 4). The strictly biographical story of Pio Piacentini will then be reconstructed. The little information available has allowed us to learn about his university studies at the Sapienza which brilliantly ranged from mathematics to philosophy before arriving at the faculty of engineering and then at the study of architecture at the Accademia di San Luca. These were followed by the usual professional practice alongside Virginio Vespignani (1808-1882), the most important architect of that time,

Accasto, G., Fraticelli, V., Nicolini, R. (1971) *L'architettura di Roma capitale 1870-1970*, Edizioni Golem, Roma
Berggren, L. e Sjöstedt, L. (1996) *L'ombra dei grandi. Monumenti e politica monumentale a Roma (1870-1895)*, Artemide Edizioni, Roma
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Pio Piacentini al fianco di Benito Mussolini all'Accademia di San Luca l'8 luglio 1923

and finally the independent debut at the end of the 1860s. We will then continue by reconstructing his family and professional relationships with some of the most important characters of his era. Colleagues, of course, such as Gaetano Koch (1849-1910) and Manfredo Manfredi (1859-1927) but also with other particularly influential personalities in the Italy of those years starting with Ernesto Nathan (1845-1921), later mayor of Rome, and the sculptor Ettore Ferrari (1845-1929). Both will be very close to the Piacentini family, with whom, as we will see, they will always maintain a relationship of mutual concern. We will try to outline the complex kinship that linked the Piacentinis to other important families such as the Stefanis, the Aymoninos and the Busiri Vicis, also revealing the decisive - but until now almost unknown - role of Pio not only in the professional sphere but above all in the social one -politician of Italy of those years. Finally, the complete register of the works will integrate the little information transmitted by a small bibliography with the study of archival materials found in the Capitoline Historical Archive. The third chapter will deal with Piacentini's work in the three most important projects for the new capital, all located along the urban axis of via Nazionale. In 1878 the architect was in fact awarded the assignment for the new Palazzo delle Esposizioni. Thus, he took part, together with Ettore Ferrari, in the first competition for the monument to Vittorio Emanuele II. The two achieved the second prize, and yet, despite the lack of victory, their project stood out for its style and audacious urban proposals. "The project they presented struck as much for its location as for the size of the monumental complex. The choice of the Campidoglio was justified by the fact that that place embodied the idea of complete Italian unity" (Brice 2005,111). When a second call was announced in 1883 with Giuseppe Sacconi as the winner, precise typological and urban requests would finally be indicated, inspired precisely by the previous project by Piacentini and Ferrari. Finally, in 1885 it will be the turn of the headquarters of the Bank of Italy, and this time the proposal by Gaetano Koch will be preferred to Piacentini. In 1909 the "Società Pio e Marcello Piacentini" was born, and the fourth chapter will thus to deepen its events. It has been underlined how "Marcello's brilliant statements push Pio Piacentini to give greater visibility to his son's role within the studio" (Nicoloso 2018, p. 26). This statement reveals all the complexity of their professional relationship. In fact, in the year in which this partnership was officially born, the twenty-eight-year-old Marcello had already participated in competitions in various parts of Italy and had some achievements to his credit. It would therefore be simplistic to say that this collaboration exclusively favored the rise of the son since it was also the father who benefited from the growing prestige that Marcello was gaining. Subsequently, we intend to investigate the crucial story of the competition for the National Library of Florence, which involves Pio and Marcello Piacentini together and which will represent a decisive turning point for the subsequent assignments of both. Once again, a defeat - Cesare Bazzani's was in fact preferred to their proposal - turned into an opportunity: at the end of a complex network of relationships and friendships with part of the jury, it was in fact entrusted - directly by Minister Aprile - to Pio Piacentini "as a sort of reward" (Nicoloso 2018, p. 32) the task of building the new headquarters of the Ministry of Justice in via Arenula. The following year, in 1912, it will then be Marcello's turn commissioned by the same minister to design the Palace of Justice in Messina. A story that we intend to reconstruct through the study of the documents found in the belief that it is exemplary for understanding the dynamics and relationships for the assignment of offices in Italy in those years, which the Piacentinis proved to be able to exploit wisely. Finally, in 1911, Marcello, acclaimed for the buildings of the International Exhibition in Rome, will earn a prominent position in the Roman and Italian panorama. His son has now joined his father, and from this moment on, his fame will gradually overshadow that of the elderly parent. It is not just a physiological generational passage but an era that closes in favor of another. Architecture is about to change radically and suddenly the space of a generation seems to expand beyond measure. Modernity relegates Pio Piacentini and his entire era to an almost forgotten past, and so historiography also seems to consciously ignore all of that period. In this last chapter, therefore, we intend to reconstruct the oblivion of this figure, also important for the first fifty years of Rome as the capital, singularly coincided with the affirmation of that of his son. Two personalities, those of Pio and Marcello Piacentini, different but inseparable, which could be considered to all intents and purposes as a genealogy of Roman architects.

MODERN MASS HOUSING AS LEGACY: INVESTIGATING CONTEMPORARY HERITAGE-MAKING PROCESSES OF JAPANESE DANCHI



Josephine Buzzone

Cycle
36° - PoliTo Grant

Year
2020 - 2023

Supervisors
Filippo De Pieri

Research Group
History of Architecture

The doctoral research discusses some regeneration and demolition processes of Japanese danchi, public housing complexes built between the 1950s and 1970s by the Japan Housing Corporation (JHC) for the emerging middle class. In the last two decades, the Urban Renaissance Agency (successor of the JHC) undertook significant interventions to rehabilitate this modern heritage, involving in these processes, private actors and, in some cases, even residents and local communities.
The research identifies factors and phenomena determining these interventions. On the one hand, it debates how they contribute to acknowledging danchi cultural, historical and architectural values. On the other hand, it questions the effects of these practices on this legacy. It also traces danchi's architectural, functional, social and economic transitions and how the perception has changed towards them in the academic, professional and public spheres from their construction to the present day.

The following essay focuses on the chapter setting the dissertation's central core, framing its structure and an overview of some of the case studies selected for the doctoral research.
In December 2018, the Urban Renaissance Agency officially presented the plan "Vision for the UR Rental Housing Stock Utilisation / Renewal" to rehabilitate and reduce the stock of danchi across Japan. This plan, already begun over a decade earlier, aims to implement a generational rebalancing, develop sustainable communities, and improve the housing stock value of these residential complexes. The initial selection of the case studies was defined by the three aims of the UR vision in order to have as many combinations of these variables as possible. Then the chosen case studies were clustered, considering the similarities of the heritage-making, regeneration and or demolition processes and the scale of intervention. However, the first phase of the field research in Japan led to further assessing and defining primary and secondary case studies. In this research, thus, while the primary case studies are extensively investigated, the secondary cases are examined as an element of comparison to discuss similar renovation and demolition practices and their results.
Akabanedai danchi (Tokyo, 1958) is one of the primary case studies since it is the first and only danchi registered as "Tangible Cultural Property" by the Agency of Cultural Affairs in 2019. Almost at the end of a massive demolition due to the construction of the Nouvelle Akabanedai housing complex, the intervention of the Architectural Institute of Japan to preserve this modern legacy brought the conservation of four buildings: three Y-shaped, the so-called star house, and one standard building. Although these buildings are registered as tangible cultural properties, posing them under particular protection rules, in 2020, a competition was organized to gather some proposals for their rehabilitation. In this regard, this study examines competitions dedicated to danchi renovation to look more in-depth at the intentions of these plans. The analysis of these contests is instrumental in understanding UR programs, and, above all, the connotation of the renovation works and how they impact this legacy.
Hibarigaoka danchi is another primary case study analyzed in this section. As Akabanedai danchi, this residential complex was almost entirely turned down in the first decade of the 2000s for the construction of the new housing settlement, Hibarigaoka Park Hills. Only six structures were spared from demolition, three of which just for a limited period to test adaptive reuse concepts and renovation technologies in cooperation with private construction corporations. This "Regeneration demonstration test" also involved Mukōgaoka danchi, a secondary case study that thus supports the comparative analysis of the Hibarigaoka danchi case study. Apart from the demolition, the case studies of Akabanedai danchi and Hibarigaoka danchi are connected by the UR's aim to recognize their important tie with the past. In Hibarigaoka danchi, this was translated into the decision to preserve the balcony where the then-imperial princes appeared in the 1960s during a visit, an event regarded as emblematic of Japan's economic growth and a new modern era.
The research explores the process of developing sustainable communities within danchi, scrutinizing more in-depth two renovation projects: Danchi no Mirai (Kanazawa prefecture, 1970) and Taimadaria Danchi (Tokyo, 1958). Danchi no Mirai (団地の未来 - Future of Danchi) is a project carried out, among others, by art director Sato Kashiwa and architect Kuma Kengo in Yokodai danchi (Yokohama, 1970). It was conceived as a Twenty-first-century model for addressing distinctive social issues related to danchi in Japan, such as the ageing population and declining birth rate. Danchi no Mirai's architectural and urban project seeks to attract young people and families for a generational rebalancing of the housing complex. Here, urban gathering points alternate green and paved spots. A roofed walkway connects the renovated public square to a danchi building, and a new lowered plaza is connected to a new low building, hosting various services. On the other hand, in Tamadaira danchi, the obsolete collective areas have been converted and returned as natural assets. Albeit with more ordinary forms, they have been recognized as a productive resource and a common good for residents and the entire local community. The analysis of these two rehabilitation projects is supported by other case studies in which formal and/or informal involvement of danchi residents and communities spotlights a significant social and economic commitment.
The third part of the chapter examines the case study of Kangetsukyo danchi (Kyoto prefecture, 1962) as a project devised to renovate housing units. It observes how innovative regeneration strategies transform danchi's original layout and how residents use and experience these domestic spaces. Kangetsukyo danchi is part of a broader plan developed by UR in collaboration with architect Baba Masataka (Open A studio) and architect Hoshida Itsuro. The project pursues the creation of housing prototypes according to two concepts, "kitchen" and "doma". For a comparative perspective, this session assesses other interventions on danchi apartments conducted either as part of other UR rehabilitation projects or sold by the agency and then renewed by private actors.
Finally, the last part focuses on the case study of the Danchi Museum. For the cultural, historical, and architectural value that a museum conceptually recognizes, the research considers the museum as a complementary case study in addition to the danchi complexes. The structure, designed by Kinoshita Yoko and Watanabe Makoto Shin (ADH architects – to be open in September – is located in the area of the four Akabanedai danchi buildings registered as Tangible Cultural Properties. It will incorporate some elements of the former Apartment History Hall, in Hachioji (集合住宅歴史館) and, through new active dynamic exhibitions, will showcase the origins of Japanese cities and contemporary lifestyles. According to the concept of "Museum & Lab", the museum will offer a platform for developing renovation technologies and the future lifestyle of danchi in collaboration with other companies and educational institutions. The research observes this and other museums' exhibitions dedicated to danchi to expose a series of heritage-making strategies, which rhetorical narratives they create on danchi and which they omit.
The results of this chapter will be instrumental for the final part of the thesis, which aims to link these findings to broader events in Japanese history.



Tamadaira danchi
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Kinoshita, Y. and Ueda, M. (2014). *Ie danchi machi: Kōdan jūtaku sekkei keikaku-shi* [いえ団地まち：公団住宅設計計画史 / *Home, housing complex, town: History of public housing design planning*]. Tokyo: Ratoruzu [ラトルズ].
Urban Renaissance Agency (2018). *UR chintai jūtaku sutokku katsuyō saisei bijon ni tsuite* [ＵＲ賃貸住宅ストック活用・再生ビジョンについて / *About UR rental housing stock utilisation and revitalisation vision*]. https://www.ur-net.go.jp/chintai_portal/stock/index.html

THE EVENTISATION OF PUBLIC SPACE IN CENTRAL BEIJING: A PUBLIC PERSEPECTIVE



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In the post-industrial society, urban development in major cities has been transformed from “production driven” to “consumption driven”. With the rise of the ‘symbolic economy’ and the ‘experience economy’, culture has become an increasingly important means of consuming the city, which many scholars term it as “cultural turn”(Richards & Palmer, 2010). A part of this cultural turn is the rapid development of city events and festivals. The growing prominence of city festivals and events has made a number of cities to promote themselves as ‘eventful cities’ or ‘cities of festivals’, including Melbourne, Edinburgh, Hongkong, Montreal and many others and etc. (Richards & Palmer, 2010). Cultural events and festivals have become central to processes of urban development and revitalization, as cultural production becomes a major element of the urban economy, and cultural consumption dominate both the image of places and urban life in general (Richards & Palmer, 2010).

The rise of scholarly attention on the issues associated with staging events in public spaces also corresponds with a shift in urban design thinking on public spaces. Many scholars have noticed the gradual development of industrial society’s essential city life to the elective city life of the leisure and consumer society. Urban designers now focus on programming public life as much as the design of physical space. (Smith et al., 2021). The pioneering work of Jacobs, Gehl and Whyte laid the foundation of research on public life. The rise of the urban design concepts including programmable space, loose space and temporary city means reconsidering the role of the public space as the platform on which social life occurs. Under this context, urban events staged in public spaces have attracted a lot more scholarly attention.

In the aspect of festivals and events, Beijing, which has been the capital of China for over 800 years, has a long tradition of staging festivals and events (like temple fairs and the Lantern Festival Parades) in significant public spaces such as temples. Currently, the number, volume, frequency and diversity of events staged in Beijing are continuously increasing since Beijing is now endeavouring to construct itself as the cultural center of China. However, events’ social and cultural effects on public spaces have been generally neglected. Therefore, the dissertation selects Central Beijing as the research scope to further explore the social and cultural implications of urban festivalisation and public space eventisation.

To truly understand and optimize the outcomes of urban festivalisation, we need to gain sufficient empirical evidence on how individual events affect specific public spaces and therefore, scholars like Smith Andrew introduce a narrower term “eventisation” to further analyse the process through which events affect the public spaces they occupy. However, there is still lack of a complete and objective evaluation of how planned city events could impact the vitality of public life and an in-depth analysis on the process and mechanism of eventisation is still missing. The dissertation explores those unsolved problems. General aim of the research is to acknowledge the global tendency of urban festivalisation, and to understand the outcomes, processes and mechanisms of public space eventisation in order to explore and propose responsive urban design strategies.



The Event Status of Longfu Northern Cultural Park
© Cao Gan

In response to the global trend of urban festivalisation and Beijing’s new development requirements, the dissertation introduces the theory of publicness of public spaces into the evaluation and analysis on the social and cultural implications of events on urban public spaces in Beijing. The social philosophical concept ‘publicness’ is introduced for a better understanding of public space and how the public is ordered in urban space through a series of thresholds, complex flows and boundaries, defining the ‘publicness’ of urban spaces (Lopes et al., 2019). Over the last decades, the overlap of approaches to publicness of public spaces have formed a mature methodology of evaluation and analysis but the researches on publicness mainly target public spaces in the state of daily use, lacking an objective and holistic framework on the empirical study on city festivals and events staged in public spaces.

Within these contexts above, the dissertation proposes a core research question:

How can urban design respond to the trend of staging events in public spaces, so that public life in urban public spaces and their surroundings will actually be animated?

In detail, the research will try to explore the following sub-questions: 1) how is the spatio-temporal distribution of festivals and events on city-wide level in Central Beijing; 2) how events staged in public spaces affect public life in public spaces; 3) what are the processes and mechanisms of public space eventisation and how the contribute to the publicness variation of public spaces during staging events; 4) what urban design strategies responding to urban festivalisation and public space eventisation can be taken to animate public life in public spaces.

The major contributions of the dissertation will contain both theoretical and practical aspects. On a theoretical level, the dissertation expands the publicness theory with studies on public space eventisation. It will first identify four dimensions of publicness performance of public space eventisation through literature review and then establish an objective evaluation model on the publicness variation through staging events in public spaces. Then it will construct an analytical framework based on the contractualised publicness framework. Through combing the literature on urban festivalisation, public space eventisation and publicness, the thesis will provide a holistic methodology framework to fully explore the outcomes, process and mechanism of public space eventisation based on the theory of publicness. In the practical aspect, the research will first try to figure out the spatio-temporal distribution of urban festivalisation and identify the representative cases of public space eventisation. On the basis of cognition of the tendency of urban festivalisation in Beijing, it will further evaluate the publicness variation of public space eventisation in Central Beijing and analyse the process and mechanism of staging events in public spaces, identifying existing problems and proposing feasible urban design responsive strategies towards urban festivalisation and public space eventisation, which will assist both city authorities, event organisers and urban designers in designing events and public spaces to optimize the impact of eventization and actually activate public life in public spaces.

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THE ARCHITECTURE OF THE BUILDING RETROFIT. READING RETROFITTED ENVELOPES BETWEEN FUNCTION AND SYMBOLS



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In recent years, the topic of renovation of existing buildings has found wide space in the architectural debate. Sustainability has become one of the main drivers of intervention on the built heritage. The climate crisis and the more recent energy crisis have made it clear to most how dependent Europe is on energy. The building sector is responsible for about one-third of the energy consumed globally and has the highest potential for improvement.
This research fits into this context and aims to examine existing residential retrofit projects. In particular, the thesis investigates the envelope and surfaces of retrofit projects: the question arises as to how sustainability principles and techniques influence the architectural outcomes of building retrofits. One wonders if and how much retrofit projects are skewed either toward performance, driven by the instance of resource rationalisation, or toward image, driven by symbolic and cultural needs.

The envelope as a catalyst
The research addresses preliminary the issue of the contemporary envelope in its dual vocation as incorporating an expressive bearing and as a technical element. In this paper, only the former theme will be addressed.
There is a moment when the concept of envelope emerges in a particular way. From being considered an indefinite mass, the wall splits into two different functional concepts: that of envelope and that of structure. As noted by Rafael Moneo, this occurs particularly with the spread of frame structures. The separation between load-bearing and enclosing elements forces a reflection on architecture: the wall begins to be considered as a layering of elements, each with a specific function and performance. In recent decades, the topic of envelope has regained great centrality for several reasons.

As far as architecture built from scratch is concerned, in several contemporary projects, the surfaces seem to have gained more importance than the structure. Also, the focus is shifting to building boundaries because of new environmental requirements. Since interiors often need to be able to accommodate frequent changes of use, the skin is disconnected from the building's functions, and the architect's role is often its conception. According to Antoine Picon, the contemporary ornament is no longer conceived as a supplement but appears inseparable from the envelope. For this reason, the theme of envelope will inevitably intersect and overlap with the one of ornament, which, since the late 1990s, has been reappearing in architecture.

In parallel, the issue of retrofitting existing buildings has become central. If we neglect the systems, energy retrofit focuses essentially on the building envelope, changing its architectural expression. That's because the other factors affecting energy performance (orientation, shape, distribution) cannot be changed.

The research grounds the assumption that designed objects, including building envelopes, always arise from a concrete historical, economic, social and material context. Walter Benjamin speaks of "optical unconsciousness", which is the one with which we automatically perceive things in everyday life. According to Jörg Gleiter, this occurs when we do not grasp their socio-historical details. The research aims to read and carry out some conceptual reflections on some case studies of retrofitted residential buildings, tracing a series of details catalysed therein. Several levels of reading can be outlined: a material level, related to technique, technology, economy and materials; a functional level, related to the performances it must fulfil; a formal level, related to expressive, symbolic, cultural, social and political issues; and an authorial level, related to the poetics of the authors (which here will not be investigated). Now, some keys to interpreting contemporary envelopes are proposed.

Neo-functionalism
Looking at the debate on the architectural envelope and ornament, we find Farshid Moussavi and Michael Kubo's attempt to trace back to functional issues in the form of contemporary envelope and ornament. They hope that ornament will take on an architectural meaning related to the materiality of elements, design and assemblage logics rather than symbolic-discursive issues. Indeed, they believe that in such a fragmented multicultural world, finding symbols and icons that can find interpretive convergence is a hard goal to achieve, potentially conflicting. Thus, in their reading of case studies, symbolic and formal motivations are set aside, and contemporary ornament is interpreted as an element whose form and patterns are conceived for functional (e.g. thermal or lighting) reasons.

Affects and materiality
In addition to the functional issue, the idea that the conception of the contemporary envelope (textures, patterns, colours and topological structures) is closely linked to the will to produce architectural affects emerges. According to Deleuze, affects do not belong to the sphere of feelings but rather to something more sensory and physical. The affect denotes a change in intensity involving the body, space, and time in which one is immersed. The attention usually given to rhetoric and semiotics is thus shifted to a physical dimension of experience. This also destabilises the traditional distinction between subject and object and the notion of detached appreciation. Viewer and architectural work are understood as part of the same continuum. Instead of using the terms matter or material, the notion of materiality is introduced. It concerns the subjective sphere and possesses a relational character. It describes the range of experiences generated during the encounter between the subject and the physical world.

Neo-symbolism
According to Robert Levit and Antoine Picon, the reasons for the form of envelope and ornament cannot be reduced to a question of function or materiality and affect alone. Despite not immediately legible to contemporary plural audiences, the symbolic component of form is a necessary category to describe the contemporary practice, which involves the social and historical circuits of understanding. In contemporary architecture, the symbolic function seemed to be abandoned after the excesses it led to during post-modernism when the envelope (often in contradiction to form, structure, and program) took on a semiotic function. However, a relapse into symbolism seems still to occur in some cases. Critics speculate that the roots of neo-symbolism may reside at the intersection of perception and culture. Greening practices also seem to play a symbolic role that responds to the concern for sustainability and reconciliation between architecture and nature.

Mass non-standard conception and fabrication
Contemporary critics, such as Mario Carpo, describe the changes affecting architecture through the digital revolution. It is calling into question some fundamental concepts: the idea of standard, which arose with the industrial revolution and characterised 20th-century architecture, and the idea of the author, which has characterised architecture since the Renaissance. Nowadays, it is possible to produce non-standard pieces in series at no extra cost. Variation replacing uniformity has also been read through social lenses: it refers to the condition of individuals who recognise themselves in a social group through a varied assemblage while preserving their individual specificities.

The digital is also credited with the important role of making possible the manipulation, generation, and management of shapes, textures, patterns, and topologies at different scales, with an ease that is very evident compared to the past. Today the built form is a still image chosen from endless solutions that can be generated and prefigured with the help of software. Picon argues that the development of digital culture has accompanied a weakening of the tectonic culture and greater importance attached to the surface.

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THE COMMON MAN OF THE STREET. A CONCEPTUAL HISTORY. DECODING THE INTERPRETATIONS, TRANSLATIONS, AND MISUNDERSTANDINGS OF A CONCEPT'S USE. 1947-1975



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The research delineates a genealogy of the *Common Man of the Street concept*, primarily within the postwar CIAM context, from the VI Congress in Bridgwater in 1947 to S. Wood's publication The Man in the Street in 1975. Using the term as an interpretative lens to observe events already covered by many scholars, the research deconstructs the social and cultural milieux of its discursive uses, revealing its shifting meanings, divergent definitions, and possible misunderstanding. The study identifies three specific epicenters of the concept's emergence: J. M. Richards' speech at Bridgwater CIAM, A. & P. Smithsons' critical use of the idea in their Urban Reidentification Grid, and G. Candilis and A. van Eyck's confrontation and transfer of ordinary forms of human habitat from non-European contexts. These nodes are framed as part of a broader constellation of experiences, widely transcending the CIAM borders, and examined through the two intersecting discourses on the Everyday and the Street.

In September 1947, the Sixth International Congress of Modern Architecture was held in Bridgwater, England, to discuss the fate and new aims of CIAM and officially sanction the re-establishment of contact among the participants to the international architectural debate after World War II. On that occasion, J. M. Richards, the first delegate of the British Modern Architectural Research Group (MARS Group, 1933-1957), delivered a heartfelt speech to urge a rethinking of Modern Architecture in light of its failed relationship with the *Common Man of the Street*.

After and beyond Bridgwater, the concept of the *Common Man of the Street* is used, more or less explicitly, within a multiplicity of narratives, encompassing different definitions, translations, and conflicting interpretations. Once acknowledged the paradox that the term implies, as, evidently, there is no universal *common man*, the research intends to problematize its multiple uses, deconstructing the possible histories of a concept analyzed as a discursive event (Guilhaumou, 2000) whose significance always intrinsically depends on practical, situated circumstances, speaking communities, and interlocutors' intentionality. Precisely because of this accumulation of divergent meanings, the term is used as an interpretative lens to observe a specific moment (the almost thirty years following 1945) of a multivoiced intellectual landscape, contributing with a particular angle to the vast scholarship on postwar architectural discourse. The research initially acknowledges the multiplicity of declinations the concept encompasses to map a potentially vast and complex constellation of experiences often overcoming

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CIAM VI in Bridgwater, 1947 - Dossier Alfred Roth (X-10)
© gta Archives / ETH Zurich, CIAM

the European and CIAM borders, such as B. Rudofsky's publication *Street for People* (1969) and D. Scott-Brown and R. Venturi's research on the new ordinary American landscape (1968-1972). Then, without pretending to reconstruct a complete genealogy of the concept but aiming to shape a coherent reflection about processes of knowledge transfer, the research identifies three specific epicenters (Čeferin, Cvetka, 2008) of the discourse within postwar CIAM history. Thus, narrowing its field of observation, the study links the primary scaffolding of the reflection to a more coherent and distinct, however internally heterogeneous, ensemble of events and figures with a solid genealogy and geography in common. Thus, the Bridgwater VI CIAM, in 1947, constitutes the first epicenter. On that occasion, primarily through the figure of Richards, who mediates in-between the MARS Group and the Architectural Review's cultural milieu, the concept enters the disciplinary debate as a challenge to the shifting relationship between the architect and the lay public and his/her civic responsibility in the latter's education to appreciate Modern Architecture (Bullock, 2002; Higgot, 2007; Kelly, 2016). Secondly, the research considers British architects A. and P. Smithson's urban explorations in the London working-class neighborhood of Bethnal Green as crucial experiences to develop their interpretation of the *Common Man of the Street* that will be subsequently integrated as a tool of critique into their Urban Reidentification Grid, presented at the IX CIAM in Aix-en-Provence in 1953 (Goldhagen & Legault, 2000; Bonillo, 2006). The third node analyzes A. van Eyck's and G. Candilis's attempt to transfer and translate into diverse cultural and linguistic contexts alternative idea(s) of ordinary human habitats, back and forth from their research expeditions in Marocco, Chad, and Mali (Lefaivre & Tzonis, 1999; Heuvel & Risselada, 2004). For the four architects, the concept acquires diverse interpretations, in turn as the preferential public to address as committed civic professionals, as a figure revelatory of authentic, instinctive patterns of everyday life, and as a member of communities presenting inspirational examples of primitive forms of human associations. However, the concept is also similarly regarded as capable of encouraging a renewed relational idea of architecture, and the different ethnographies of the ordinary human ways of life constitute both a repository of material and a new logic for conceiving the project, where theoretical reflections and operative design strategies are intrinsically linked (Avermaete, 2006). Finally, the study considers the moment of publication of Shadrach Wood's *Man in the Street: A Polemic on Urbanism* as a possible critical epilogue, given the life and working trajectory of its author, one of the leading members of Team 10 and the significative year of its publication (1975), marking the final unraveling of the Golden Age of the Welfare State (Doglio, 2015) and a radically new direction of the architectural debate. The research regards the concept of the *Common Man of the Street* as a composite one and examines it as intercepting other two fundamental and controversial discourses of the time.

First, there is the field of the everyday, investigated both as an accumulation of particularities and in search of overarching interpretative systems of reality (Lefebvre, 1958; De Certeau, 1980; Highmore, 2002); and object, in the postwar years, of innovative sociological studies and artistic experimentations as well as of a nostalgic retreat to the certainties of ordinary life (Heynickx & Avermaete, 2012). Thus, there is the context of the street, at once the unfulfilled promise of a public space overcoming the functionalist interpretation relegating it to mere circulation and the arena of an urban life animated by political and social claims (Anderson, 1978; Colomina, 1999). Moreover, in the considered historical context, the concept of the *Common Man of the Street* also constitutes a *topos* of the Welfare State, whose realization moves among similar internal tensions, in between the desire to address individual identities in their micro-scale and ordinary aspects and the need to structure the planning of the new egalitarian mass society on a very large scale. The study is built on undoubtedly historical objects; still, it has a prominently critical and theoretical orientation. Intersecting and grounding the reflection on an extensive series of scholarships on the history of CIAM and Team 10 (Mumford, 2000; Heuvel & Risselada, 2004) and on histories of words and concepts (Topalov, 2010; Zuccaro, 2018), the research advances an unprecedented perspective aiming at decoding the divergent interpretations and implications of an idea on the basis of the different cultural and social contexts in which it emerged. The study constantly interweaves original publications of the time, particularly from *The Architectural Review*, archival documents (mainly from the funds of J. Tyrwhitt, A. Roth, and S. Giedion from gta of ETH in Zurich, and the Team10 and J. Bakema funds from Het Nieuwe Instituut in Rotterdam) with available secondary literature, also belonging to scholarships from the fields of philosophy, social sciences, and linguistics.

BETWEEN NORMS AND EXCEPTIONS. AN ECOLOGY OF URBAN PRACTICES



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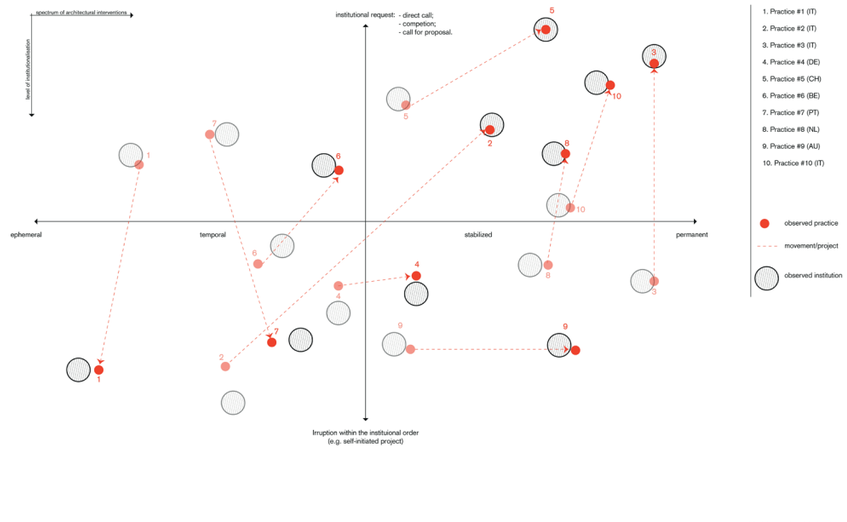
Research Group
Theory of the Architectural Project

The thesis investigates the encounter between emergent architectural practices and institutions and explores the transformative power and the critical potential of the architectural project. It does so by looking at architectural practices which strongly claim to be 'alternative to' the given institutional system and at how they negotiate their positions, focusing on the effects of their actions. Indeed, to realise their projects these collectives have to enter into relation with the institution they claim to be alternatives. Hence, they are considered non-institutionalised actors who manage to intervene in the urban space and actually transform it, getting, at the same time, through what could be defined as a process of institutionalisation. As stated by Italian philosopher Roberto Esposito, this process generates a constant tension between the inside and the outside of institutions and shapes what it encounters: what is outside, before institutionalising itself, modifies the previous institutional set-up by challenging, expanding, and deforming it (Esposito, 2021). Therefore, the research aims to present and discuss possible architectural practices that create this deformation as a project. The practices that are the object of the study happen in spaces across the spatial and architectural realms. Through the inquiry, the research places them in a spectrum of references where the gradient of possibilities shifts between the performative arts, different temporary and ephemeral uses, and more formalised architectural projects. Methodologically wise, it observes ethnographically the different strategies and tactics used by the architects to make their projects happen, as the complex assemblages of documents, emails, drawings, and messages they produce. Doing so, it considers "the politics" of the observed practices by proposing a study of the networks and the concerns involved in producing their projects. Hence, it positions itself among the broader debate around the political effects of artifacts and, more generally, within the exploration of the relationships between society, politics, and technology, looking at infrastructures, artifacts, or any (material) spatial intervention being considered a *medium of politics* (Easterling, 2014).

Architecture exists in the world, and at the moment it is enacted, it has effects on it. The research explores ontological questions regarding what an architectural project is and whether it has transformative power or critical potential. Possible trajectories for architectural and spatial practices would be suggested by considering where the effects of different analysed projects happen and if the projects have altered and modified the dynamics in the space or, rather, the space of the dynamics. Drawing on the work of feminist scholars such as Haraway (1991), Stengers (2013), and Puig de la Bellacasa (2017), the research is based on the crossing of science and technology studies, feminist theories, and environmental humanities connecting feminist materialist tradition of critical thinking with human and non-human ontologies and ecological practices. Thus, the inquiry positions itself within a relational ontology that sees the architectural project as affected by the word and explores spaces of possibility also to affect it. It starts acknowledging this double movement, which is always relational, ***affecting*** and *being affected by*, yet happens with different intensities. The possibilities of one of the directions of this movement have been called transformative power and critical potential because they are exercised by the analysed practices in different ways - shifting within a spectrum of actions that encompasses ephemeral interventions as material and physical transformations. All the analysed practices share a strong hankering to change the given institutional set-up, and the research observes and discusses their actions and their effects. It looks at ordinary actors who can snick into vacancies - on a normative, physical, administrative layer. What happens in the faults created when those architectural collectives, defining themselves as dissenting, enter in relation with administrative institutions? Those moments have been recognised as the picks of tension where exceptions and norms meet in a constant negotiation between the practices' own positions and institutional stances.



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The research explores the complex ecologies of these practices and proposes a reflection on their intervention possibilities. These practices differ in ontology, scale, and politics (Yaneva, 2017). They have been chosen because they have a secure narration of their being "alternative to", and they are considered to have a powerful irruptive potential and transformative will. The research shows how some of them may go beyond the habitual by contesting and modifying the given institutional set-up, while others reproduce prevailing logics and regulations. *Are these actors in or outside the institutions? What does it mean to propose a project with a strong will to transform (urban) space from a specific dissenting position? How are the actors able to realise their projects? What happens in their process of institutionalisation?* By answering these questions, the research positions itself with a pragmatical take and follows ethnographic methods applied to the study of architectural projects. Indeed, neither reality itself proceed the practices nor knowledge, but both are incorporated into daily events and activities (Mol, 2002). The consequences of embracing such a position touch both the methodology of inquiry and the ontology behind it: these mutually create a relationship with each other and ask for the research to be radicalised in practice.

On the one hand, there is the aim to understand possibilities of how not embrace the *status quo* but rather to engage with architectural practices that may transform the institutional system they operate in; on the other, there is the will not to put distance between the object of study and the knowledge behind it, and not to create a level of separation between the analysed practices and the discourses around them. Ten practices have been observed in-depth, and a conceptual diagram places them within a possible spectrum of interventions according to the project they have enacted. On the horizontal axis, these interventions could span from being performative, ephemeral, and temporal to more permanent and stabilised architectural projects. The analysed practices and their projects also move on a vertical axis according to their level of institutionalisation, which both considers the mandate which let the project be initiated: whether it has been a direct call, a competition or an open call, or, on the opposite side, a self-initiated mandate, which left more level of freedom. This movement helps in detecting the level of irruption within the institutional order. All the selected exempla of *"praxis institutes"* differ from one another in their relationship with the institutions and the related manifestation of dissent. Moreover, their realised projects diverge in the scales and the temporalities of interventions; consequently, they constantly negotiate with the institutions from their specific position, which is always relative and never absolute. The transformative potential is thus to find both in the engagement of the subject exercising the practice as in the theoretical work that observes and traces it in a network of concepts that could contaminate both the practices themselves and the conventional world surrounding them. The observed architectural practices suggest transformative power within given methods and tools to explore the critical potential of the architectural project.

DOMESTIC SPACE IN TRANSITION: BATHROOM DESIGN EVOLUTION IN CHINA'S URBAN HOUSING MODELS SINCE 1949



Xiang Ling

Cycle
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Supervisors
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Research Group
China Room

This research explores the evolution of bathroom design in China's urban housing models since 1949, revealing socio-cultural, political, and economic influences on domestic spaces. It uses a multi-method approach to investigate the effects on space of shifting from an egalitarian residential system to a diversified, market-oriented housing model. The study uses a decoding system considering factors like Position, Size, and Functional complexity, offering insights into the transition of bathroom spaces across housing models. The research analyses urban housing models conceptualized by the national government through housing policies, design codes, and housing prototypes, highlighting the transition from communal to individualized comfort, influenced by economic development, cultural norms, and technological advancements. This study provides a critical understanding of China's modern urban domestic space transformation.

The bathroom, while being the most private and frequently overlooked space within domestic environments, is intimately connected to residents' daily lives. This dissertation uncovers the socio-cultural, political, and economic factors that have influenced the design and transition of this small domestic unit. It also posits the bathroom as a microcosm reflecting broader trends in China's urban housing landscape and the dynamic relationship between individuals and society. By examining the transition of bathroom design, this research provides valuable insights into the larger context of urban housing models and their underlying conceptualizations.

While substantial and meaningful research has been conducted on the transition and development of Chinese urban housing and residential settlements over time (e.g., Lv and Row, 2001; Wu, 2004), the specific focus on bathrooms has been relatively overlooked. International studies examining the historical transformation of bathrooms, such as those by Shove (2003), Gürel (2008), and Quitzau & Røpke (2009), have shed light on this subject. Yet, the progression of the bathroom in the Chinese context, specifically its relationship to personal hygiene and societal development, remains less emphasized. The intersection of these aspects is crucial, and this study aims to fill this gap in the existing literature.
The dissertation employs a multi-method approach, which includes a literature review, typological socio-spatial analysis, archival research, oral histories, material culture studies, and architectural drawings derived from national housing design competitions, standard houses design atlases, housing design codes, national pilot housing projects, and real estate advertisements.

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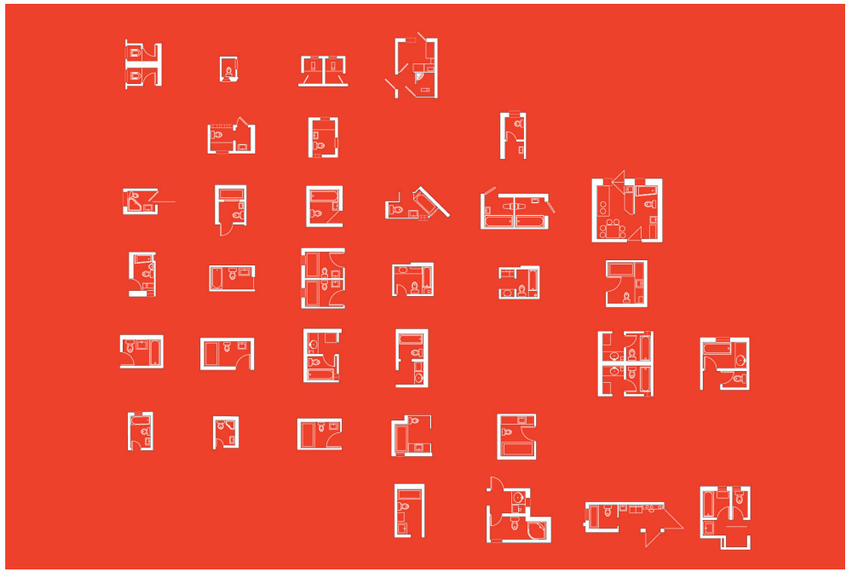

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Conducting a comparative study of bathroom spaces' transition across diverse housing models is significant. Then a decoding system is structured around key factors such as Position, Size, Sharing degree, Functional complexity, Form, Illumination, and Sewage system, which facilitates a detailed qualitative examination of domestic spaces. This system allows a typological classification of these models based on their bathroom spaces' primary characteristics.
The government's enduring influence on urban housing model design represents a distinctive characteristic of China's urban housing development history. This research explores the governmental regulations that shaped national-level urban living space paradigms during the planned economy era, exploring housing policies, reforms, design codes, design competitions, and prototype housing models. By establishing a market economy, private developers innovatively responded to consumer needs, creating a diverse array of commercial housing products to cater to contemporary urban dwellers' increasingly varied lifestyles.
During the planned economy era and the initial stages of socialist marketization, the State organized a series of national urban housing design competitions, applying their outcomes to housing regulations and construction, a distinctive feature of China's urban housing development. The State led National-scale design competitions organized and undertaken by state organs such as the Ministry of Housing and Urban-Rural Development, National Development and Reform Commission, or China Architectural Society. These competitions, in line with national policies and societal contexts of the time, provided solutions for practical housing construction needs or explored new housing models. From the "National Standard Housing Design Competition" in 1955 to "China's First Affordable Housing Design Competition" in 2011, China has held 15 national-level housing design competitions. Contestants came from design institutes, universities, and companies from all provinces and cities nationwide. Winning projects were eventually collected into atlases and published nationwide, with some designs even included in the standard housing design atlas. This national application and promotion of housing design solutions and models profoundly influenced the development of urban housing design and construction in China.
To understand the evolution of urban domestic space models and their nationwide discourse, establishment, and promotion, this research analyses urban housing paradigms' formation and transformation from three aspects: 1) Design level (national urban housing design competitions, standard housing design Atlas), 2) Application and promotion level (nationwide pilot housing model) and 3) the policy level at the background (housing policies, reforms, and design codes).
This study centres on the evolution of bathroom design within the context of award-winning submissions from design competitions and national standard housing designs. It delves into the transformations of physical bathroom spaces within urban housing models over various periods, contextualizing these changes within the broader socio-cultural dynamics and shifts in daily living habits. This research underscores the pivotal role that even seemingly mundane architectural elements, such as the bathroom, play in reflecting and shaping societal transitions. It offers a unique lens to examine the intricate interplay between state policies, market forces, and architectural design in the urban housing landscape of China. Additionally, the study employs a decoding system for a typological exploration of housing models underpinned by the distinct characteristics of their bathrooms.
The research uncovers the journey of urban residents in China from a period of low standards and collectivist housing to an era of individualized comfort, enabled mainly by economic development and housing market prosperity, and highlights the importance of cultural norms in shaping bathroom design in China, including the preference for privacy, the importance of hygiene, and the influence of transnational attitudes and behaviours. Moreover, technological advancements have also significantly impacted bathroom design in China, including modern materials, advanced plumbing systems, and intelligent technologies.
This research offers unprecedented insights into China's evolving housing landscape, underlining the complex interplay between state policies, market forces, cultural norms, and architectural design. Its findings contribute to a deeper understanding of the transformation of urban domestic spaces, a critical aspect of China's modern development.

SKI RESORT PLANNING AND DESIGN IN CHINA. A METHODOLOGICAL EVALUATION BASED ON THE ARCHITECTURAL PROGRAMMING APPROACH



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Year
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With nearly 700 ski resorts in 2022, the ski industry in China has grown rapidly since its appearance in the 1950s, further propelled by the recent Winter Olympics in Beijing. This surge underscores the economic and ecological significance of ski resorts as capital-intensive projects with long-lasting effects on the territory that demands informed and sustainable planning and design. This study dissects existing practices of ski resort planning and design and investigates their landscape in China. Using structured architectural programming as a tool for critical examination, a context-specific evaluation system was applied within a holistic and multidisciplinary framework, integrating empirical data from the author's extensive fieldwork. By expanding the epistemological framework to encompass multifaceted aspects grounded in industrial realities, this study aims to contribute to systematically refining existing methodologies for ski resort planning and design in the context of China.

Background of the research topic

The global landscape of the ski industry has been transforming with China's emergence as a significant player. The first ski resorts were established in the European Alps, where winter tourism started to thrive in the 19th century. Traditionally, Europe and North America have dominated this sector due to their rich skiing history and established infrastructure. However, in the wake of the 2022 Beijing Winter Olympic Games, China has witnessed exponential growth in the market. From solely 35 ski resorts in 1996, China boasted 692 ski resorts by 2022, partly due to the government's ambitious initiative to involve 300 million people in winter sports. Despite the disruption of the pandemic, the number of ski participants registered a 10.68% increase in 2022 from the previous snow season (Wu, 2022), hinting at a growing public interest in the sport. The economic impact is substantial, with the snow industry's market value estimated at approximately 53 billion yuan in 2020 since the ski macro industry encompasses not only ski resorts but also related sectors such as ski equipment manufacturing, rental and services, ski education, and related tourism. China is poised to become a significant player in the global ski industry. With less than 1% of the population participating in skiing, the winter tourism industry in China is still in its infancy compared to established markets. Despite their late entry, ski resorts in China have developed rapidly. Beyond recreational appeal, the introduction of ski resorts in China has significantly transformed regional development and economies. They have driven economic prosperity, improved livelihoods, and spurred infrastructural advancements while posing social and ecological challenges. Therefore, it is important to ask how these complexities and challenges can be effectively navigated in their planning and design to optimize their positive impact on regional development and economies while mitigating their social and ecological implications.

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Field trips snow season 2022/2023 and a peek at Chinese Ski resorts
© Xian Lu

Research Frameworks

Architectural programming, introduced in the first half of the 20th century, offers a systematic approach to navigate these complexities. This process of analyzing functional requirements and synthesizing design solutions evolved further after the '70s, moving from an analysis-synthesis paradigm to a conjecture-refutation model (Popper, 1957). The former dissects complex phenomena into manageable components and reintegrates them into a comprehensive entity and was foundational to the early development of architectural programming (Pena & Parshall, 1977 ; Sanoff, 1977). However, the Popperian conjecture-refutation model diverged from the traditional positivist discourse. It emphasized the importance of hypothesis testing and falsifiability, ensuring continuous refinement of theories through empirical testing. This shift has significantly influenced architectural programming, integrating the systematic exploration of the analysis-synthesis approach with the rigorous testing of the conjecture-refutation model (Hershberger, 1999). The concepts and classifications of architectural programming and their application to ski resort architecture will be explored. A version of architectural programming tailored specifically for China was proposed by Zhuang, taking into account the practical nuances of Chinese architectural design and development (Zhuang, 1997). This research applies this evolved framework of architectural programming to the planning and design of ski resorts in China. Moreover, the research content is centred on applying the conjecture-refutation model within the analysis-synthesis framework as a tool for critical examination and context-specific evaluation to the context of ski resort planning and design in China. It will draw upon existing research on architectural programming theory and practice and the current state of research on ski resort architectural programming, both domestically and abroad. This research aims to contribute to the refinement of architectural programming methodologies for ski resort planning and design in the context of China.

Structure of the thesis

The final thesis is divided into four key sections, commencing with an exploration of the fundamental theories and background of ski resort planning, design, and architectural programming. It further investigates the current situation of ski resorts in China, introducing an evaluation system for these projects. Subsequently, it develops a hypothesis architectural programming model based on the results of the evaluation systems designed specifically for ski resorts. The final section validates, integrates, and refines this hypothesis through a practical project to establish an instructive architectural programming and conception system for future ski resort projects.

Methodologies

This study utilizes multiple methodological approaches to examine ski resort planning and design in China. A literature review was conducted, sourcing from databases like Google Scholar, Web of Science, and CNKI, to understand architectural programming and relevant themes. A systematic scientific method was employed to deduce project-specific features of ski resort architecture and integrate design theories. Analytical and synthetic methods were used for strategy development within ski resort planning and design. Sociological and experimental methods facilitated direct engagement with ski resorts through fieldwork, interviews, and observations. Finally, Participatory Design Workshops and Observational Studies were incorporated to elicit stakeholder insights and identify potential challenges and solutions in a practical design. Overall, this research proposes a planning and design methodology based on architectural programming, aiming to expand the epistemological framework to encompass multifaceted aspects of ski resort planning and design in China. It seeks to provide a more comprehensive, rigorous, and context-specific programming system, contributing to the refinement of existing methodologies and the advancement of architectural programming practices.

LANGUAGE AS AN ARCHITECTURAL DESIGN TOOL. ANALYSIS AND DESCRIPTION OF A DESIGNING DISCURSIVE PRACTICE



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Research Group
Theory of the Architectural Project

What role do language and texts play in the architectural design process? It is the purpose of this research to provide an answer to this question, developing a line of argumentation structured on two levels. On the first level, the thesis is aimed at describing a discursive practice characterizing the architects' design action: to do so, it carries out a linguistic and stylistic analysis of a selected corpus consisting of project reports written for some important national architectural competitions between the Second World War and the Seventies. On the other level, and concurrently, it suggests an interdisciplinary approach to the relationship between linguistics and architecture, in an attempt to demonstrate how the proposed method of analysis can contribute to the theoretical reflections related to the architectural design process, thus trying to overcome sector-based perspectives.

What do linguistics and architecture have to do with each other? There is no actual state of art on the topic in the current publishing world, still many essays deal with this issue both in the linguistic and the architectural fields with different starting points. For this reason, the first step in order to build an interdisciplinary relationship between the two is to define a space where a number of common subject matters can be observed.

The peculiarity of language used in the architectural domain has received great attention from that specific branch of linguistics which studies and describes the birth and the progression of Italian as a language in relation to its evolution and stabilization processes: namely the history of Italian language. Technical terminology, in fact, surely plays an important role in the development of a national language, as much as the transition from Latin to dialects. As for the history of Italian architectural language, the main lexicographic studies trace it back to the XVth century, when a long tradition in the vulgarization of Vitruvio's *De Architectura* started. Indeed, before that moment there was not a unanimous national lexicon in architecture, whereas many local jargons were used instead by artisans in their own studios. The translation of Vitruvio's work then established a bridge between the artisans' world and the erudite one, paving the way and finally leading to a common and universally comprehensible vocabulary. The vocabulary based on Vitruvio's terminology lasted from the end of the XVIth century to the first half of the XIXth, consolidating to such an extent that for some time it became a model for other western countries.

From the second half of the XIXth century until the present days, though, the Italian architectural language has been progressively influenced by social, economic, and political changes, as well as by an increasing range of communicative situations and targets. The varieties of contemporary Italian, its sectorial and specialized languages, are yet debated by another branch of linguistics, called sociolinguistics. The field of study dedicated to specialized languages, in fact, largely focuses on the different communicative situations and targets. It considers not only the variations on the lexical level, but also involves the syntactic and textual one. It thus deals with linguistic register and texts production, relating to the categories of textual typologies and genres. Some papers on contemporary Italian architectural language have classified it not just as sectorial, but even as a specialistic one when referring to the highest communicative level – namely the expert-to-expert relation. At the same time, contemporary architectural language is deeply rooted in professional practice, where the "to do" dimension introduces significant register fluctuations, different textual genres, and a plurality of communicative typologies. Specialistic communication is indeed an important medium in the making of the cultural process, since at the basis of it lie the mental schemes and the encyclopaedia that give meaning to what we perceive.

It was however as early as the '60s and the '70s of the last century that linguistics and architecture found a meeting point. The increasing success of semiotics and structuralism, in fact, led to a theorization of architecture as language. A language characterized by a recognizable and legible structure, as well as able to communicate its functions, defined both by denotative and connotative meanings. A language with its own code, whose organization could be shaped as the one provided by Ferdinand de Saussure's structural linguistics and his pivotal dichotomies. In this case, then, the relationship between linguistics and architecture tackled their epistemology, aiming at building a theory of architecture modelled on the semiotic or linguistic one. Nevertheless, the connection between the two is more clearly intertwined in the production of oral and written texts related to the whole architectural domain. Language devices, as much as textual typologies and genres, in fact, engage with the historical and theoretical disciplinary code unanimously shared in a specific time period, or with the one that expresses the architects' reflective thinking; as a matter of fact, they also deal with the ability to communicate, convey, and spread architectural culture, just as much as with the professional practice and the drafting of documents. Indeed, architects write to reflect upon the principles that shape their knowledge; to explain their thoughts and their beliefs about architecture, cities, and society; to describe their own or others' graphic representations; to promote their intentions and persuade other people about the legitimacy of their proposals; to communicate with their work group and regulate others' behaviour.

Both linguists and historians of language, on the one hand, architects and historians of architecture, on the other, are therefore interested in describing the multiple uses of architectural language and its functions. Still, the latter also show the need to systematize the extensive branching of contents involving the architectural domain. Linguistic tools are thus employed in an attempt to better define how architectural knowledge structures itself through theoretical, critical, historical, informative and practical dimensions. Considerable collections of essays then testify this effort. Some scholars query what features theoretical texts have or should have respectively looking at the presence of stable utterances and at the recurrence of discursive practices; identifying the main textual genres and topics employed to communicate it; or analysing lexical and textual choices used in a sampling of books. Some investigate how words shape and convey knowledge by drafting some kinds of glossaries and dictionaries which reflect past or present positions on architectural culture. Some others wonder which register and wording should be used to connect a specialistic knowledge to the common reader, and to let architectural critics be also the medium of historical and social instances. At last, some scholars look into the role of language and texts in the architectural design process accordingly to an ethnographic point of view, as much as a pragmatic and narratological one, or examining texts produced in practice.

At the end of this synthetic overview, we may then conclude that linguistics and architecture share a number of subject matters which surely pave the way to the development of a more integrated interdisciplinary approach.

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ACADEMIA AND PRACTICE. A GEOGRAPHY OF CASES. FROM THE CHINESE CONTEXT TO GLOBAL PRACTICES



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Year
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Research Group
China Room

The Ph.D. research is part of a wider research project launched in 2019, which intends to deepen the opportunities and potentialities of a community of practice mediating between Academia and Profession. Such reflections take their cue in particular from cooperation experiences collected in the last 10 years by the China Room Research Group within the Chinese context, in which the apparent split between professional practice and academic research is approached with fewer limitations. Therefore, the main attempt of the project is to identify and test the threshold between speculative investigation and concrete relapse of design practice. It will observe the innovation potentials linked to a direct mixing of different competencies, examining thus the specific institutional framework able to encourage such permeation and other existing cases that could open incremental models of innovation. A significant part of the trials will be developed through the Polito STUDIO initiative, launched in January 2021 in collaboration with Ordine degli Architetti di Torino, aiming to create a network between the institutions in an attempt to support the internationalization of the practice.

The research investigates the potential relationship between academic research and professional practice within the field of architecture. The interest of the research arises from the observation of the mutual correlation between academia and practice in the architectural field, as much as from the absence of a systematic overview on models of collaboration between the two systems. The work can be considered as a contribution to longer-standing literature on the relationship between academia and practice and how, in some specific contexts, the separation between them – often referred to as a "gap" – is considered an issue to be addressed (Tvedebrink, Jelić 2021; Rifaat 2019). Furthermore, the possible relapse of academic research into practice led to the phrasing of questions on the dichotomy of academia-practice. *What is the current state of models of collaboration between university and professional practice in architecture*? *How do projects develop in collaborative contexts between university and professional practice*? *Could these collaboration models be replicable*? The aim of the research is therefore to identify and comprehend the functioning of existing models of collaboration between the two spheres and to understand the potentialities of projects carried out in a collaborative environment with specific attention to the Chinese context.

To test this hypothesis, the research is structured using case studies: they are a medium to explore and investigate models, to examine the process, and through the lens of the collaborative effort, to analyze the research process and its outcomes. In order to determine whether the initial hypothesis is a global trend, or it is limited to specific contexts, an incremental atlas of "best practices" has been created and compiled, mapping cases around the world in which university research centers, hubs, and master programs display a mutual correlation between the two spheres. This part is inserted in the wider framework of Polito Studio Observatory of Best Practices, with the aim to identify international instances of interactions between universities and practice in the field of architecture. As part of the Polito Studio initiative, a range of practices that operate within different geographical and normative contexts, bridging the gap between academia and professional practice, have been examined. Approximately ten of these practices have been interviewed so far to gain a deeper understanding of their potential, limitations, and impact of projects on society. The research could therefore be envisioned as an opportunity to shed light and enhance the existing network of university-practice design partnerships facilitating the formation of new programs. Having acknowledged the extremely diverse cultural and legislative background of each case study, this section of the research is not to observe the specificity of each case, yet to give an overview of possible interactions between the two spheres in different contexts. The creation of a map of geographies of cases will therefore investigate which kind of interaction occurs, exploring the places and projects that orbit around the selected case studies. The sample consists of a collection of projects carried out by the aforementioned institutions and tries to understand how projects develop in the contexts of collaboration between universities and professional practice.

The case of PennPraxis is one of the first analyzed since it is a very significant example of collaboration between academia and practice in the American context. PennPraxis can be considered the applied research arm of the School of Design of the University of Pennsylvania. The organization was born in the early 2000s under the astute guidance of Professor Gary Hack who identified, a missing "piece" of interaction between university and professional practice in the architectural and urban fields in the American university panorama, mending the distance between the two spheres. By bridging this existing gap, PennPraxis was established as an institute that actively engages students and faculty members in real-world practices and projects, effectively mending the gap between the academic and professional spheres. The primary aim of the institution is therefore to provide opportunities for scholarly discourse and experiential learning beyond the confines of traditional university classrooms, facilitating a dialogue between the academic community and the professional realm. In 2018, the Design Fellow program was initiated as a part of PennPraxis, enabling promising students to contribute to real-world projects with more than 250 students involved over the last five years. The program is defined by three fundamental principles: strategic work, design justice, and community engagement. It focuses on design projects that go beyond mere commercial interests, instead prioritizing the promotion of justice and social impact, and incorporating in the process interdisciplinary design, heritage preservation, neighborhood revitalization, and urban planning. A significant noteworthy and ongoing collaboration is the one between the Design Fellow program and Philly Thrive, an influential voice in the field of environmental, and economic justice since 2015 in several major American cities, underscores this commitment to community engagement and social justice, as much as the work with residents and communities.

Among the cases identified in the definition of the Atlas of Practices and taking into consideration the existing literature, the case of the Chinese architecture Universities appears to be a particularly interesting case to be further explored due to the strong correlation that exists between theory and practice. As mentioned, the Chinese context is a particularly representative example of the connection between theory and practice which takes place in the university design institutes, and practice institutes that often arise right within Chinese universities (Xue et al., 2021) and that can be regarded as a connective figure between the universities and the professional world. Acknowledging the Chinese case of the design institutes as emblematic of this collaboration, the research aims to study throughout design projects how this interaction takes place, and what are the effects on the built environment, with specific regard to the impact of research beyond academic boundaries.

The work, therefore, could be envisioned on the one hand as a chance to shed light and enhance the existing nationwide network of university-practice design partnerships, with specific regard to the Chinese context and the related university programs, on the other as a way to create a toolbox of actions and strategies that could be used by academic institutions to bridge the academic sphere with the professional domain through design projects that are grounded in real-world practice.

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THE GREEN AND BLUE NEXUS. INTEGRATED FRAMEWORK FOR CLIMATE SENSITIVE URBAN DESIGN AND URBAN DIGITAL TWIN MODELS



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Research Group
Architectural Technology

In the Architectural Technology field, the Urban and Environmental design process has the potential to integrate climate mitigation and adaptation strategies through the support of digital and technological transformation. This is an emerging research area that could contribute to accelerate the physical transformation and give a holistic answer to the climate crisis in Built Environment.

Many cities around the world have developed plans and policies to achieve climate neutral and climate resilient targets in the last decade. Even if these two goals represent the two sides of the same coin to work with climate change (i.e. climate change mitigation and adaptation), some researchers have highlighted that Climate Change Action Plans (CCAPs) give scarce consideration to integrating simultaneously mitigation and adaptation in the same planning process. This aspect has influenced also the physical transformation of the built environment in urban areas. The 10 most advanced cities for local climate action have been analyzed through a proposed multilevel assessment of CCAPs, urban regeneration, and building projects to understand the level of integration of adaptation and mitigation in pioneering contexts and draw implications for the maximization of synergies and co-benefits for urban design practices. Using the developed scoring framework to evaluate the level of integration of CCAPs, urban regeneration, and building projects, research finds that the majority of analyzed CCAPs have revealed a “moderate” and “early” level of integration.

In addition, the assessment of CCAPs has reported the best practices related to action and measures to integrate climate mitigation and adaptation approaches in urban transformation.

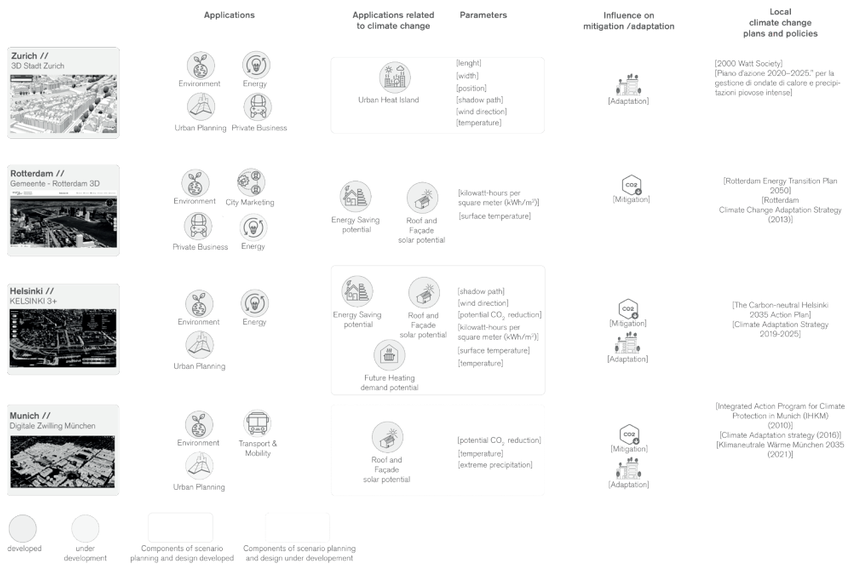
These results are in line with the scientific literature that has revealed that there is an absence of an integrated approach that combines both mitigation and adaptation strategies in policies and design practices from the city level to the building scale to assess future urban and environmental design scenarios (Grafakos et al., 2019; Leone, M., & Tersigni, E., 2019; Sharifi, 2020; Sharifi, 2021). Many difficulties are registered in managing a large amount of static information, trends, and data (e.g., from archives, censuses, or databases) and dynamic data (e.g., real time sensors in the city) in the urban and environmental design process. The combination of different digital enabling technologies for the development of an integrated workflow (different languages, sources of data supply, etc.) require high digital skills and more research efforts to overcome the interoperability software limits.

Grafakos, S., Trigg, K., Landauer, M., Chelleri, L., & Dhakal, S. (2019). Analytical framework to evaluate the level of integration of climate adaptation and mitigation in cities. *Climatic-Change*,154(1–2),87–106.Scopus. https://doi.org/10.1007/s10584-019-02394-w

Leone, M., & Tersigni, E. (2019). *Progetto Resiliente e adattamento climatico. Metodologie, soluzioni progettuali e tecnologie digitali.* CLEAN Edizioni.

Sharifi, A. (2020). Trade-offs and conflicts between urban climate change mitigation and adaptation measures: A literature review. *Journal of Cleaner Production*, 276, 122813. https://doi.org/10.1016/j.jclepro.2020.122813

Sharifi, A. (2021). Co-benefits and synergies between urban climate change mitigation and adaptation measures: A literature review. *Science of The Total Environment*, 750, 141642. https://doi.org/10.1016/j.scitotenv.2020.141642



Analysis of Urban Digital Twin to support climate change scenario planning and design
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The aim of the research is to investigate how the integration of mitigation and adaptation approaches could guide urban and environmental design processes with the support of digital enabling technologies, computational and parametric tools, and how UDTs play a crucial role to simulate, designing, and monitor different possible future urban scenarios.

To achieve the above-mentioned goals, the research wants to develop an integrated framework for climate mitigation and adaptation. This tool will be developed through the comprehension of the impacts of climate change in the built environment and the contribution of human settlements to feed the climate change and by existing and new indicators that can assess each possible urban and environmental design scenario able to transform and regenerate urban areas at different scales. In addition, after the exploration of the digital enabling technologies available in Architecture, Engineering and Construction (AEC) sector for the built environment, the research analyzes the UDT developed in the last years in Europe to evaluate if and how they consider the climate change issue, in order to understand the state of the art, the applications developed for climate change and which is the level of experimentation in order to study and develop guidelines to build urban digital twin as a support tool for a climate-neutral and resilient city. Finally, the research analyzes the role of UDT through interviews and surveys in the selected case study of Helsinki city, to understand how it supports the climate neutral and resilient target for a city based on a method that explores the benefits, the limits, the social, environmental and economic risks and the results obtained in the developed system.

The main expected results of the research focus on the possibility to develop urban design scenarios at the neighborhood scale characterized by a holistic response to climate change issues. These results will be achieved through a definition of an integrated framework able to consider and assess future urban design scenarios for climate change in the built environment supported by a digital enabling technology. In addition, the research wants to understand the role of UDT as digital enables technology able to accelerate the local climate action in urban areas and to support the design and decision-making process (simulation, design and monitor the ex-post results) to regenerate the built environment.

The research wants to explore the possibility of including a coherent number of indicators in the development of urban design to individuate the best design solution for climate change. These aspects, overcome the limits to use only one or few indicators to identify a “sustainable scenario”. In addition, UDT is an emergent digital technologies tools for urban planning, urban and building design, through the exploration of the role of this digital enable technology to accelerate the local climate action in urban areas and to support the design and decision-making process (simulation, design and monitor the ex-post results) to regenerate the Built Environment.

The research is divided in two main parts. Part I focus on the transition from the lack of integration among mitigation and adaptation approaches registered in the last years in the urban agendas around the world to the integration of these two strategies in the configuration and assessment of urban design scenarios. Part II aims to understand the framework of digital enabling technologies available for the built environment and local climate action, focusing on UDT as a more coherent model to support design and decision making for climate change. The outputs of this part will lead to the structuring of guidelines for the development of UDT not in terms of Information Technology but in focusing on the system of relations between the actors, the parameters to be considered for the city and the urban and environmental design in the age of climate crisis.

The last part of the research presents a high level of novelty in architectural technology and urban planning fields because very few cities have developed such systems to deal with this challenge.

THE ARCHITECTURE OF COMMUNITY. THE CASE OF BARCELONA COHOUSING UNDER GRANT-OF-USE



Ludovica Rolando

Cycle
36° - PoliTo Grant

Year
2020 - 2023

Supervisors
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Research Group
FULL - Future Urban Legacy Lab, Theory of the Architectural Project

The housing debate typically focuses on increasing the quantity of available housing to improve adequacy and affordability, not considering the potential of community living. Community living, a form of communal living that involves sharing living spaces and resources, has been practised across different cultures since the dawn of civilisation. The idea of living in a close-knit community to pool resources and unlock a variety of benefits is as old as humanity itself. Reducing private space in favour of shared ones means access to large, quality spaces and facilities at a lower cost. Additionally, shared spaces can offer a network of mutual aid, care, and a sense of community often lacking in modern urban living. Today a re-emergence of co-housing models (Tummers, 2016) is acknowledged as a possible solution to counteract social and demographic changes, isolation, political issues such as housing commodification and the decline of social welfare systems, as well as concerns for the climate crisis.

Collaborative housing has been adopted by many researchers and practitioners over the last decades as an umbrella term to encompass a wide variety of housing forms. The terms and definitions used for co-housing and other forms of shared housing are often contradictory or simply overlapping, and the field lacks an accepted categorisation. Therefore, part of the research has been dedicated to the study of the definition of cohousing and a taxonomy of collaborative housing sub-terms with different sharing methods (Babos et al., 2020; Tummers, 2016; Vestbro, 2010). Among the different models of shared living that fall under the umbrella term “collaborative housing”, this research focuses specifically on cohousing.

Cohousing was born during the late Sixties due to a radical contestation of current lifestyles and the quest for different solutions to market or residential policies (McCamant & Durrett, 1988). The “Housing Revolution” of the 1970s marked a paradigm shift from a deterministic point of view to a pluralistic perspective, where the future inhabitants contribute to the design, tailoring it to their needs and values. This approach is part of a broader cultural shift (Harvey, 1989), including architectural practice. The study of the work of architects such as Habraken, Turner, Ward, and De Carlo offers a critical reflection on architectural design as a process in which future users are actively involved. This contribution occurs during the design and the building’s lifetime, foreseeing that the architectural projects can adapt to the use change over time. The openness of buildings (Habraken, 1972) or, more generally, the indefiniteness of artefacts (Eco, 1962) and other strategies linked to the concept of flexibility (Forty, 2004) lead to thinking of architecture in a transformative perspective and are the room for user’s intervention from a productive point of view. The housing project is, therefore, the result of a collective agency, dynamic because of its capacity to transform itself over time, and political because of the relationships established between those who inhabit it (Lefebvre, 1974). Cohousing is regarded as a tool for testing how this perspective and design process is materialised through architectural design. Even if cohousing origins can be traced back to the secular history of utopian communities and communitarian movements (Jarvis, 2011; Vestbro & Horelli, 2012), its current form originated in Denmark, related to the realisation of the community Skraplanet (1973). It first spread to Scandinavian countries and the Netherlands, then to Continental Europe and English-speaking countries in the 1990s, and only from the 2000s to Southern Europe (Bianchi, 2020; Hagbert et al., 2020).

Habraken, N. J. (1972) *Supports: An Alternative to Mass Housing*, London: Routledge
Hagbert, P. et al. (eds) (2020) *Contemporary co-housing in Europe: towards sustainable cities?* London ; New York: Routledge, Taylor & Francis Group.
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Rolando, L., (2022). How we will live together? A Comparative Analysis of Housing Cooperatives in Zurich and Barcelona. *TECHNE*, n.24.
Tummers, L. (2016) Re-Emergence of Co-Housing in Europe, *Urban Studies*, May 2: 1–18



La Borda interior courtyard
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The expansion in Southern European countries has yet to be studied: systematic research with listing and data on cohousing projects needs to be included. Political issues, such as the struggle for the right to housing and the debate against the commodification and financialisation of the real estate market (Madden & Marcuse, 2016; Rolnik, 2019), social and demographic phenomena, such as the dissolution of the modern nuclear family and pluralisation of family fabric, a more significant fragmentation of society and the loss of minute welfare system (Allen et al., 2004; Aureli & Giudici, 2016; Tomka, 2013; Tosi, 1994), but also ecology and environmental sustainability issues (Giorgi, 2020) have increased the attention and demand for collaborative housing models also in the Southern European context. Therefore, the research aims to contribute to the knowledge of the state of the art of the cohousing phenomenon in Southern Europe.

The investigation is carried out by a multiple case studies methodology with mixed methods. The cross-qualitative and quantitative methodology integrates the formal analysis of buildings and quantitative data with extensive fieldwork and ethnographic methods. Recurrent design strategies and architectural characteristics are analysed through design research and the critical re-drawing of the selected projects. Quantitative indicators compare contemporary case studies regarding scale, program and surfaces, density, and development time. Qualitative research methods such as fieldwork and ethnography are also applied. The primary sources accessed are buildings visits, architectural drawings, interviews and a survey; the secondary sources comprehend bibliographical sources and desktop research. Data are collected, analysed, and documented in reports for individual case studies. Afterwards, a cross-case analysis is realised.

Relevance is given to the case study of Barcelona as a paradigmatic case (Flyvbjerg, 2006). Among the most relevant European cases analysed, Barcelona stands as the one that is more explicitly focusing on cohousing, able to transform a bottom-up model into a systematic production in just a few years. Nowadays, it is the city in Southern Europe with the highest number of cohousing projects – seven built and 23 under development (COPHAB, 2023) – thanks to the collective action of communities of citizens, cooperatives, foundations, technical experts, and public actors. These initiatives combine excellent architectural quality, flexibility of use and wide typological variety, low costs and low environmental impact with collective self-production and self-management of the project. Originating as a grassroots movement, cohousing production has been systematised thanks to the intervention of the public actor by land leases and other incentives.

The study explores the nature and characteristics of the cohousing model. However, it focuses mainly on the design strategies and typological configurations adopted in the architectural projects, how these have been defined through a collective decision-making process, and how spaces are used and appropriate during post-occupancy. The research aspires to verify how cohousing design strategies foster social relationships (Williams, 2005) and how the collective agency that characterised these project processes has driven the architectural innovation of housing types. The anticipated impacts of the investigation are the outline of collaborative housing terms taxonomy and definitions, to draw a picture of the state of the art of cohousing in Southern Europe and to provide guidelines about cohousing design strategies for future applications.

ARCHITECTURAL CRITICISM AND CULTURAL PROMOTION. CONTEMPORARY ALPINE ARCHITECTURE (1987-2022)



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Cycle
36° - PoliTo Grant

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Supervisors
Antonio De Rossi

Research Group
IAM – Institute of Mountain Architecture

Contemporary architectural production in the Alps is a phenomenon that has enjoyed considerable international significance since the 1990s. In 1992 the *Neues Bauen in den Alpen* prize was established in Sesto in South Tyrol. The prize will gain more and more importance and participation in the three successive editions - 1995, 1999 and the last one in 2006 - also thanks to the publication of the catalogues, enriched by significant theoretical and historical contributions and by the travelling exhibitions, present not only in alpine galleries and museums but also in the Scandinavian peninsula and South America, as further confirmation of the attention and essential role that Alpine architectural production plays within the global scenario of contemporary architecture. Another fundamental date for the change of general vision towards the Alps is 7th November 1991, when the European Alpine countries sign the Alpine Convention. The most important product of the Convention, as regards the architectural field, was born in 2010: it is another architecture award, namely *Constructive Alps: prize for sustainable architecture in the Alps*. The debate that arose after the establishment of the *Neues Bauen in den Alpen* prize, and subsequently with *Constructive Alps*, also involved the sector magazines, which from that moment on began to take an interest in the Alpine territory. More and more Alpine projects are published in international magazines such as «Casabella», «Domus», «The Architectural Review», «el Croquis», and «a+u», especially Swiss projects from the canton of Grisons and Austrian ones from Vorarlberg or Tyrol. The interest is also condensed in some exhibitions of great importance and resonance. Starting from those that accompany the prizes mentioned above, to others, such as the famous exhibition entitled *Constructive Provocation*, concerning the architecture of Vorarlberg and organized by the *Institut français d'architecture and the Vorarlberger Architektur Institut (VAI)*. In the wake of the activities of the *Sesto Cultura* association, which before the *Neues Bauen in den Alpen* award had organized several exhibitions concerning architecture in the Alps, other cultural institutions began to take an interest in Alpine architecture. This is the case of *Kunst Meran / Merano Arte* which organized some international exhibitions, above all the *Wohn Raum Alpen - Abitare le Alpi* in 2010.

The beginning of the 1990s witnessed a profound change in the imagination of the Alps in Europe, at a legislative, regulatory, and perceptive level (De Rossi, Dini, 2012). In particular, some events, such as the stipulation of the Alpine Convention in 1991, or the research of some scholars, expecially the one carried out by the German geographer Werner Bätzing, contribute to this transformation. In the same period, in the architectural field, the *Neues Bauen in den Alpen* prize, announced for the first time in 1992 by the South Tyrolean association *Sesto Cultura*, contributed to the creation of the concept of "Alpine architecture" as a cultural construct (Mayr Fingerle, 1992). The *Neues Bauen in den Alpen* prize is part of a set of tools for the cultural promotion of architecture that has allowed the international diffusion and critical success of the architecture produced in the Alps in the contemporary world, especially starting from the end of the 80s to the present day. The research aims to analyse the role of these different cultural promotion tools, including exhibitions, sector magazines, new digital media, and architecture awards. The thesis is therefore divided into four chapters that intercept these four different devices. These chapters will be interspersed with project sheets of some architectural case studies chosen because of the publication on one of the promotional tools. The case studies will mainly be selected in two Alpine regions, Vorarlberg in Austria and Graubünden in Switzerland, which have received the most significant critical acclaim internationally between 1987 and 2022. Through the study of a paradigmatic case such as that of the architecture produced in the Alps, a pivotal and barycentric territory in Europe, the research aims to understand how some tools of cultural promotion allow the development of a particular architectural culture and consequently also the creation of quality architecture, and how architectural criticism, through its narratives and different historiographies, can influence this process. The Alps are taken as a paradigmatic case that can lead, as argued by the geographer Werner Bätzing, to a "deeper understanding of Europe"(Bätzing, 2005) and, consequently, of its architecture. Furthermore, it is of particular interest to study the reasons for the attention paid by critics and sector journalists to the architectures produced in the Alpine territory (with some regions leading the way, such as Vorarlberg and Grisons), especially starting from the 1990s forward. The research aims to analyse this "stage", using the architecture produced in the Alps as a case study to understand the reasons and mechanisms that can lead a "regional" architecture to a particular public success and how this success, in turn, can affect the architectural quality of the region in question.



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Bätzing, W. (2005). *Le Alpi. Una regione unica al centro dell'Europa.* Torino: Bollati Boringhieri

De Rossi, A., Dini, R. (2012). *Architettura alpina contemporanea.* Scarmagno: Priuli & Verlucca

Mayr Fingerle, C. (Eds). (1992). *Neues Bauen in den Alpen - Architettura contemporanea alpina 1992.* Bolzano: Edition Raetia

A COMPREHENSIVE METHODOLOGY FOR COMPARATIVE ANALYSIS OF URBAN FORM. DETECTING AND CLASSIFYING URBAN BLOCK WITH ARTIFICIAL INTELLIGENCE



Didem Turk

Cycle
36° - CRT/DAD/FULL Co-funded Grant

Year
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Supervisors
Marco Trisciuoglio, Francesca Frassoldati, Matteo Robiglio, Olgu Caliskan

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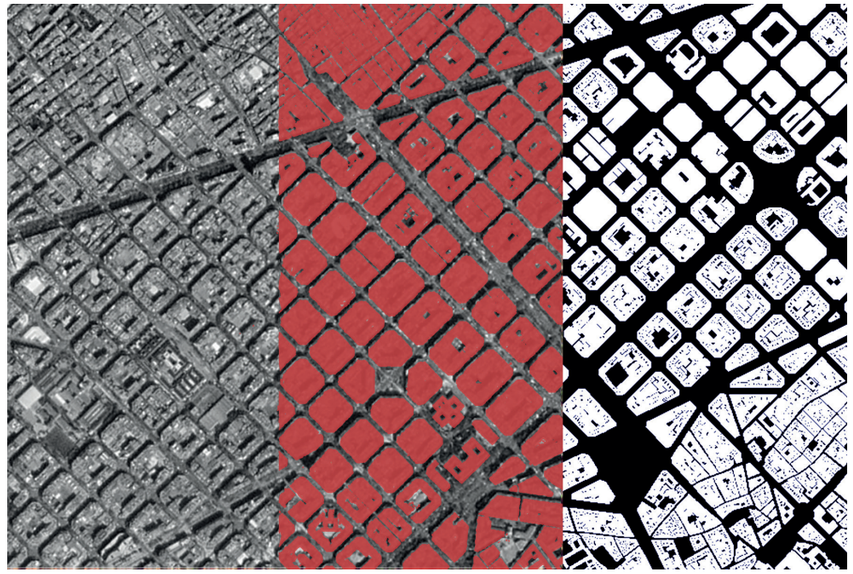
Transitional Morphologies Joint Research Unit, FULL - Future Urban Legacy Lab

The field of urban morphology consists of analyzing the evolution of cities from their formative years to consecutive transformations by identifying their various components (Moudon, 1997). The specific characteristics of urban form are analyzed, classified and compared with mapping tools. The growing accessibility of geographic data boosted urban morphology studies toward more quantitative and data-driven approaches. The burgeoning development of automatic tools enables machines (as mapping tools) to get a human-like understanding of urban forms hinged on images. The research is based on the interest and the need for new technological developments such as software, tools, and their implementation in urban morphology. The study aims to define a comprehensive approach to identify, classify and compare urban block components using the artificial intelligence (AI) model. The study investigates 'whether a machine can be trained to learn what an urban block is and detect it". Using earth observation techniques, the study takes satellite images as data and retrieves information about urban blocks.

Studies on cities' visual diversity of urban tissue which is related to numerous combinations of urban form elements, lead researchers to examine the similarities and differences (Dibble et al., 2019; Fleishmann, 2021). Urban morphology distinguishes urban form into components (street, plot, building, block) and strives to understand each component's running pattern and interactions (Chen et al.,2021; Kropf, 2009). Urban blocks gain particular attention because of their relationship with the street, plot, and building. The study takes an urban block as the core and develops a new perspective to understand and map the phenomena. Urban blocks are of great importance in studying and understanding cities. Urban blocks' shape, size, and orientation impact their internal structure and surrounding areas. The significance of urban blocks is in their ability to reveal information about the morphology of cities. The contemporary treatment of urban form has shifted with the emergence of new technological tools. The research context is shaped by using these new achievements to guide urban morphologists to expand their studies to new methodological approaches. In addition to the qualitative perspective developed over history, the accessibility to various forms of spatial data, the opportunity of computing power, and the high eligibility of urban data accelerate quantitatively driven analysis of urban form (Carneiro et al., 2010). Therefore, new approaches to examining shared formal characteristics on the data gathered from adequate sampling are constituted (Ye, 2014). Applied methodologies are diverse according to the context of the studies and/or accessibility of the data (Marshall, 2005; Venerandi, 2017). In a changing society, diverse data is produced every day. Together with technological advancements, data-driven urban form analysis has accelerated in recent years. Although these data are accessible, analyzing and understanding the immense variety of data with conventional/manual methods is not easy. Recently, the development of new technologies, such as aerial photography and Geographic Information Systems (GIS), made a significant difference in creating maps by enabling highly precise and detailed maps. These tools made it possible to create maps with accuracy and easier to update and maintain them, such as satellite imagery and earth observation, open street map tools, etc. The information retrieved from these maps varies in detail and covers diverse aspects. The study aims to understand and map urban blocks using earth observation and satellite imagery. This study employs machine learning tools, specifically a deep learning model, to understand and analyze urban blocks. Machines (in this study context, an AI model) have become significant tools in giving good quality information and having the ability to read and understand forms like humans with systematic teaching. The research preliminarily investigates urban form components based on theories of urban morphology. It aims to build the relationship between measurable urban form components and machine language. To do so, it defines a systematic algorithm, which breaks down complex problems into smaller, manageable sub-problems that are solved by a series of steps combined with a specific order. This study's algorithm defines the input, machine and output and specifies the relationship between them. The applied methodology comprises detecting and classifying urban forms using a deep convolutional neural network. A Convolutional Neural Network (CNN) is an artificial neural network that can be used in image recognition and processing. The AI model was chosen because machines can learn, and by using learned vectors, the detection of similar urban forms and comparison of detected urban forms become easier and more efficient. The aim is to draw a framework from a manually trained model to automatic analysis. Due to its compatibility with the GIS platform and flexibility, the Unet (deep learning) model is used and trained with labelled urban blocks hinged on images. GIS, and Deep Learning applications are used to address the gap in urban form classification and characterization. The model is trained based on the different shapes of urban block types hinged on images. Following the accuracy of the results obtained in the first step, it is aimed to train the model with descriptive elements of the urban block. Due to the program's limitation, instead of structural components and their combinations, variations based on shape and size became the first input for the model. This affected the choice of case study selection. This research aims to provide an algorithm that can be applied to different research contexts. Therefore, the model is selected so that the required data structure can be easily accessible. Accessibility (open access) and accuracy of the data structure became essential components of the research process. Acquiring free access data requires specific framing of what is needed. This research uses the 3m/px Planet Scope Tiff images where geographic coordinates are provided. Since the research mainly focuses on the urban block and its structural components, case studies are chosen according to the different compositions of urban block types. Primary case studies are Barcelona, Paris, London, Copenhagen, and Berlin. Additionally, to test the model's limits and applicability, a historic city such as Venice will be chosen in further steps. The model works in a twofold structure; to train the model, there is a need to compile with the language of the model. The model sees the image and requires information such as the size of the image, the correspondence of each pixel in that image and how to process it. In this case, a mask (labelling image) must be created using a vector data structure to introduce the information on the image. In this research, vector data is the digitized building footprints from OpenStreetMap. Using GIS, vector data (in Geojson format where geographic location can be detected with coordinates) masks are created, and images are introduced to the machine. The study has a twofold contribution. First, it opens up a discussion on how the urban block is defined. Second, it builds toward the shift to automatic tools by addressing how a machine can read urban blocks and what are the learning rules for automated recognition of them. The analysis includes automatically extracting urban blocks, providing classification criteria, and conducting cluster analysis within and across defined case studies.



The process of converting the urban block into digital information to introduce the machine
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Carneiro, C., Morello, E., Voegtle, T., & Golay, F. (2010). Digital urban morphometrics: automatic extraction and assessment of morphological properties of buildings. *Transactions in GIS*, 14(4), pp. 497-531.

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THE INTERACTIVE TRANSFORMATION OF URBAN AND RURAL SPACES: QUESTIONING AUTHENTICITY, (POST) PRODUCTIVISM, AND ECOLOGY BETWEEN ITALY AND CHINA



Hanqing Zhao

Cycle
36° - CSC Grant

Year
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Supervisors
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Research Group
China Room

Defining the relationship between urban and rural milieus is complex. Urbanization worldwide has shaped the most common change between urban and rural society for centuries, with cities becoming the main attraction of labour and market capital. Consequently, urbanization processes have been primarily regarded as adverse effects on rural spaces, failing to acknowledge that – even if urbanization is never neutral in the dynamics of rural spaces – interdependence is a more complex multifaceted relationship than that of dominating and being dominated. The transformation between urban and rural spaces is interspersed with discussions about cultural invasion, consumerism and environmental pollution. By analyzing six cases in China and Italy from different angles, this study discusses authenticity, (post-) productivism and ecology and re-conceptualizes the urban and rural dimensions in the context of rapid urbanization.

More than half of the world's population already lives in cities, and more and more factors of production flow from rural areas to cities, which makes the future of the countryside as we know it somewhat uncertain. In the past two decades, China has experienced urban redevelopment at an unprecedented scale and speed, with a continuous process of urbanization that has gradually led to the inclusion of more neglected areas to be reinvented as "urban". What is left of the rural economy is less dependent on traditional agricultural production, which has always been the basis of China's traditional rural governance. This research aims to explore the interactive transformation of urban and rural spaces, the responses in the rural built environment in periods of social transformation, and whether mutual attention can be detected in how architectural and spatial design is approached. To this end, a relevant starting point is identified in the counter-urbanization movements and their relationships with rural regions, agricultural traditions and material heritage in the countryside. In particular, ideals, political backing, and operational institutions have nurtured the construction of a multidimensional frame for cases in China and Italy, focusing mainly on the village dimension.

The primary part of this research is based on the selected case in China and Italy. Including the traditional settlement, the countryside/agricultural resource and the ecology of inhabited nature. These cases will use the existing statistical data to analyze the changing trend of the rural population from the perspective of population mobility and social structure. Moreover, the impact of urban-rural interaction on rural areas is revealed by analyzing social space and stakeholder changes.

The first part discusses the transformation of traditional villages and towns. The village of Barolo will be the first case to analyze. Relying on the wine industry with a long history, Barolo has formed a rural culture with the wine industry as the core. At the same time, the antique town streets highlight the characteristics of Barolo as a traditional town. The Chinese case is Wuzhen. After more than 20 years of development, Wuzhen town is often referred to as the "model" of the transformation of the historical core area in terms of cultural heritage protection and tourism development, which has experienced from the traditional sightseeing town to the holiday town and then to the cultural town.

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These two cases put forward their solutions on how to deal with the modernization of ancient towns. In this process, the authenticity is deconstructed and reconstructed. While we see well-preserved traditional buildings in Barolo, we can also see that the more than a hundred-year-old chapel (Cappella del Barolo) was transformed into colorful contemporary works of art in 1999. The Castle (Castello di Barolo) has become a modern wine museum. Wuzhen looks different, but it has the same kernel as Barolo, and it is no longer confined to what it should be but to what it wants to be. Wuzhen was created artificially based on the regional reconstruction of some traditional buildings left behind. The interweaving of the new and the old has become Wuzhen and Barolo's authenticity.
The second part is the countryside/agricultural resource, related to the utilization and development of rural agricultural resources. The Italian vineyard landscape of Langhe-Roero and Monferrato is considered "one of the most harmonious and most consistent with the idea of a 'scenic' rural and vineyard landscape" by the World Heritage Committee. Wine and its surrounding industries integrate agriculture, industry and services, including grape production, wine processing and visitors' visit and experience. Tea plantation south of the Yangtze River in China is a sample for applying rural high-value products. Longwu Tea Town, located on the edge of Hangzhou, is the core producing area of Longjing tea. Before 2017, the area of Longwu Tea Town was still an industrial land with polluting enterprises, and years of industrial development left little trace of local history. In order to protect the tea industry and tourism development, the local government relocated all the factories. It began to rebuild the town with the tea industry, including tea sales, research, characteristic tea accommodation and many other new business forms with tea as the theme.

Post-productivism describes a shift in economic development from focusing on traditional production activities to knowledge-based activities and services. In the case of the grape industry in Lange and the tea industry in Hangzhou, post-productivism has significantly impacted how these industries operate. In the grape industry of Lange, post-productivism has led to a shift away from traditional grape growing and wine production practices towards a more knowledge-based approach. The industry has become more focused on tourism, with wine tours and tastings becoming an essential source of revenue for grape growers and wineries. Similarly, in the tea industry of Hangzhou, post-productivism has involved a greater emphasis on research and development and the use of technology and innovation to improve tea quality and production efficiency. The tourism industry has also become more and more critical, with tea tours and tastings becoming an essential source of revenue for tea growers and producers.

The third part is the ecology of inhabited nature, the combination of humans and nature can also become the driving force of urban-rural interaction, and the natural landscape that the city lacks can be supplemented in the rural area. Valle Tanaro, at the foot of the Alps, is an excellent place to come into contact with nature, where nature, history and culture blend. Nearby Marguareis Nature Park offers exciting hiking routes, and outdoor activities such as surfing, rafting and camping are well supported. The development of natural landscapes can also attract the attention of many urban residents and promote the development of local towns. In Dongziguan village in Zhejiang Province, the modern dwellings are built near the Fuchun River, with winding mountains behind it, which have received extensive attention due to their use of traditional elements of architecture. Through this process, the village has become one of the epitomes of urban-rural interaction.

This part focuses on natural resources. The Alps landscape provides sufficient attraction and attention to Valle Tanaro. In Dongziguan Village, nearby mountains and water become the backdrop for new buildings, which combine with the surrounding environment to attract city dwellers, including tourists and some small businesses. In addition to connecting with cities, with tourism as the core, villages rich in natural resources have more significant educational significance.

004

XXXV
CYCLE

CHINA ROOM

Listo Tommaso

THEORY OF THE ARCHITECTURAL PROJECT

Forina Camilla

Franco Gonzalez Erika

Diaz Diaz Freddy Rolando

IAM–INSTITUTE OF MOUNTAIN ARCHITECTURE

ARCHITECTURAL TECHNOLOGY

Motta Martina

Lin Yang

Gugliotta Rossella

Tonti Ilaria

Riviezzo Aurora

Corona Marco

Casali Valeria

Cafora Silvia

TRANSITIONAL MORPHOLOGIES JOINT RESEARCH UNIT

FULL-FUTURE URBAN LEGACY LAB

HISTORY OF ARCHITECTURE

Crapolicchio Martina



Silvia Cafora
PoliTo Grant



Valeria Casali
PoliTo Grant



Marco Corona
PoliTo Grant



Martina Crapolicchio
PoliTo Grant



Freddy Rolando Diaz Diaz
Free position



Camilla Forina
PoliTo Grant / Joint PhD Tsinghua



Erika Franco Gonzalez
PoliTo Grant



Rossella Gugliotta
PoliTo/CRT/DAD Grant



Yang Lin
CSC Grant



Tommaso Listo
PoliTo Grant



Martina Motta
PoliTo Grant



Aurora Maria Riviezzo
Polito/CRT/DAD Grant



Ilaria Tonti
Polito/PIC4SeR/FULL Co-funded Grant

Community-led housing development. A key ingredient for a new housing architecture and policy

Student	Supervisors	Research Group
Silvia Cafora	**Matteo Robiglio, Gaia Caramellino**	**Full - Future Urban Legacy Lab**

An Architecture Critic's Narratives. The Transatlantic Trajectories of Ada Louise Huxtable

Student	Supervisors	Research Group
Valeria Casali	**Gaia Caramellino, Paolo Scrivano**	**History of Architecture**

L'architettura del potere municipale. Il caso del nuovo Palazzo Comunale di Cagliari

Student	Supervisors	Research Group
Marco Corona	**Sergio Pace**	**History of Architecture**

Rimini. La forma e le regole. Morfologie di transizione nella città italiana contemporanea

Student	Supervisors	Research Group
Martina Crapolicchio	**Marco Trisciuoglio**	**Transitional Morphologies Joint Research Unit**

Architectural design tools for transition to peace in Colombia

Student	Supervisors	Research Group
Freddy Rolando Diaz Diaz	**Paolo Mellano, Alex Leandro Perez Perez**	**-**

The Legacy of the Involvement. Unfolding academic design *praxis*

Student	Supervisors	Research Group
Camilla Forina	**Michele Bonino, Yehao Song, Valeria Federighi**	**China Room, Theory of the Architectural Project**

Oblique design: Architecture, landform and cycling

Student	Supervisors	Research Group
Erika Franco Gonzalez	**Riccardo Palma, Chiara Occelli**	**-**

Macchine di lettura. Logica diagrammatica e transizioni morfologiche urbane

Student	Supervisors	Research Group
Rossella Gugliotta	**Marco Trisciuoglio**	**Transitional Morphologies Joint Research Unit**

Playgrounds in the City, the City as a Playground

Student	Supervisors	Research Group
Yang Lin	**Marco Trisciuoglio**	**Transitional Morphologies Joint Research Unit**

Qualcosa di scientifico. Un'ipotesi su progetto di architettura e ricerca, attraverso bandi europei, laboratori ed esperimenti

Student	Supervisors	Research Group
Tommaso Listo	**Giovanni Durbiano, Alessandro Armando**	**Theory of the Architectural Project**

I grandi cantieri del Regno di Sardegna nella prospettiva del bosco. Una storia ambientale dell'architettura

Student	Supervisors	Research Group
Martina Motta	**Edoardo Piccoli, Antonio De Rossi**	**History of Architecture**

Professionismo, burocrazia, città pubblica. Napoli dalla legge 167 agli anni Ottanta

Student	Supervisors	Research Group
Aurora Maria Riviezzo	**Filippo De Pieri**	**History of Architecture**

La temporaneità permanente del post-sisma. Architettura e paesaggio tra emergenza e ricostruzione nell'Italia Centrale

Student	Supervisors	Research Group
Ilaria Tonti	**Matteo Robiglio, Andrea Maria Lingua , Massimo Crotti**	**FULL - Future Urban Legacy Lab**

005

DASP ACTIVITIES





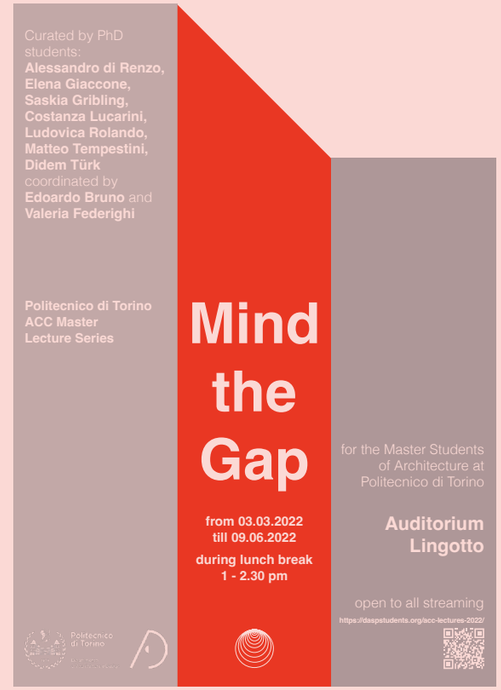
ACC LECTURES

Riccardo Biondi, Saskia Gribling, Francesca La Monaca

The ACC (Architecture Construction City) Lecture Series is an open cycle of conferences offered as an elective course within the Bachelor and Master curricula in Architecture at Politecnico di Torino. Since 2019, each year it is curated by a group of DASP PhD students who have the opportunity to thoroughly propose and organize it with a twofold purpose and effect. On the one hand, it represents a direct teaching experience within the PhD curriculum, where all aspects, from the discussed topics to the student's assignments, are self-organized and managed by the doctoral candidates; on the other, it is thought of as a "bridge course" where a hands-on approach and strong involvement of practitioners brings the academic conversation to be confronted with the practice and its common issues. The talk series was born to stimulate a common debate within the architecture department across years and disciplines, aiming to be accessible not only to students involved in the course. That is why it keeps being held weekly during the lunch break on a chosen day, available also through a live youtube channel, to open up the possibility for professors and interested people to participate in a triggering discussion.

Renowned international scholars and practitioners are invited to give clear-cut and sometimes provocative speeches according to the edition's themes. Among others, radical architect, artist and educator Sandi Hilal, the Belgian multi-disciplinary collective Traumnouvelle, and the Italian collective Fosbury Architecture have been guests in the recent editions. The discussion which usually follows encompasses a greater spectrum of topics, from the role of architecture as a discipline in a constant climatic crisis regime to the disciplinary, linguistic or ontological gaps it could encounter, as well as challenges and dilemmas typical of the architectural practice, which often elicit a complex relationship characterized by both admiration and dissatisfaction with the profession.

These lectures not only address the pressing concerns of the younger generation but also introduce alternative pedagogical approaches by systematically integrating practitioners into the academic realm. In this sense, the ACC Lecture Series has brought forward something relatively uncommon in the Italian university, fostering an inclusive dialogue among students from various academic backgrounds, allowing them to engage actively with specialists who can bring diverse perspectives beyond the conventional academic instruction offered by the university.





EUROPEAN RESEARCHERS' NIGHT

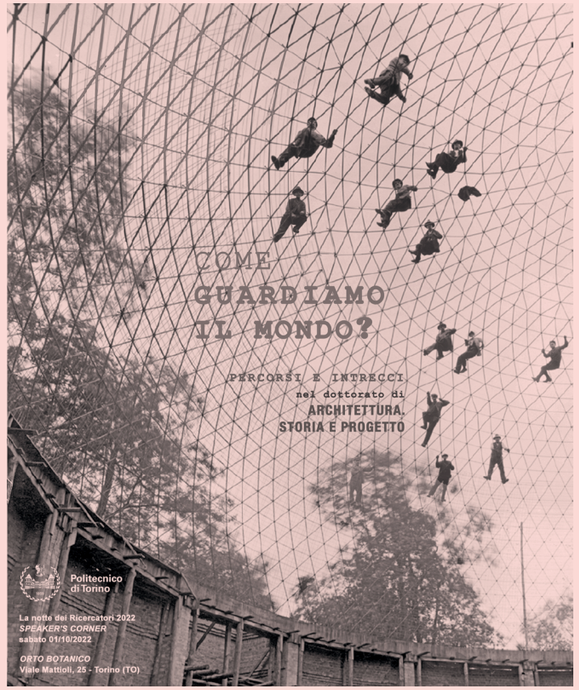
Elena Giaccone

The U*Night (the European Researchers' Night) has been an occasion to present the doctoral program in Architecture. History and Project to a wider audience and as part of a broad network of learning and cultural institutions operating in Turin. Some Ph.D. students participated in the Researchers' Corner on the 1st of October 2022, aiming to shape a place of discussion between researchers from diverse disciplines, future students interested in the teaching paths offered by Politecnico, and the citizenship at large. The moment was conceived, in particular, to highlight and raise awareness about the character of a learning community that the Ph.D. program aims to acquire both internally and, on a larger scale, as an active element capable of significantly communicating and contributing to the city's everyday life. Indeed, the work of a doctoral program remains often confined to the "hidden places" (the library, the archives, the laboratories…) where the research is mainly conducted.

The doctoral program in Architecture. History and Project has a multidisciplinary character, dealing with building and architecture discipline, urban studies, design theory, and knowledge from different perspectives. Taking up the challenge to capture the attention of the public by presenting a differentiated spectrum of research in a nutshell, some Ph.D. students gave voice to the diverse research groups existing within the department, shaping the image of an archipelago of heterogeneous but interconnected topics, also involving institutions beyond the Politecnico di Torino.















DASP LUNCH SEMINARS

Federica Joe Gardella, Ludovica Rolando

Cultivating basic (curiosity-driven) research is one of the purposes of a doctoral program, along with training in the methods of inquiry that are specific to each knowledge and practice. However, a doctoral program also has the purpose of educating and igniting peer-to-peer dialogue on topics that are significant, either because -*innovative*- they await us in the future, or because -*far removed in traditions of study*- they prompt us from the past.
In the spring semester of 2022, the "DASP Lunch Seminars" initiative opened the doctoral activities for discussion, first of all among the doctoral students of the different cycles with each other and with the members of the teaching board, but also with researchers, experts and scholars from outside the doctoral community.

In a sequence of 12 meetings, at Friday lunchtime, the seminars provided a platform for public discussions on projects and histories, cities and processes, techniques and societies, models, innovation, and much more. During each session, three or four doctoral students representing each cycle (the XXXV in the closing phase, the XXXVI in the crucial study phase, and the XXXVI in the exploratory phase), presented their research progress while establishing thematic connections among the three investigations, so as to share and discuss them with specially invited speakers and other meeting participants.

The professors and invited external guests played the role of discussants, offering valuable comments and feedbacks on the doctoral students' work. The purpose of these seminars was to engage in operational discussions about the ongoing research, particularly with individuals who may not be familiar with the methods or topics being studied.

The main characteristic and challenge of the DASP Lunch Seminars was to identify methodological or thematic similarities among research projects from different cycles, belonging to different research groups, and dealing with different methodologies and topics. The doctoral students, therefore, had the opportunity to exchange views with their peers to find commonalities to build a shared discourse. While this aspect presented difficulties, it also offered an opportunity for comparison, enrichment, and clarity regarding the research's cornerstones, the specificities of each work, and the cross-cutting issues. Although attendance was not mandatory, all the doctoral students participated in the seminars with great enthusiasm.







“PROGETTI & STORIE” PUBLICATION SERIES

Costanza Lucarini

As a PhD program, we recently evaluated the idea to establish our own publishing series. “Progetti & Storie. Ricerche e materiali dal dottorato in architettura” was born to collect studies, research and considerations both on architectural project and architectural history. Its focus, indeed, is on methods and practices concerning the whole architectural process: how to conceive it, how to draw it, how to build it, how to deal with it. These topics are in fact at the heart of the contemporary scientific debate in the architectural field, thus representing an ideal background and the epistemological foundation of this publishing series. Among the editorial products, the series is aimed at gathering: collective volumes on specific topics that have emerged during PhD initiatives; original research developed in the PhD program; re-editions and translations of works that have once again been brought to light by that research.

The series first volume, published in 2022, is the final result of a PhD course concerning architectural design pedagogy. It takes its cue from seven laboratories that took place in Politecnico di Torino during 2020-21 in order to discuss how to teach architectural design theory and, ultimately, what can be considered architectural design theory. It is devised in four sections: the first hosts essays written by academics from Italian and foreign universities; the second focuses on the aforementioned laboratories; the third consists in a visual atlas that collects a sample of exercises produced by students during the seven laboratories; and the fourth combines some further considerations suggested by the book’s editors.

WORKSHOPS AND CONFERENCES

Martina Crapolicchio, Rossella Gugliotta

Participation in workshops and conferences is a constitutive experience for PhD candidates. The workshops allow participants to engage in practical sessions to acquire specific skills and discuss their work. Conferences involve a wide range of participants worldwide. They serve as platforms where PhD students can present parts or complete research results and show their contribution to the academic architectural community in specific scientific sectors. With those initiatives, the DASP community actively shares the diversity of research at national and international levels. Among others, some workshops are to be mentioned, such as TACK Communities of Tacit Knowledge, which organised a summer school that explores the significance of tacit knowledge in architectural education, and Cres Moise Architectural Seminar, a collaborative space for engaging discussions and exchanging insights within the academic community. Some noteworthy conferences involving doctoral students’ active participation concern both architectural and urban studies aimed at history and design, such as AISU (Italian Urban History Association), SAH (Society of Architectural Historians) and EAHN (European architecture history network); but also ISUF (International Seminar of Urban Form), EAAE (European Association of Architectural Education) and La ricerca che Cambia, a national conference of Italian PhDs in architecture, planning and design. These are just a few initiatives that offer the opportunity to share the research, interact with colleagues worldwide and stay up-to-date on methodologies, experiments and explorations in the architectural disciplines.

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“The PhD Program in Architecture. History and Project (DASP) was born out of two long lasting traditions of doctoral level studies and research in the area of Architecture at Politecnico di Torino. The PhD Program programmatically investigates the complexity of architectural cultures starting from the multi-disciplinary and trans-disciplinary interweaving between the history and the design of buildings, cities, territories.

On the one hand, in fact, urban and architectural composition and technology of architecture favor an interpretation of the project as a tool for measuring the stratifications of theoretical elaborations, technical innovations and modifications of built environment.
On the other hand, the historical disciplines for architecture and the city, far from a local vision and thanks to the cooperation with other histories (the economic, social, anthropological and aesthetic ones), trace paths that can be traveled by architects and urban planners, but also by other humanities scholars, such as philosophers and linguists”

Marco Trisciuoglio

(from the document Proposal for the accreditation of doctorates - a.y. 2023/2024, presented to the Italian Ministry of University and Research on June 5th, 2023)

DASP. PhD in Architecture. History and Project

Politecnico di Torino

Politecnico di Torino
Department of Architecture and Design