

The evidence of the city. Making the case for a data-oriented urban morphology.

*Original*

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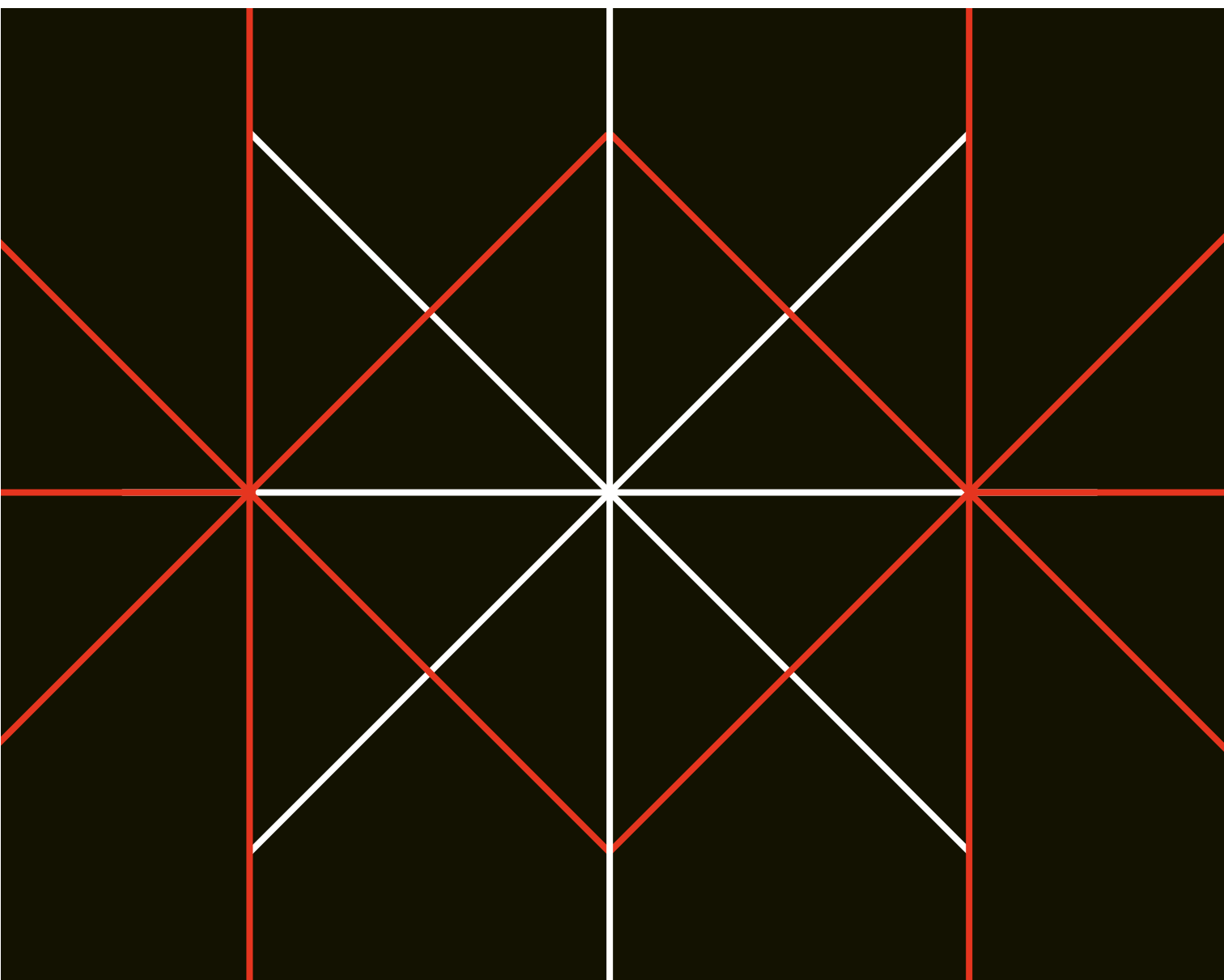
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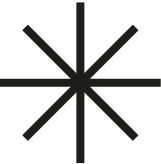
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(Article begins on next page)

# SPACE

**DASP Yearbook 2023**





SPACE

# SPACE

DASP Yearbook 2023

PhD in Architecture.  
History and Project

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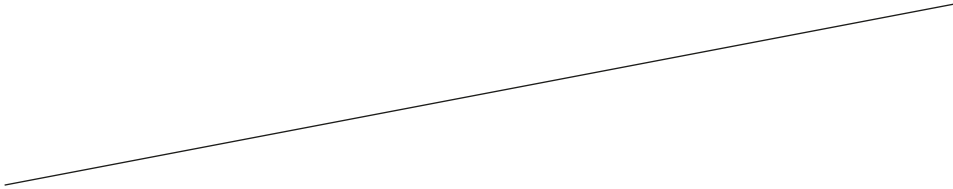
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# INTRO- DUCTION

# TORINO 10125. OUT OF THE DASP-HOME.\*

## AN INTRODUCTION

Marco Trisciuglio

*"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 programatically 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.

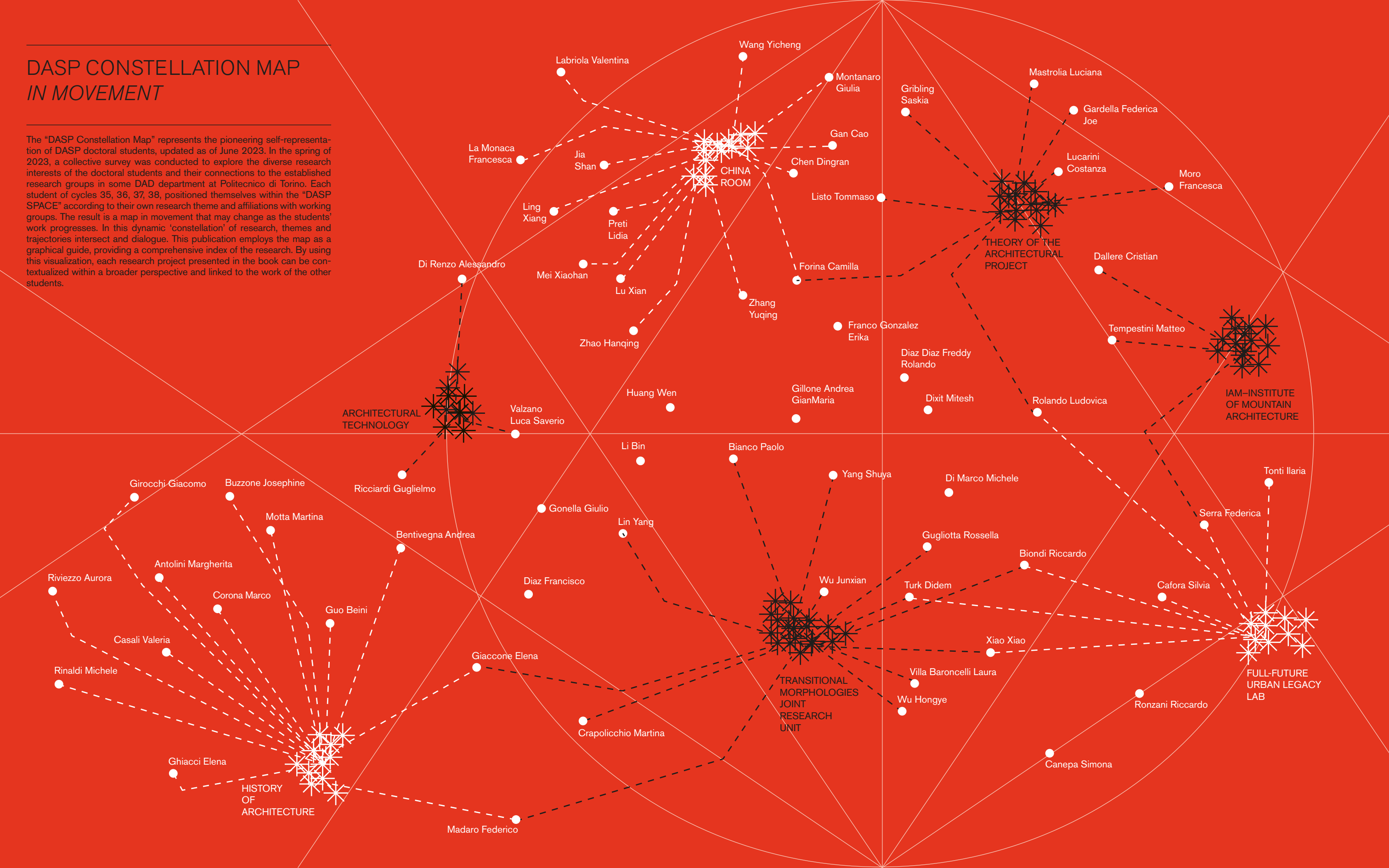




# DASP CONSTELLATION MAP

## IN MOVEMENT

The “DASP Constellation 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 the established research groups in some DAD department 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. In this dynamic 'constellation' of research, themes and trajectories intersect and dialogue. This publication employs the map as a graphical guide, providing a comprehensive index of the research. 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

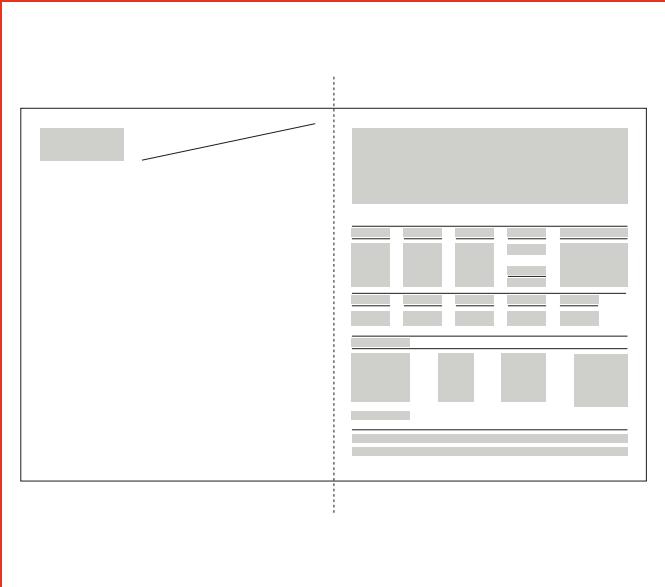
The aim of this publication is to explain the complexity of the DASP's structure and its relationships both inside and outside the organization. The content is presented in a simple and easy-to-read format, resembling a magazine which covers several PhD research topics with varying levels of detail,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

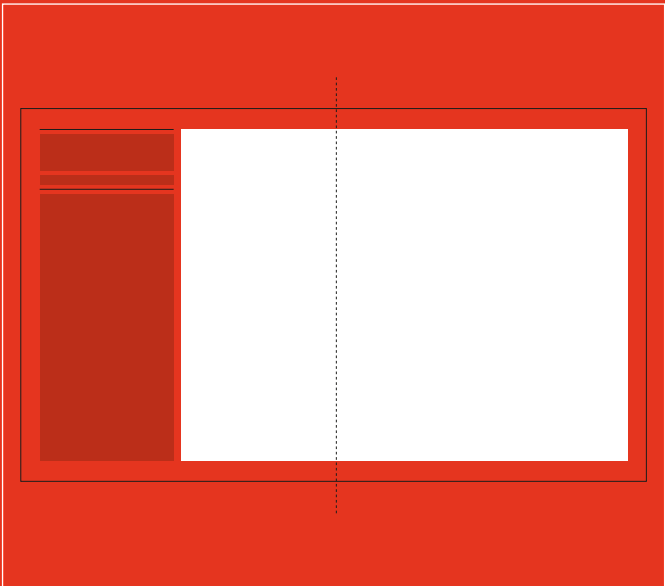
The typography used in this project features the *Akzidenz Grotesk* typeface. It's a simple and clean *sans-serif* font that became popular in the 1950s as part of the *Swiss Modernism* style and it was widely used by public transportation companies, including the New York Subways, because of its neutrality 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

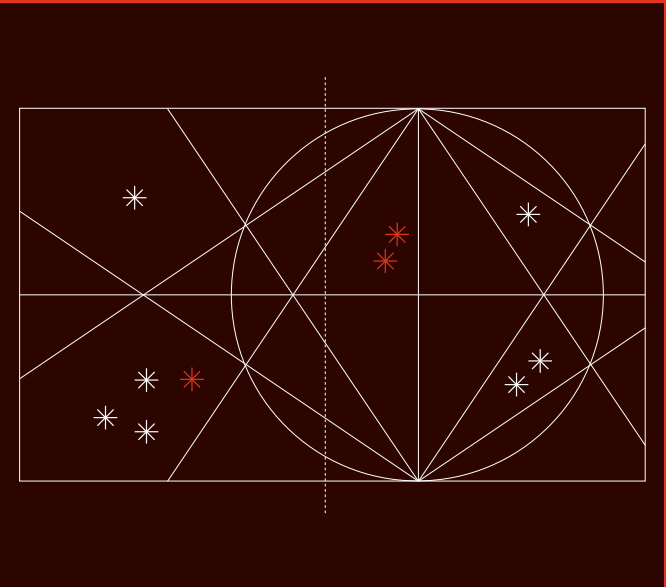
Every chapter is guided through its specific colour and contains various topics, specific materials with different formats of text and/or images.



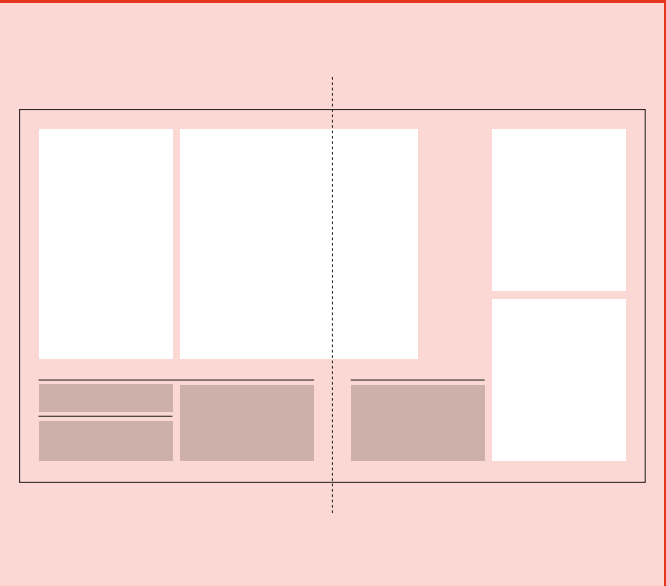
White - Title page of the chapters and colophon



Red - Introduction and info on the DASP and the yearbook



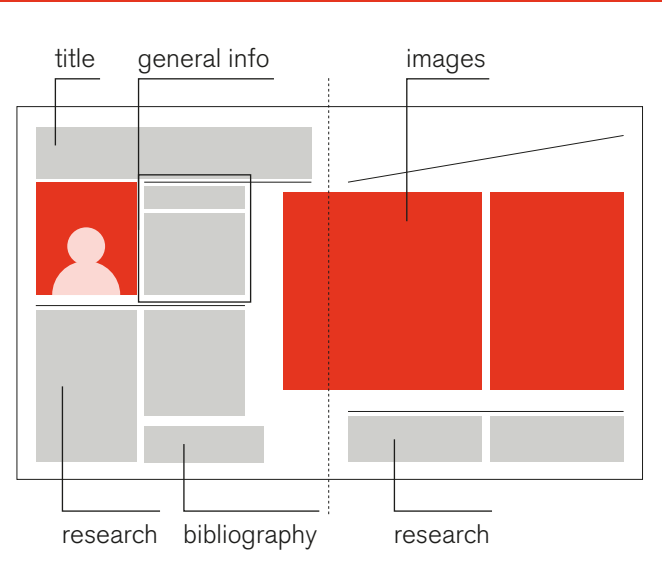
Black - Graphical index of the cycles



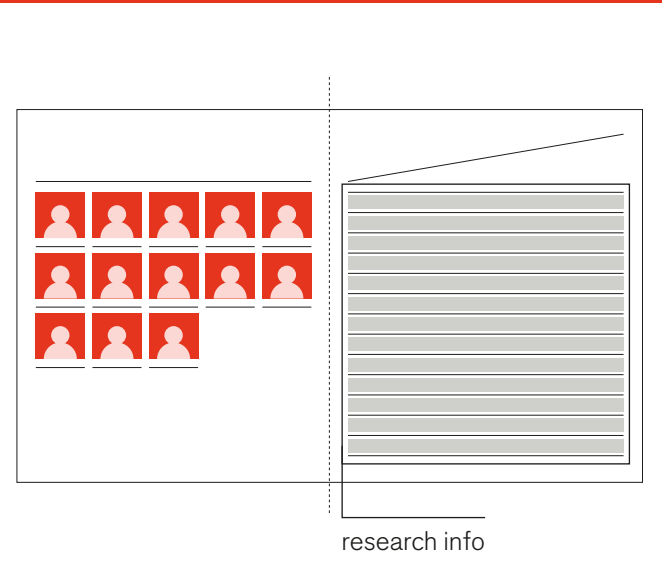
Pink - DASP activities such as workshop and congresses

## A SIMPLE STRUCTURE TO SHOW COMPLEX RESEARCH

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



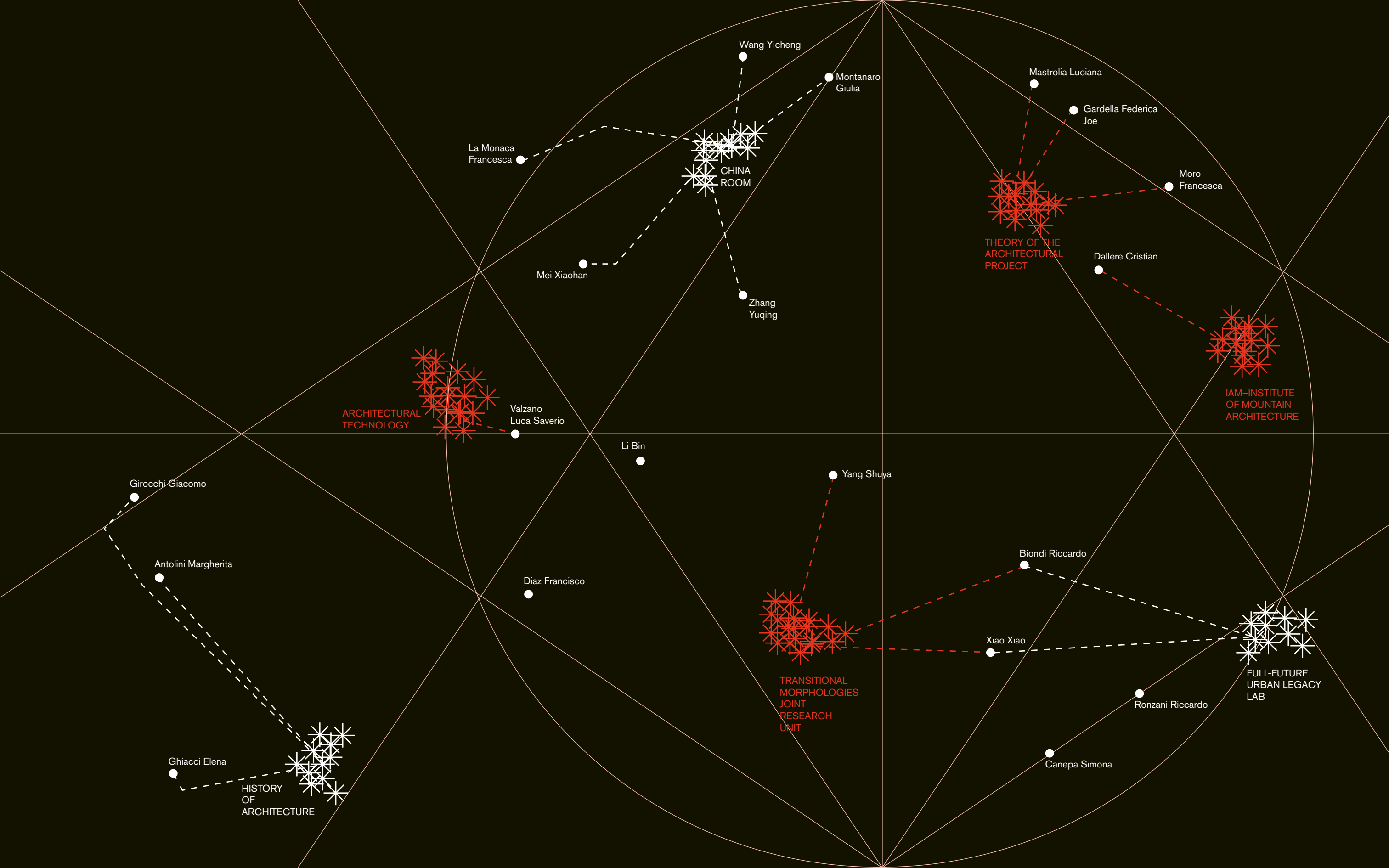
Page structure for 38-37-36 cycle PhD students



Page structure for 35 cycle PhD students

002

XXXVII  
CYCLE



Wang Yicheng

Montanaro  
Giulia

Mastrolia Luciana

Gardella Federica  
Joe

Moro  
Francesca

Dallere Cristian

La Monaca  
Francesca

CHINA  
ROOM

Mei Xiaohan

Zhang  
Yuqing

ARCHITECTURAL  
TECHNOLOGY

Valzano  
Luca Saverio

Li Bin

Yang Shuya

Girocchi Giacomo

Antolini Margherita

Diaz Francisco

Biondi Riccardo

Xiao Xiao

Ronzani Riccardo

Canepa Simona

Ghiacci Elena

HISTORY  
OF  
ARCHITECTURE

TRANSITIONAL  
MORPHOLOGIES  
JOINT  
RESEARCH  
UNIT

FULL-FUTURE  
URBAN LEGACY  
LAB

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



## Riccardo Biondi

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

Year  
**2021 - 2024**

Supervisors  
**Marco Triscioglio**

Research Group  
**Transitional Morphology Joint Research Unit,  
FULL - Future Urban Legacy Lab**

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

Cushing, D. F., & Miller, E. (2020). *Creating great places: evidence-based urban design for health and wellbeing*. London: Routledge.  
Hamilton, D. K., & Watkins, D. H. (2009). *Evidence-based design for multiple building types*. Hoboken: John Wiley & Sons.  
Hillier, B. (2004). *Space is the machine: a configurational theory of architecture*. London: Space Syntax.  
Sackett, D. L., Rosenberg, W. M. C., Gray, J. A. M., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: what it is and what it isn't. *BMJ (British Medical Journal)*, 312(7023), pp. 71-72.  
United Nations. (2017). *The New urban Agenda*.

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?

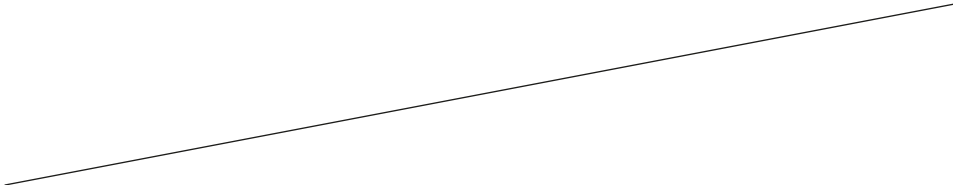
The research answers arranging around the groups of quantitative data, qualitative data, and spatial information, all the various contributions to the study of city form: from the well-established approaches in urban morphology - the geographical approach, the process-typological approach, space syntax 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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\* until 38th cycle  
\*\* from 39th cycle

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Marco Trisciuglio

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(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)