

ENERGY LANDSCAPES. The design of landscape architecture by the shape of energy infrastructure

Original

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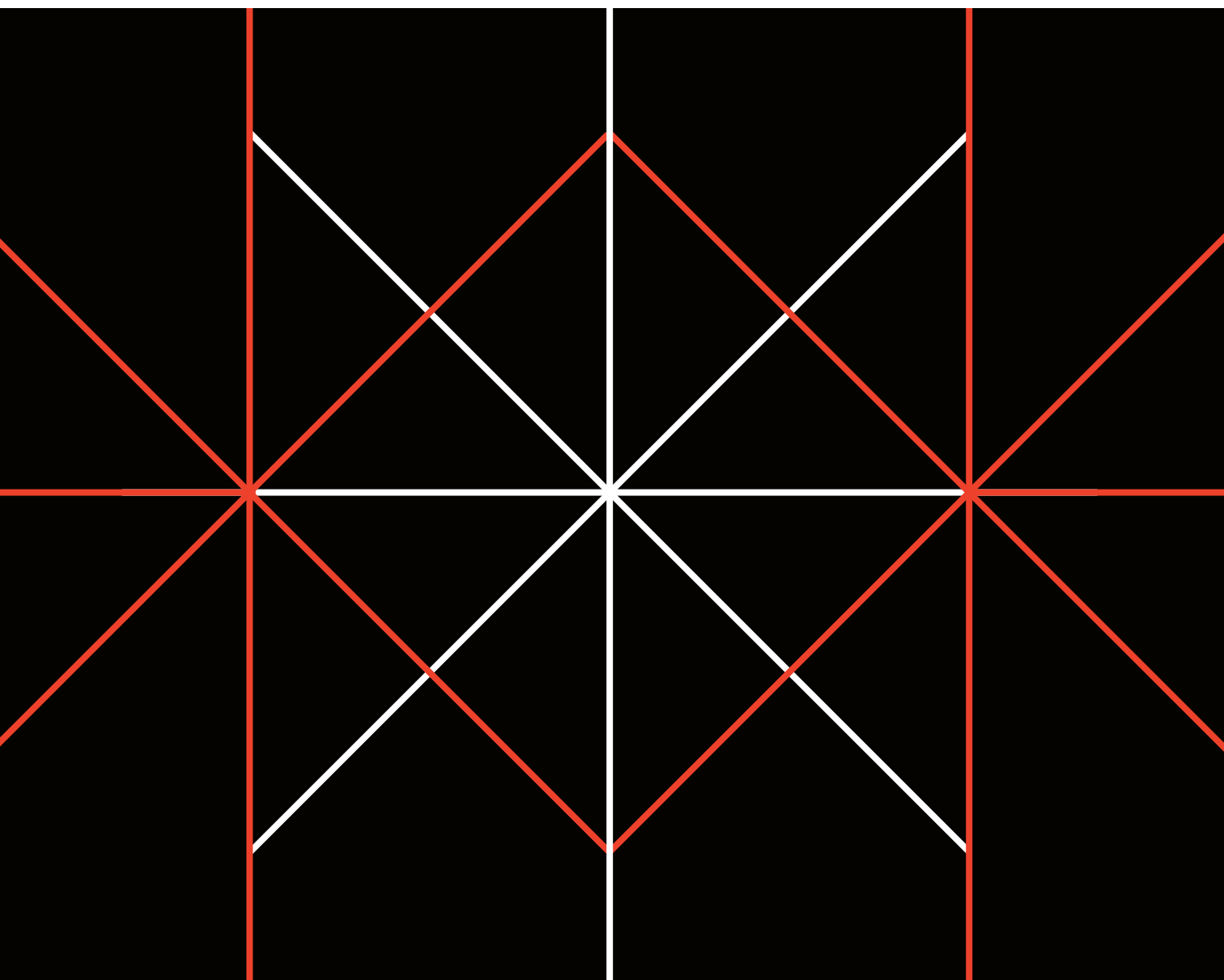
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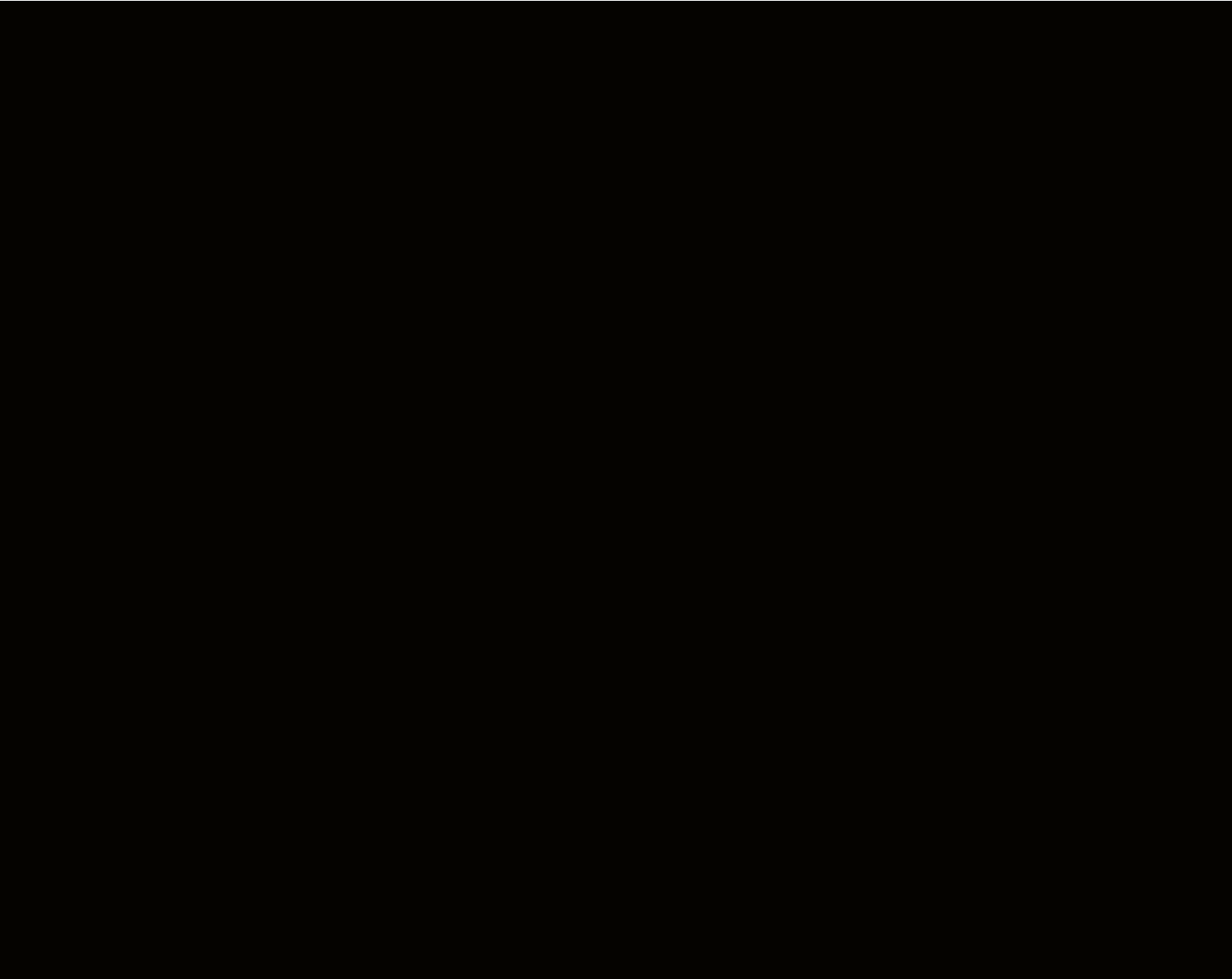
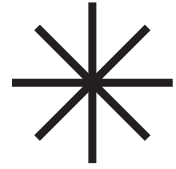
SPACE

DASP Yearbook 2023



SPACE

DASP Yearbook 2023



SPACE

SPACE

DASP Yearbook 2023

PhD in Architecture.
History and Project

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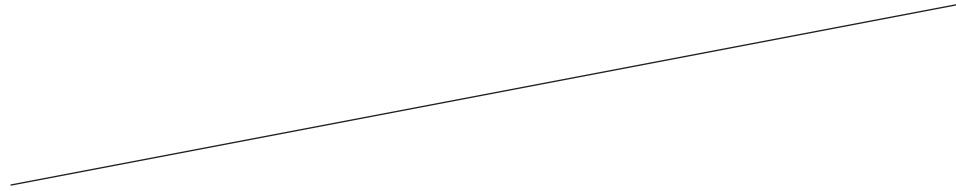
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INTRO- DUCTION

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-specializzazione/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.



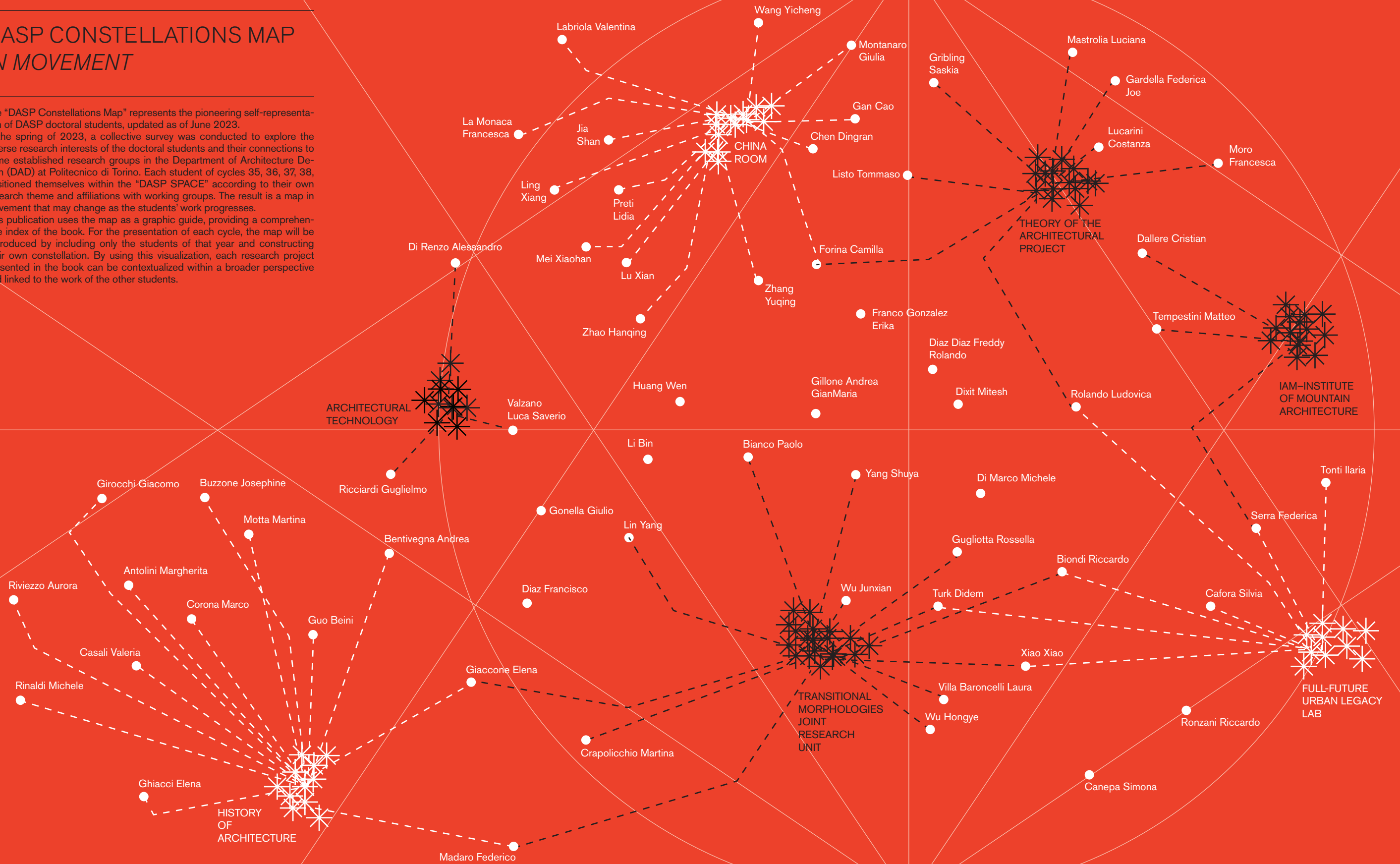
DASP CONSTELLATIONS MAP

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

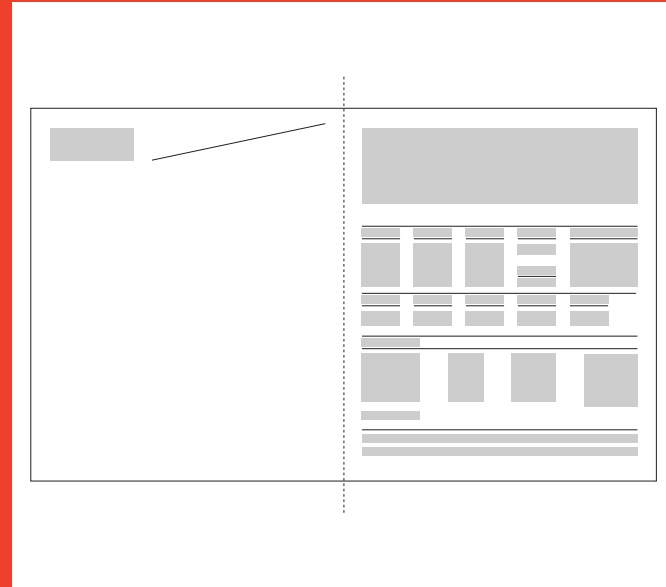
The aim of this publication is to explain the complexity of the DASP's structure and its relationships both inside and outside the organization. The content is presented in a simple and easy-to-read format, resembling a magazine which covers several PhD research topics with varying levels of detail,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

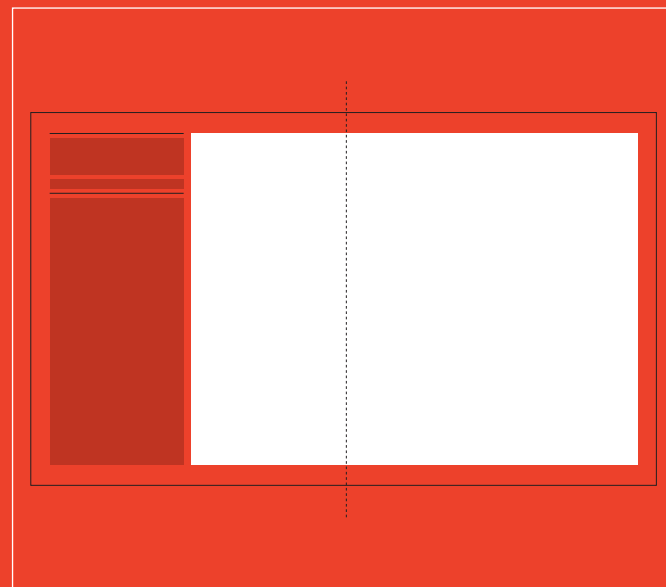
The typography used in this project features the *Akzidenz Grotesk* typeface. It's a simple and clean *sans-serif* font that became popular in the 1950s as part of the *Swiss Modernism* style and it was widely used by public transportation companies, including the New York Subways, because of its neutrality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

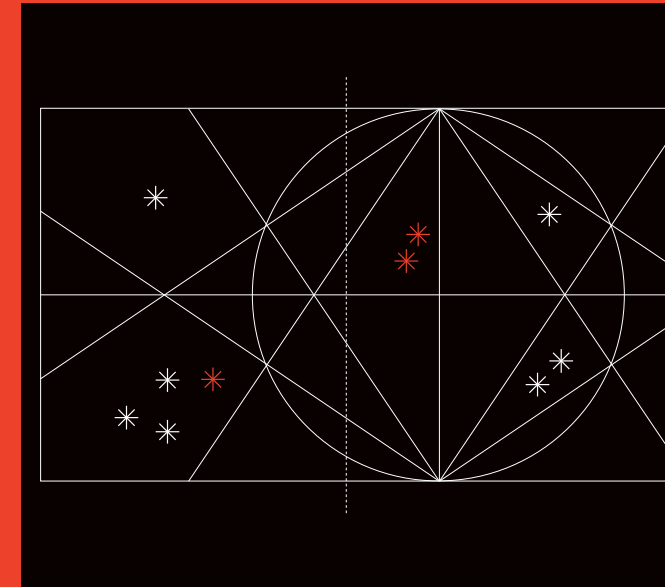
Every chapter is guided through its specific colour and contains various topics, specific materials with different formats of text and/or images.



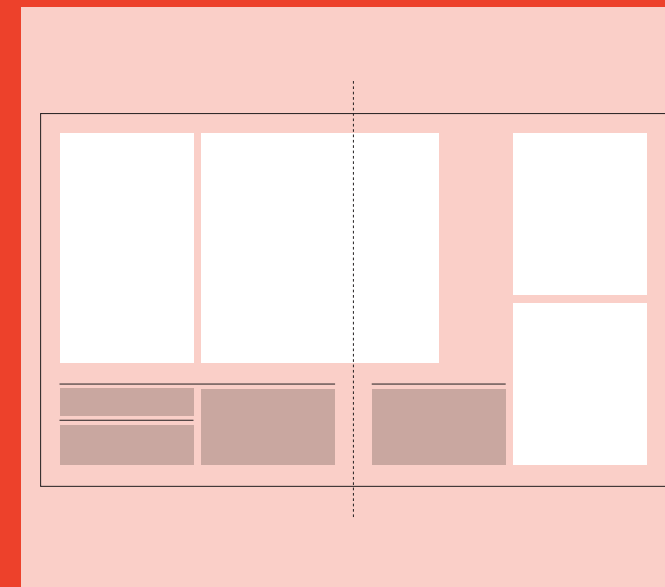
White - Title page of the chapters and colophon



Red - Introduction and info on the DASP and the yearbook



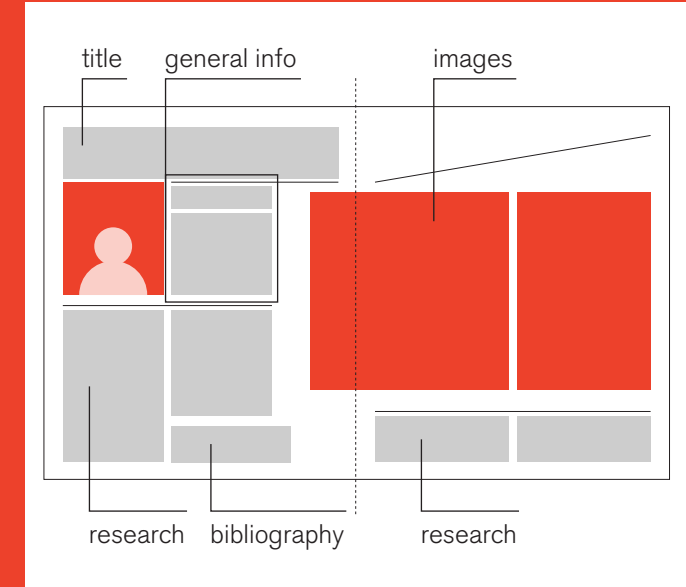
Black - Graphical index of the cycles



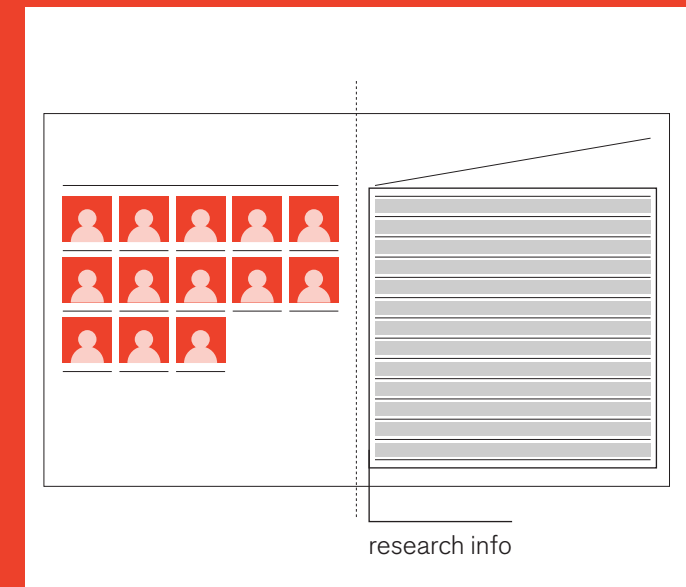
Pink - DASP activities such as workshop and congresses

A SIMPLE STRUCTURE TO SHOW COMPLEX RESEARCH

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

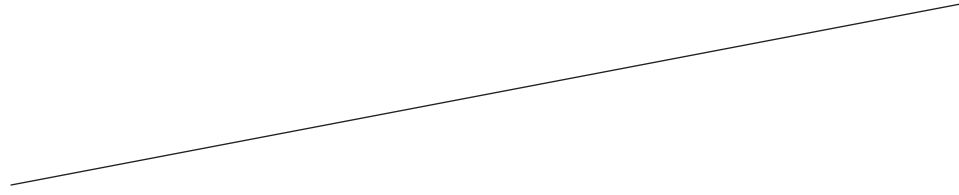


Page structure for 38-37-36 cycle PhD students



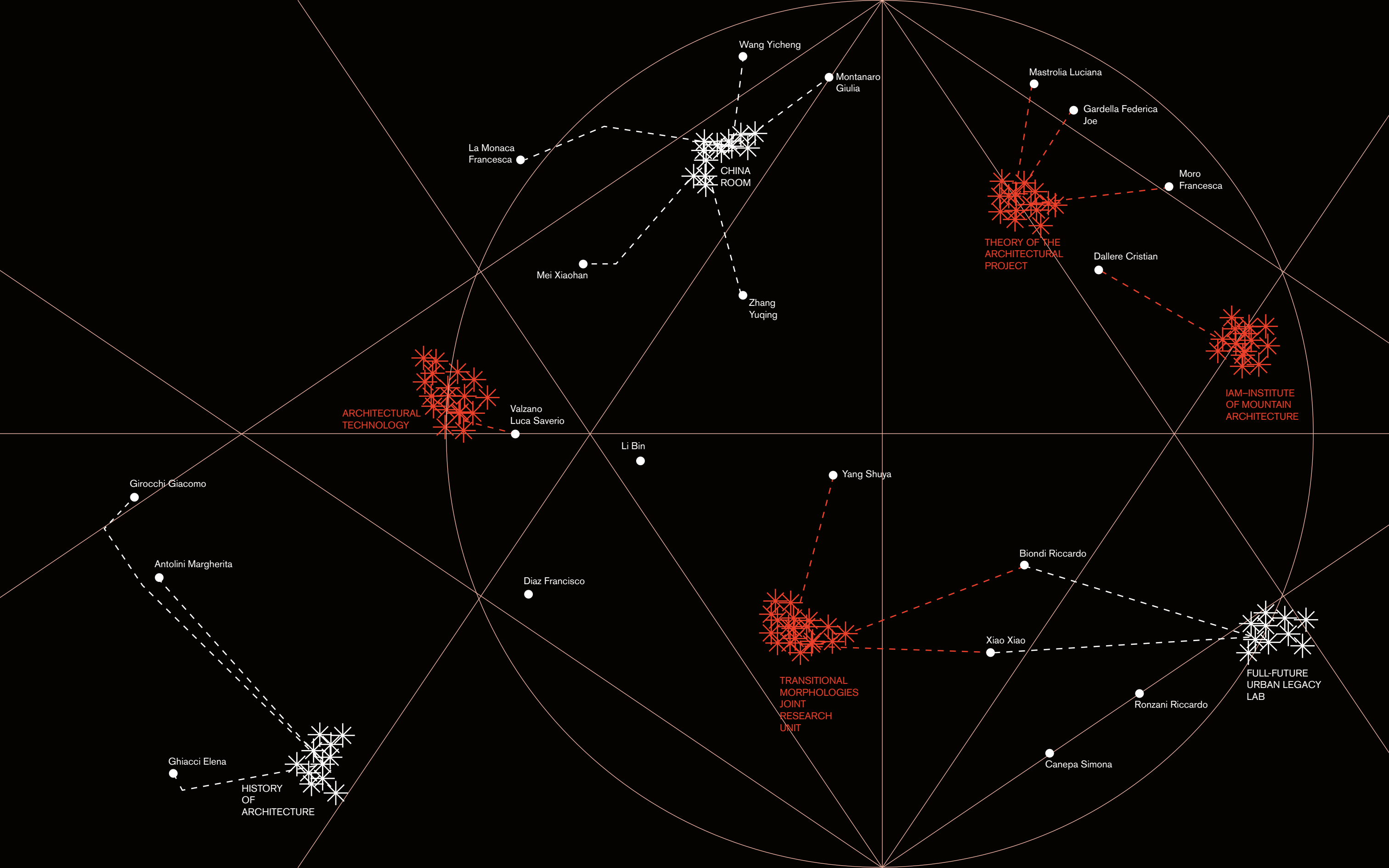
Page structure for 35 cycle PhD students

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XXXVII

CYCLE



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

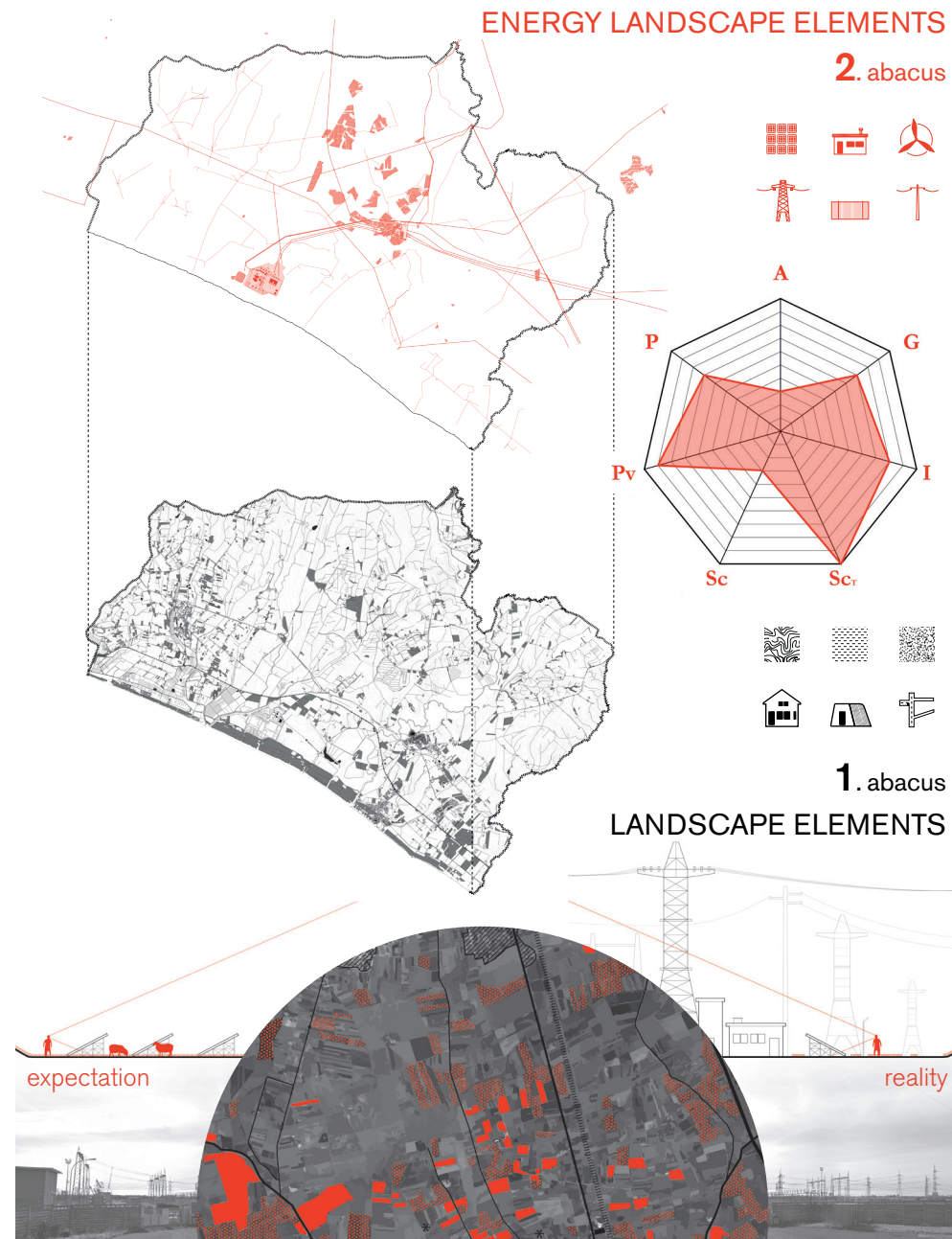
a research-by-design method. The contribution by Rob Roggema (2016) is particularly interesting because it offers a general and graphical scheme of the research methodology. It combines a more analytical part (useful, for example, for the state of the art and the case studies analysis) to a design phase 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

- Allemand, S. (Ed.), et al. (2021). *Paysages et Énergies. Une mise en perspective historique*. Paris: Hermann.
- Apostol, D., et al. (2017). *The Renewable Energy Landscape. Preserving Scenic Values in our Sustainable Future*. Oxon: Routledge.
- Corner, J. (1999). *Recovering Landscape. Essays in Contemporary Landscape Architecture*. New York: Princeton Arch. Press.
- Folléa, B. (2019). *L'archipel des métamorphoses : La Transition par le paysage*. Marseille: Parenthèses.
- Picchi, P. (2022). *The Power of Landscape – Novel Narratives to Engage with the Energy Transition*. Rotterdam: nai010 publisher.
- Roggema, R. (2016, September 12th). *Research by Design: Proposition for a Methodological Approach*. *Urban Sciences*, 1(1), 2–19.
- Sijmons, D. (2014). *Landscape and Energy. Designing transition*. Rotterdam: nai010 publisher.
- Smil, V. (1994). *Energy in World History*. Boulder (Colorado): Westview Press.



Schematization of main research reasons outlined by an example of case study analysis
© Riccardo Ronzani

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 aesthetic 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.

006

COLOPHON

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