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Porosity and Open Forms. Interpreting the Form of Openness in Urban Morphological Transition and Complexity

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# DASP YEARBOOK 2025

# ENVIRONMENTS

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Politecnico di Torino
Dipartimento di Architettura e Design

# DASP YEARBOOK 2025

# ENVIRONMENTS

PhD in Architecture.
History and Project

DAD | Department of Architecture and Design
Politecnico di Torino

# TABLE OF CONTENTS


38th CYCLE 012

39th CYCLE 040

40th CYCLE 078

006 FOREWORD

008 **PREFACE**
Filippo De Pieri

010 **INTRODUCTION** DASP PhD Program: A Critical Overview
Valentina Burgassi, Valerio Della Scala, Elena Guidetti, Sofia Nannini

110 AFTERWORD

112 **CHALLENGING KNOWLEDGE AS A COMMITMENT TO THE FUTURE**
Ana Tostões

114 DASP IN 2025

117 **COURSES**

119 **ACTIVITIES**

121 **PUBLICATIONS**

123 **PEOPLE**

006

# FOREWORD

# Preface

Filippo De Pieri

The first volume of the Yearbook of the Doctoral program "Architecture. History and Project" (or DASP, as the Italian acronym goes) was published in 2023. It bore the title "Space" and offered a near-geographical representation of the distribution of research within the program, understood as a sort of archipelago with its separate islands and occasional interconnections. By placing the word "Environments" in the title page of this new edition of the Yearbook, we would like to emphasize a different aspect of the program: its ongoing evolution, its responsiveness to changing contexts, and the emergence of a growing set of reciprocal interrelations between the research works documented in the following pages.

DASP originated in the early 2010s from the fusion between two previously existing doctoral programs – one in architectural design, the other in architectural history. The dialogue between *storia* and *progetto* – the Italian words convey a number of nuances that cannot be easily reflected by the English translation – had been, well before that, one of the central factors behind the creation of what has today become the Department of Architecture and Design. DASP was therefore deeply rooted in a research tradition well exemplified by the intellectual trajectory of key figures such as Roberto Gabetti and Carlo Olmo. Over time, the original idea behind the program – investigating the mutual relationships between the stratified temporalities and the manifold rationalities that contribute to shaping the built environment – has acquired additional nuances and implications against the backdrop of the changes affecting global architectural culture. The dual polarity of history and project appears today less as an opposition between two clearly defined disciplinary sectors than as a starting point to explore the growing complexity of architectural knowledge and its hybridization with methodological, epistemological and ethical suggestions coming from a plurality of fields of inquiry.

In this respect, the title "Environments" is more than just a metaphor. The presence of environmental humanities within doctoral studies in architecture has been one of the most striking aspects of change in recent international research. It can be detected in some of the topics of the theses of the latest (40th) cycle of the DASP program, in the evolution of its teaching activities, and in a subtler, and possibly deeper way in the reconfiguration of the tools of inquiry shared by many investigations. Although this is not the only direction towards which the doctoral program is evolving, it offers a good example of how the key questions behind it are being reshaped on a daily basis by the emergence of broader research trends and by the questions posed by society at large.

2024/25 marked the first academic year in which the three doctoral programs existing within the Department of Architecture and Design at Politecnico di Torino collaborated in a few common initiatives and understood their role within the Department as jointly aimed at promoting top-tier research within the context of an architectural institution. The single most important undertaking was the organization of the DAD PhD Day, a yearly event marking the opening moment of the academic year and involving the three doctoral programs, as well as the whole Department, in a discussion about the state, perspective and role of PhD research. DASP consolidated this trend by reshaping its traditional mid-term review moment as a public exhibition, open to the Politecnico community and centered upon the display and informal discussion of ongoing works. Ana Tostões, who closed the DASP Day with a keynote lecture, shares some of the impressions collected during the event in her postface to the present edition of the Yearbook.

The following pages capture DASP at the peak of a phase of expansion. Italy's national post-Covid recovery plan for the years 2021–26, generally known as PNRR (*Piano nazionale di ripresa e resilienza*) and part of European Council's Next Generation EU program, has among other things dedicated a substantial amount of resources to funding doctoral scholarships for the three doctoral cycles (38, 39 and 40) documented here. This has contributed to pushing DASP towards the unprecedented overall size of about fifty candidates being simultaneously enrolled, while also stimulating a differentiation of research topics and experiences.

On a different level, the theses collected here also show the increasingly international dimension of the DASP community. Over the years, DASP has developed a privileged relationship with Chinese universities, well-illustrated by the joint PhD curriculum with Tsinghua University, called "Transnational Architectural Models in a Globalized World", and by the increasing presence of PhD candidates fully funded by China Scholarship Council (CSC) scholarships. 2025 has also seen the consolidation of research collaborations with countries in the Balkan areas, with two theses activated within a tri-lateral agreement with universities in Skopje and Belgrade. Besides these institutionalized exchanges, the individual trajectories of the future PhDs – be they international candidates who pursue a degree in Torino or Italian ones who develop international topics and collaborations – are crucial in the development of a plural and multicultural research setting.

The sharing of research questions and results and the development of a collective conversation has been part

of DASP's approach since the early days of the program. Doctoral education is not intended as an individual experience, to be carried out in an exclusive relationship with one or more supervisors, but rather as a collective exploration aimed at fostering the development of critical awareness and intellectual mobility. This is an increasingly difficult goal to achieve in a global research environment marked by hyper-fragmentation and extreme competition. To this end, the program offers a varied catalogue of courses and seminars – some of them aimed at providing essential methodological tools, others at involving candidates in ongoing research projects – and contributes to the organization of specific workshops in partnership with various international institutions.

Starting in 2025, DASP has added to the Academic Board a group of 'tutors', intended as early career researchers that operate as a scientific and organizational support to both the professors and the candidates within the program. The four tutors have been instrumental, among other things, in organizing the DASP Day, in collecting the material for the Yearbook and in giving shape to the new version of the DASP website. Their introduction to the present publication outlines some of the challenges that the PhD program will likely have to face in the near future: how to remain explorative, and responsive to changing trends in architectural and historical inquiry, while building a cohesive scholarly community and firmly placing an emphasis upon a few shared and clearly recognizable research priorities.

# Introduction
# DASP PhD Program: A Critical Overview

Valentina Burgassi, Valerio Della Scala, Elena Guidetti, Sofia Nannini

Across the research questions raised by the 46 ongoing theses of the DASP PhD program, diametrically opposed attitudes seem to emerge. On the one hand, certain theses build upon a critical approach, more oriented towards theoretical exploration and characterized by an intrinsic pessimism regarding the state of the built environment. On the other hand, some theses instead show a quasi-positivist attitude, often relying on urban and architectural research as tools for problem-solving. This clearly simplistic division is instrumental in introducing a key question for those involved in research programs in our field of study: should doctoral research in architecture offer solutions or provide critical inquiries? Or both?

There is no definitive answer, but keeping this question in mind could be particularly relevant for our school, which has historically oscillated between a technical, product-driven approach, influenced in part by the strong presence of engineering departments, and a more theoretical orientation rooted in the humanities. A review of the work produced by the students of the DASP program underscores the importance of approaching research as a continuous source of uncertainty: one that encourages the exploration of uncharted territories. Adopting this stance requires a healthy skepticism towards ready-made answers about what the meaning or value of research in architecture is or should be, and a willingness to challenge those assumptions continuously. It may seem extremely rhetorical, but in a period characterized by a strong verticality of research agendas, it is important to emphasize the need for a horizontal, elastic, and unbiased notion of research.

With that in mind, we would like to offer an overview of doctoral research currently in development in the DASP course, beginning with a few overarching reflections on methods and topics. The sources upon which the DASP research projects are built — which vary in type, form, and origin — make this "overview" particularly compelling. From those who mainly use archives (often scattered, ignored by previous historiography and usually non-monographic) to those who rely on ethnographic surveys — via the collection of quantitative data — a very heterogeneous picture emerges. There is also a number of dissertations moving towards a geographical dimension which, heavily relying on mapping and cartography, suggests territory and space morphology itself as a form of archive, somehow extending the boundaries of architectural knowledge and its historical stratifications.

Regardless of such differences, most ongoing PhD projects try to go beyond the idea of a single and well-defined authorship in architecture production, focusing on collective processes of design activities and thus attempting to analyze its many effects — as well as trying to write histories of the architecture profession — beyond the agency of architects themselves. This is not a casual trend: over the decades, the Department of Architecture and Design of the Politecnico di Torino has built up a long tradition of studies that investigate the complexity of architecture with a strongly critical attitude towards predominant authorial storytelling. Furthermore, whether they are historical or design-oriented, they share a political slant, as they focus on the interplay between political regimes or institutions and the design and production of the built environment.

Another key and recurring element concerns the broadening of disciplinary boundaries. There is a certain degree of porosity among the disciplines already represented in this PhD program (history, design, technology, urban studies), which also highlights a certain influence from other PhD programs active at the Castello del Valentino, particularly evident in those theses which lean towards geography (closer to the research promoted by the doctoral program in the Urban and Regional Development program) and in those which deal with the notion of heritage (doctoral program in Architectural Heritage).

While building a community that seeks to overcome rigid disciplinary boundaries is undoubtedly valuable — especially considering the limitations each field faces in addressing increasingly complex problems — it nonetheless raises an important question: what are the specific research and educational identities of the DASP PhD program? Once again, we know that this is a complex question. Rather than providing answers, it serves to fuel the discussion on the role of a PhD called: "Architecture. History and Project". After all, the specificity of any discipline is constantly being renegotiated, and its solidity is challenged by paradigm shifts affecting ideas and plans that extend far beyond a particular field.

**Critical lenses of inquiry: Keywords and geographies**

A close reading of the doctoral investigations currently underway within the DASP program reveals thematic and methodological diversity, alongside a set of recurring conceptual terms that serve as critical lenses, shaping how each project defines its object of study, constructs its epistemological stance, and negotiates its disciplinary position. Some cross-cutting and dynamic concepts are particularly relevant to evaluate the ongoing PhD research

at DASP: the interplay between local and global (a matter of scale); urban and rural (a matter of place); conservation and transformation (a matter of legacy); ecologies and morphologies (a mattery of analysis). These binomial lenses should be understood as semantic nodes, historically and theoretically charged, whose meanings are anything but self-evident. Their use across different theses reflects an ongoing attempt to reframe foundational concepts within architectural research, turning them into open-ended instruments of inquiry.

This shared vocabulary gains further significance when considered in relation to the wide territorial span of the current doctoral investigations. The geographic scope of the DASP theses is broad: notably, a growing number focuses on Asia and the Global South. At the same time, some research projects deal with theoretical issues abstracted from any single geographic setting. Such heterogeneity reflects a deliberate shift away from narrowly defined spatial frameworks, towards a plural and decentered geography of research. It also resonates with ongoing debates in architectural historiography that advocate for expanding beyond Eurocentric frameworks, emphasizing the need to recognize alternative genealogies, and spatial imaginaries.

**On scale**

Among these conceptual lenses, the notion of scale emerges with particular complexity from the current PhD theses, as it acts as a structuring principle of architectural and urban thought, facilitating between form and territory, between the immediacy of construction and the abstraction of spatial systems. Within the work carried out by DASP students, scale functions as a methodological choice, as a level at which analysis is conducted, and as a critical tool for interviewing the spatial, the political, and the epistemic dimensions of architectural construction.

Several doctoral theses engage with scale explicitly, tracing how architectural knowledge shifts across scalar registers: from construction details to the morphology of entire regions, from the socio-political micropolitics of neighborhoods to large-scale planning logics and territorial imaginaries. This multiscale orientation often mirrors the complexity of the case studies themselves, particularly in projects that explore the intersections between urban and rural dynamics, or those that examine heritage practices operating simultaneously at the local, national, and global level. In research set in contexts as diverse as Chinese megacities, Balkan borderlands, Mediterranean coastlines, or Italian alpine valleys, scale becomes a lens for understanding how architecture participates in spatial regimes of control, identity, and transformation. In transnational projects, it facilitates the analysis of global circulations of capital, expertise, and technologies, while grounding them in local material conditions. In this sense, scale resonates with the work of scholars as Henri Lefebvre, for whom spatial practice is always produced within relational and hierarchical scalar frameworks, and shaped by history, infrastructure, governance, and ideology. Scale also intersects with temporality: many PhD theses explore the scalar implications of historical processes, revealing how architectural forms operate over time, how they sediment or dissolve, how they are reactivated or erased, echoing Fernand Braudel's insight into the layered temporalities of space (l'histoire événementielle, la conjoncture, and la longue durée) allowing architecture to be read both as means of historical transformation and as outcome of enduring spatial reasons.

The purpose of this yearbook is to hold together all the ongoing PhD research projects of our program and thus offer a photography of the state of the DASP research in 2025. By doing so, we invite the readers to map the invisible networks among candidates, their similarities and differences, methodologies, and topics. We hope that this document may be useful to all currently enrolled PhD candidates, as well as to the DASP candidates of the future.

38th

# CYCLE

# Porosity and Open Forms. Interpreting the Form of Openness in Urban Morphological Transition and Complexity

WU Hongye

| | |
|---|---|
| Cycle | 38th |
| Supervisors | Michela Barosio, Michela Rosso |
| Research Group | Transitional Morphologies |

Captions

Figure 1 - Analogy betwwen the concept of porosity in material science and in urban morphology, by the author, 2024.

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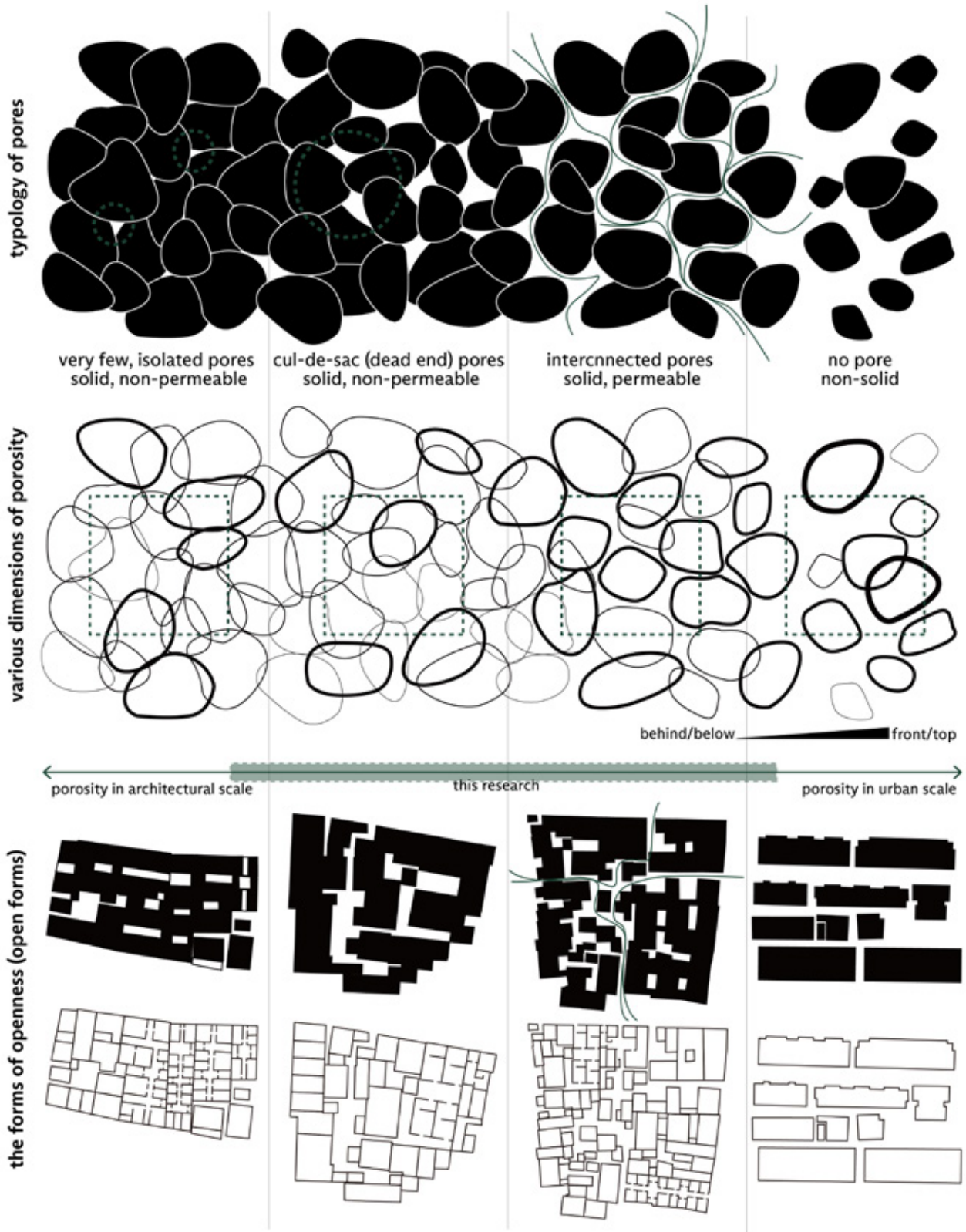
## What are the significant variables in the porosity formula that contribute to a deeper understanding of urban porosity–beyond just the open space ratio (OSR)–and shape a more inclusive and adaptable city?

Urban scholars have been exploring for a long time the relationship between urban form and human experience (everyday life), from the advocacy for organic and spontaneous city growth by Jane Jacobs to the concept of legibility of the city and mental mapping by Kevin Lynch, to the argument of the "right to the city" by Henri Lefebvre, and to the "life between buildings" and the human scale by Jan Gehl, whose ideas continue to shape our understanding about how we make cities and how we live in the cities. However, for decades, zoning and high-density development, central to rapid (re)development of many urban areas, are often seen as necessary tools for accommodating increasing populations and economic activities. Traditional urban planning approaches that prioritize control and fixed functionality stand in contrast to design that embrace unpredictability and change (Sennett, 2018), challenging the very visions these scholars advocated. Although the proximity facilitated by high-density living offers significant accessibility to workplaces, services, and diverse activities, it also leads to unintended social interactions and psychological stress. Within the context of extensive urban displacement and rapid redevelopment in Chinese cities, it is argued that dismantling established neighborhoods can negatively affect urban sustainability; consequently, positive social objectives must be carefully considered in the process of urban redevelopment. In today's context, these "solutions" are increasingly questioned through the lens of the sustainable development goals (SDGs). The challenge lies not only in designing sustainable cities but in fostering spaces that are inclusive, adaptable, and capable of responding to the complex dynamics of urban life.

The duality of the city (Sennett, 2018)—as both a physical construct (ville) and social experience (cité)—emphasizes this importance of creating urban environments that embrace complexity and adaptability (Stavrides, 2006). The tension between these two aspects is central to the discourse of open form, where flexibility and openness facilitate the dynamics in the urban environment that can evolve in response to societal needs. Open forms align with this emerging trend in architecture and urbanism, including the concepts of soft city, open city, porous city, and sponge city, all of which emphasize flexibility and ecological resilience through openness. This research stands for an "open" (or "porous") approach to urban design, where ambiguity and experimentation are valued. The concept of urban porosity, often employed as a metaphor (Wolfrum, 2018) in urban studies and design discourse, broadly refers to the degree of openness and permeability in the urban fabric, reflecting how interconnected and accessible spaces within a city. However, works that focus on urban porosity are still scarce and the distinction between porosity and permeability in an urban context hasn't been clarified – both terms tend to be used indiscriminately and often inaccurately. In the meantime, studies that establish the criteria that assure porosity and try to understand how urban porosity evolved are yet unknown. Thus, this work aims to address these gaps. First, it examines the taxonomy of open forms and the concept of porosity—not merely in terms of open space ratio (OSR)—and their role in contributing to the long-term vitality and inclusivity of urban space, as porosity is an important indicator in addition to density, which is the more familiar one to urban planners and designers. Second, it reviews and investigates various perspectives and dimensions of urban porosity and their representations, exploring their relevance to urban form character and the process of urban design. In this study, urban porosity is approached through various interconnected dimensions - spatial, visual, social-functional, environmental and temporal porosity - all of which are linked to urban morphology and integrated into the formulation of urban porosity formula (index). Finally, through case studies, it collates these measures and the forms of openness into a matrix, a toolkit to assist, formalize and assess design claims, design processes and results. The outcome of this research, therefore, is a matrix at multiple dimensions to designing and regenerating urban spaces, with a particular focus on open forms that also fill the gaps in urban design and urban morphology studies. The research method is critical and descriptive-analytic and data collection is conducted with empirical and the literature research methods.

#urban porosity, #urban form, #openness


typology of pores
very few, isolated pores
solid, non-permeable
cul-de-sac (dead end) pores
solid, non-permeable
intercnnected pores
solid, permeable
no pore
non-solid
various dimensions of porosity
behind/below
front/top
porosity in architectural scale
this research
porosity in urban scale
the forms of openness (open forms)