Research by Design at the Crossroads of Architecture and Visual Arts: Exploring the Epistemological Reconfigurations

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Abstract. The paper aims to explore the potential of research by design in architecture and visual arts. The main objective of the paper is to analyze the different models and epistemological positions advanced in the academic milieus as far as doctoral research by design is concerned, to explore the differences and similarities between research by design in the field of architecture and in the field of visual arts. Even though the research by design in the fields of architecture and visual arts is focused on the production of knowledge through visual, associative, and experimental research, the models of research by design in visual arts differ from those prevailing in architectural programs. The paper focuses on a corpus of models of doctoral research by design carried out within different university programs in schools of architecture and visual arts, and various multi-university and supra-disciplinary programs (architecture and visual arts) which share the intention to develop their research projects through creative practice. Two questions to which this paper aims to respond are the following: Under which circumstances and conditions a work in the field of architecture (drawn, graphic, or con-structed) or its formulation (verbal or written) can be recognized as active in the constitution of knowledge? What are the modes of inquiry specific to architectural and artistic practices that make it possible to build knowledge that can be transmitted and shared?

Keywords: research by design · epistemologies of architecture · architectural pedagogies · design thinking · architecturology · visual arts · advancement of knowledge · doctoral research in architecture · art-based research · art-informed research · practice-based research · heuristics

1 Introduction

While the project is placed at the center of teaching in schools of architecture, the recognition of research by design in architecture as an academic and scientific outcome remains a controversial topic. The possibility of considering a design project a research activity at the doctoral level implies conceiving research by design as a process of exploratory, speculative, or even experimental investigation, whose object is the creation of knowledge. Two specificities of the knowledge acquired through the research by

design in architecture are the exploration of the status of architectural drawings, on the one hand, and the reinvention of ways of establishing new relationships between the subject who produces the architectural artifacts and the subject who interprets them, on the other hand [1]. A point of departure for this paper is the recognition that these questions, which lie at the heart of any architectural practice, should be addressed by the doctoral programs of architecture schools.

Even though project-based research in the fields of architecture and visual arts share an orientation towards the production of knowledge through visual, associative, and experimental research, the practice in the visual and plastic arts is on different levels from those prevailing in architecture programs. The main objective of the paper is to question what can be the criteria and conditions for the architectural project to be accepted as a tool of thought and production of knowledge capable of contributing to the history and theory of architecture [2].

2   On the Epistemological Status of Research by Design in Architecture

The particular relationship of architecture to knowledge thanks to its positioning in the intertwining of action and knowledge is a variable that should be taken into consideration in architectural education. A series of questions that this paper aims to clarify are the following: At what point can an architectural work (drawn, graphic, constructed) or its formulation (verbal, written) be recognized as active in the constitution of knowledge? What are the modes of inquiry specific to architectural and artistic practices that make it possible to build knowledge that can be transmitted and shared? What forms can research by design should take to meet the essential criterion of the evaluation of doctoral research, namely a contribution to the advancement of knowledge? [3, 4].

The topicality of these questions is indicated by the proliferation of scientific publications and symposia around doctoral research by design. Three key moments of research through the project can help to better define the purposes related to the reflection on the epistemological status of the project in architecture. The first is the *"Conference on Design Methods"*, which was held at Imperial College in London in London in 1962 [5]. The full title of the aforementioned conference was "The Conference on Systematic and Intuitive Methods in Engineering, Industrial Design, Architecture and Communications". It is generally is considered as the event through which the idea of design as a method of investigation was made possible. The second episode is *Exodus, or the Voluntary Prisoners of Architecture*, which was a collaborative project between Elia Zenghelis, Madelon Vriesendorp, Zoe Zenghelis and Rem Koolhaas, was presented by the latter as his thesis at the Architectural Association in London in 1972 [6, 7] (Fig. 1). The third case considered as a key moment is the "Science: Method Conference" of the Design Research Society, which took place in 1980 and revolved around the desire to overcome simplistic comparisons between science and design by problematizing their epistemological relationships [8].

A key distinction concerning the debates around research by design in architecture, is the distinction of how design is understood in academia and practice. This distinction is analyzed by Ayşe Zeynep Aydemir and Sam Jacoby, who underscore that "in academia

the focus is on conceptualising a problem [, while] in practice the purpose of design tends to be more immediate in finding tangible solutions to concrete design problems" [9, p. 661]. Zeynep Aydemir and Jacoby draw a distinction between process-driven research in architecture and output-driven research in architecture, and they argue that "[p]rocess-driven research tends to have planned and cyclical and output-driven research iterative and emerging research processes" [9, p. 669].

Fig. 1. Rem Koolhaas, Zoe Zenghelis, Elia Zenghelis, Madelon Vriesendorp, Photo-collage for Exodus, or The Voluntary Prisoners of Architecture, 1972. Final project, AA School of Architecture, London, 1972. Medium: Pen, ink photo-collage in color and black and white, on silver backing. Dimensions: 295 × 418 mm. Exodus started as an answer to a competition by *Casabella* in 1972, on the theme of "the city as meaningful environment", for which the Berlin Wall is taken as model. Image courtesy of Drawing Matter. Collection No: 3151.5. Provenance: Zoe Zenghelis.

3   The State of Arts Around Doctoral Research by Design in the US, Australia, UK, Switzerland and Italy

Within the current context of Architecture Schools in Europe, there is an intensification of interest in research by design in architecture, which revolves, mainly, around the following institutional structures (networks, associations, etc.): the European Association for Architectural Education (EAAE), the Architectural Research European Network Association (ARENA), and the European League of Institutes of the Arts (ELIA). A scientific journal, that focuses on the publication of research cases by the project in architecture is *ARENA journal of architectural research.* Of pivotal importance for better grasping the

epistemological debates around the status of research by design in architecture is EAAE Charter for Architectural Research, while for understanding the disciplinary questions related to research by design in the arts is the Vienna Declaration on Artistic Research. The EAAE Charter on Architectural Research is intended as a reference document for the use of universities, architecture schools, research institutions, funding agencies, professional bodies and architectural practices that are undertaking architectural research. It specifies the character and objectives of architectural research, confirms the variety of valid methodologies and supports the development of a vibrant, internationally recognized and well-funded research community. The Vienna Declaration, which was co-authored by the European Association of Conservatoires (AEC), CILECT/GEECT (the International Association of Film and Television Schools), Culture Action Europe (CAE), Cumulus, the European Association for Architectural Education (EAAE), the European League for Institutes of the Arts (ELIA), the European Platform for Artistic Research in Music (EPARM), EQ-ARTS, MusiQuE and the Society for Artistic Research (SAR), is the first outcome of a continuing collaboration between organizations and transnational networks dealing with Artistic Research at a European level and beyond [10]. Another important document for exploring the questions raised in this paper is the RIBA report *How Architects Use Research*, which was published in 2014 [11]. The Design Research Society Conference and the *Instant Journal* that brings together the papers presented at the aforementioned conference are also important catalysts for disseminating practice-based research and for researching how this mode of research can shape the relationship between different social, economic, and political actors [13].

Within the American and Australian contexts, the PhD by design in architecture is becoming more and more widespread [14]. At the same time, on an international scale, practice-oriented doctoral programs are developing in the disciplines of music, visual arts, and plastic arts, thus far exceeding those devoted to architecture [15–17]. Concerning the American context, I could mention the Doctor by Design Program (DDes) of the Graduate School of Design of Harvard University, which has already existed since 1987 and revolves around the reflection of architects on the specificity of their architectural practice [18]. Peter Rowe delivered a lecture during the DDes 30th Anniversary Program in 2017, which shed light on the endeavor of DDes to advance multi-scalar and trans-disciplinary design knowledge while addressing crucial societal issues in our increasingly complex and challenging world.

In the UK, there is the PhD Architectural Design Program of Bartlett School of Architecture in London, which was founded in 1995. Within the British context, two models can be distinguished. A first model that is characterized by the intention to propose new ways of conceiving the spatial experience and aim at the redefinition of the encounter between the architect-designer and the inhabitant-user. This model is at the core of the PhD Architectural Design Program of Bartlett School of Architecture, while the second model mentioned above was adopted by the University of Sheffield. At the center of this program is the emphasis on the creative interdependence of drawing, writing, and building in the development of innovative practices and theories of architecture. Penelope Haralambidou's PhD thesis entitled *The Blossoming of Perspective: An Investigation of Spatial Representation*, which was defended in 2003, lies between architectural design, art practice, art history, and critical theory and used drawing as a critical method [19]

(Fig. 2). Haralambidou's PhD thesis was reworked and published as *Marcel Duchamp and the Architecture of Desire* in 2013 [20]. Yeoryia Manolopoulou's PhD thesis entitled *Drawing on Chance: Indeterminacy, Perception and Design* [21], which was also defended in 2003 at UCL, "investigates how our perceptual and aesthetic habits are altered by chance events of accidents and asks whether architecture might employ them as creative devices, in particular Duchamp's *The Bride Stripped Bare by Her Bachelors, Even*, and the actual production of design work" [22]. Manolopoulou's PhD thesis was reworked and published as *Architectures of Chance* in 2013 [23].

The second model of PhD by Design in Architecture that is encountered in the UK places particular emphasis on the conception of architectural and urban practices as modes of social engagement. This model has been developed at the University of Sheffield by researchers such as Doina Petrescu and Kim Trogal [12]. The PhD by Design Conference devoted to the theme "Idea of 'Self' in Practice-based Research", which was held at the University of Sheffield between 3 and 4 April 2017, intended to engage with narratives of 'self', and to explore how the notion of self as a researcher can be assumed and embodied in research by design [13]. Moreover, the School of Architecture and Landscape Architecture (ESALA) of the University of Edinburgh offers A PhD in Architecture by Design program.

In Switzerland, the École Polytechnique Fédérale de Lausanne (EPFL) currently offers a doctoral degree explicitly based on project-based research. At EPFL, "the 'Research in/by Design' axis addresses the project both as a research topic - in its conceptual, cultural and technical foundations - and as a form of research in its whole" [24]. Between 2017 and 2021, Philip Ursprung from the Swiss Federal Institute of Technology Zurich (ETH Zürich) led a research project entitled "Design Research in Architecture"

Fig. 2. 'Illuminated Scribism', plate 19 from Haralambidou P (2003) The Blossoming of Perspective: An Investigation of Spatial Representation, PhD Thesis, UCL, London. This PhD thesis was reworked into the book *Marcel Duchamp and the Architecture of Desire* published in 2013.

[25]. This project aimed to analyze the practice of architectural research as conducted by the faculty at six selected Departments of Architecture in Scandinavia, Germany and Australia. It placed particular emphasis on how architectural design is taught in the different Departments of Architecture under study. Its main objective was to compare the methods of design research in architecture within these different contexts [26, 27]. The aforementioned project was based on a collaboration between the Department of Architecture of ETH Zurich and the Chair for History of the Modern World of ETH Zurich. In Italy, several doctoral programs are formed with explicit reference to the project. In other words, the doctorate in architectural and urban composition is quite widespread within the Italian context.
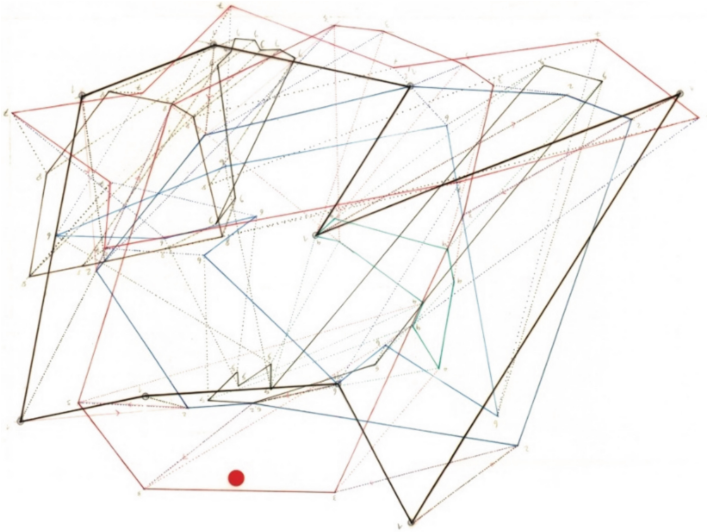
Fig. 3. Drawing from Manolopoulou Y (2003) Drawing on Chance: Indeterminacy, Perception and Design. PhD Thesis, UCL, London. This PhD thesis was reworked into the book *Architectures of Chance*, published in 2013. In this drawing Manolopoulou used 'measurable chance' to mark, multiply and connect 9×9 points in a drawing experiment that tries out Duchamp's concept of 'demultiplied vision'.

4 Around Different Themes, Methods and Orientations of Research by Design in Architecture

In the studies already carried out around research by design in architecture, we can distinguish various themes and orientations [28]. A first model is that of doctoral theses who are interested in the invention of new tools of architectural representation. A second model focuses on exploring the mechanisms by which architecture can function as a form of social engagement [29–31], and participate in the reinvention of the status of inhabitants [32–34]. A third model focuses on the design and development of computational and algorithmic tools [35]. A fourth model concerns doctoral theses whose
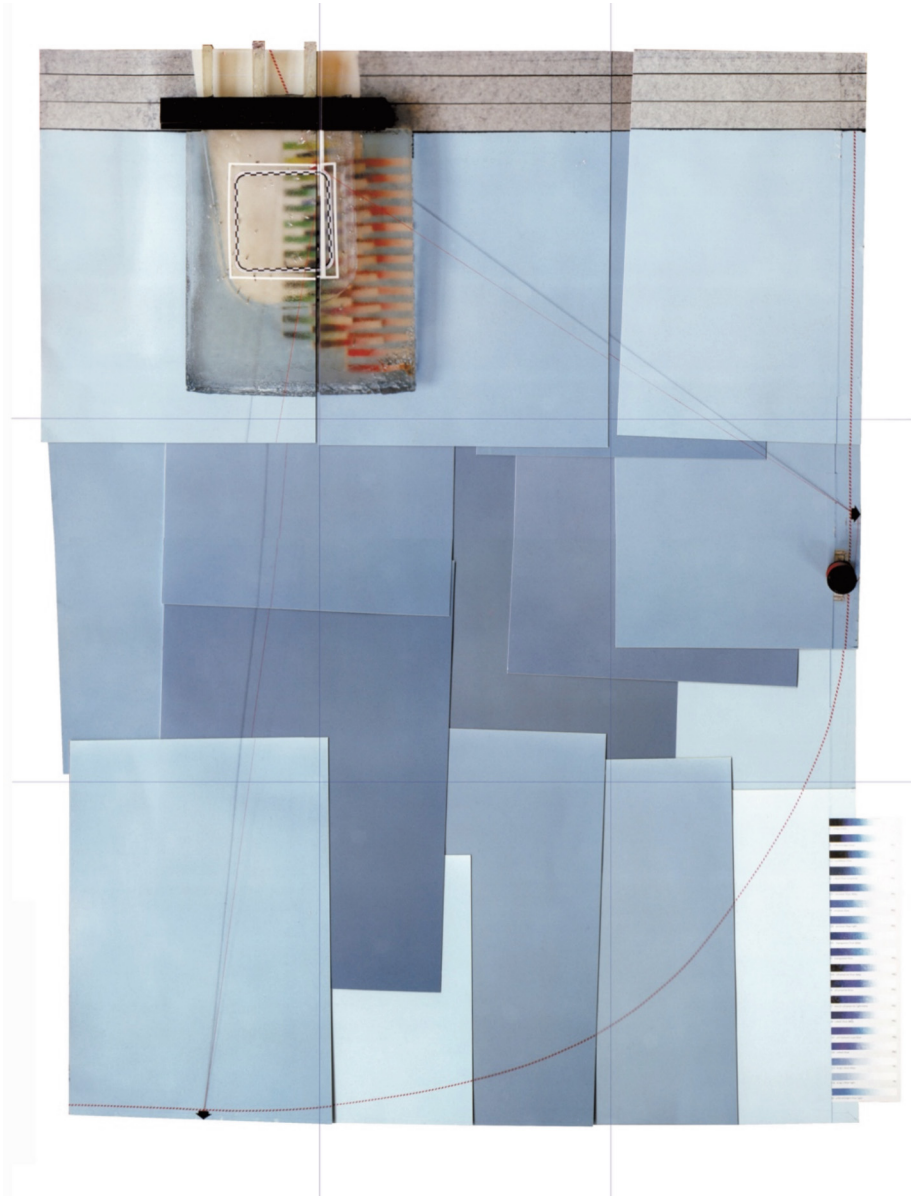
Fig. 4. Drawing from Manolopoulou Y (2003) Drawing on Chance: Indeterminacy, Perception and Design. PhD Thesis, UCL, London. This PhD thesis was reworked into the book *Architectures of Chance*, published in 2013.

reflection develops through the staging of interactive environments and experimentation with various ways of creating such environments [36]. A fifth model aims to establish innovation strategies in the field of ecological and bioclimatic design, and more broadly

sustainable development at the scale of architecture and the city [37]. A final model of doctoral research by design in architecture seeks to approach urbanism and architecture in their interconnections and deals with problems related to the phenomenon of urbanization through the project [38].

An important distinction is that between research on the architectural project and that by the architectural project. To the first type belongs the book *Design Thinking* by Peter Rowe, published in 1987 [39, 40], and the research on "architecturology" by Philippe Boudon, which is exemplified in his book entitled *Introduction à l'architecturologie*, published in 1992 [41, 42], as well as Donald Schön's critique of the notion of "Design Science" in *The Reflective Practitioner: How Professionals Think in Action* published in 1983 [43]. To the second type, we could categorize Jonathan Hill's PhD thesis entitled *Creative Users, Illegal Architects* [32] which was among the first PhD theses by design at the Bartlett School of Architecture. It was defended in 2000 and was published as *Actions of Architecture: Architects and Creative Users* in 2003 [33]. Hill argues that the definition of "disegno" that presides over the practice of the project involves "both drawing… on paper and the development of an idea" [44]. If the principle of the traditional thesis is established on the dissertation and the argument, the doctorate by design raises the question of the modalities according to which the project can function as an argument, since a project is not an argument a priori [45].

The studies already carried out around research by design within the field of visual arts are much broader and more diverse than those around research by design in architecture. An important scientific journal that brings together different approaches to research by design within the field of visual arts and intends to promote a transdisciplinary approach to visual arts is *Visual Arts Research*, founded in 1982. This journal aims to provide "a forum for historical, critical, cultural, psychological, educational and conceptual research in visual arts and aesthetic education" [46]. A key moment for the research by design within the field of visual arts is "The Penn State Seminar in Art Education", held in 1965 [47]. This seminar brought together artists, art historians, critics, arts educators, curriculum specialists, psychologists, and sociologists, and aimed at exploring ways of transforming arts education. It contributed considerably to the intensification of research by design in arts of the interest in interdisciplinarity [48]. A distinction that is at the core of the research by design in visual arts is that between "art-based research", "art-informed research", and "practice-based research" [49]. These terms are related to different methods of conducting research. A core aspect of the research by design is the interaction between thought, performativity, and composition. The exchange between these three parameters is described as the triangle "thinking-performing-composing" [50].

5   Conclusion

Architecture schools should consider different types of possible interactions between doctoral research in art and architecture, and propose new modes of development for transdisciplinary doctoral programs that link fields characterized by different visual and spatial epistemological statuses. Taking as their starting point the different epistemological positions and institutional postures adopted by the different institutional and

geographical contexts, architecture schools should try to shape new methods of addressing questions related to the differences and/or affinities between the doctorate by design in architecture and the doctorate by design in visual arts. Useful for this exploration of new methods of research by design in architecture is the notion of heuristics, which as Amy Kulper and Sheila Crane highly, can lay "the ground for the future possibility of spatial discoveries" [51]. Architecture schools should also try to shed light on the importance of the role of interdisciplinarity for research through the architecture project and stimulate exchanges between the epistemological tools of the visual arts and those of architecture. Both holism and interdisciplinarity lied at the heart of Constantinos A. Doxiadis's approach to the understanding of what he called Ekistcis. Doxiadis drew a distinction between interdisciplinary and a condisciplinary science. In "Ekistics, the Science of Human Settlements", published in *Science* in 1970, Doxiadis highlights: "To achieve the needed knowledge and develop the science of human settlements we must move from an interdisciplinary to a condisciplinary science" [52].

Although doctoral projects by design in architecture are increasing thanks to the intensification of debates around the epistemological issues of research by the architectural project, their legitimization in the context of the current university system is still not sufficiently institutionalized in several cases. In contrast, in the field of visual arts, project-based research is, in its current state, much better legitimized and institutionalized. It is pivotal for architecture schools to shed light on inter- and transdisciplinary combinations between the models of the PhD by design in the field of architecture, and the PhD by design in the field of visual arts. In order to do so it is important to explore in a transversal way in different institutional contexts how the intention to produce research by design at the doctoral level is treated. This would help to better grasp the ongoing epistemological debates, and to shed light on the diversity characterizing the epistemological status of visual and spatial production [53], on the one hand, and to experiment on the disciplinary boundaries of doctoral research in architecture, on the other hand.

An aspect that is of great significance for reflecting upon how doctoral research in architecture can challenge the boundaries of architectural epistemology is the idea that there are project-based research methods that are irreducible to textual language [54]. Another direction that would be fertile for enhancing interdisciplinarity in doctoral research by design is the exploration of multiple types of interaction between doctoral research by design in visual arts and doctoral research by design architecture, and to propose new modes of development for transdisciplinary doctoral programs that link fields characterized by different visual and spatial epistemological statuses. The epistemological status of the architectural project is at once speculative, critical, and pragmatic. To preserve the specificity of architecture without falling into disciplinary solipsism, it is necessary to explore how doctoral research by practice is addressed in other disciplines. A characteristic of the disciplines that support the PhD through the project is the understanding of knowledge production as intrinsically linked to a concrete efficiency, specific to the discipline concerned. Such an approach is more dominant in disciplines like biotechnology or materials science in which knowledge production is not characterized by such a critical dimension. Within the framework of this endeavor to explore new directions of doctoral research by design in architecture, we should bear in mind that the

production of knowledge in architecture is intrinsically linked to an experimentation on critical disciplinary concerns.

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