Dissecting the Archipelago: PhD by Design Concepts in the Fields of Architecture and Urban Design

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PhD programmes within the disciplines of architecture and urban design have in the last decades presented various designerly approaches. In this paper, we suggest viewing the numerous conceptual contributions as an ‘emerging archipelago’ of different attitudes and positions which PhD candidates, as much as PhD programmes, need to navigate, find their standing point within, and contribute to. By presenting five cross-sections of this archipelago, our aim is to offer perspectives to dissect, cut through and explore the nature of the complex conceptual landscape of PhD by Design (PhD).

These cross sections have been drawn up from literature reviews and discussions within the context of the Erasmus+ project ‘Mapping, Reflecting and Developing PhD-by-Design Programmes’. Each of the five sections presents one of the following topical debates: science/design, subjectivity, disciplinarity, literacies and practice/theory. In our analysis of Annelies De Smet’s doctoral thesis, ‘Architecting Bodies by Immersive Gestures’, we (graphically) sketch out how a research project can be positioned within the messy and continuously emerging PbD landscape.

Introducing the metaphor of an emergent archipelago, the paper opts for an open attitude. By dissecting this archipelago, we aim (in an inevitable act of simplification) to unpack perspectives and raise questions regarding the various approaches that coexist, with overlaps, nuances and oppositions present in their own foundations. We encourage readers to explore in a non-dogmatic way – and to position themselves in – the ‘emerging archipelago’ of attitudes and positions and to thus contribute to its ongoing formation.

Keywords: PhD by Design; doctoral studies; design; science; subjectivity; disciplinarity; literacies; architectural practice; architectural theory

Introduction
Designerly ways of conducting research in the context of a PhD have gathered momentum in the disciplines of architecture and urban design during the last ten to fifteen years. Instead of promoting only research ‘on’ architecture from a historical, social or technical angle, the need grew to develop research methods and forms of knowledge creation which are inherently situated in the design discipline itself. In the context of newly emerging PhD programmes, different partially overlapping categories have been proposed, such as practice-based research, artistic research or research by design, each of which searches for ways of relating research and design. The elaboration of these concepts within various PhD programmes, the conceptual work of PhD research projects, as well as the numerous texts on design research and design knowledge, result in a heterogeneous conceptual landscape, which we propose to see as an ‘emergent archipelago’ of different attitudes and positions. While acknowledging that all landscapes are moving to a greater or lesser extent, we chose the metaphor of the archipelago as it forcefully depicts the emergent and fragile character of a landscape that grows out of, or could potentially disappear again into, the sea. An archipelago, furthermore, provides multiple different and yet interconnected positions that can become part of a larger island or remain independent fragments. Finally, archipelagos can be navigated in various ways. They are approachable from all sides and can be explored through various methods: by sea, by air and underwater. Yet there are also currents and winds that make it more likely that travellers end up in one spot rather than
another. While embracing the complexity and dynamism that the metaphor provides, we are also aware of its limitations. For example, we don’t see the archipelago of PhD by Design (hereafter written as PbD) as naturally given, but rather as a construct of those working with it. In that sense, we are talking about an artificial archipelago that may be subject to modifications, new imaginings, and last, but not least, political struggles over its future becoming.

While the fragmentation of the PbD archipelago can be problematised as eclectic, it can equally be embraced for the openness and richness that come with the lack of a dominant discourse. Thomas Kuhn has characterised this tension within a scientific community as ‘pre-paradigmatic’ and described it as a particularly productive and creative period in the process of knowledge creation [1]. In embracing the richness and diversity of the various approaches to PbD projects, we are building upon Murray Fraser’s suggestion that ‘what is now crucial is to map out a terrain of what design research in architecture might encompass’ [2: p. 4]. In this sense, this paper opts for an open attitude, in which different ways of positioning a PbD in architecture and urban design coexist, with overlaps, nuances and oppositions present in their very foundations, recognising the emergence of an archipelago of different attitudes and positions. It is within this shifting landscape that this paper aims to propose a series of topical cross-sections that explore facets of the rich landscape. As in an architectural cross-section, our sections do not claim a complete representation of the archipelago, but rather reconstruct segments of a complex entity that can only be grasped partially and momentarily. In that sense we understand our cross-sections as snapshots which add to already existing mappings and will be complemented by future ones.

As well as Fraser’s mapping of the subject, several other contributions have engaged in if not mapping then collecting, connecting, reviewing and structuring the various contributions that have been made with regard to conceptualising research by design in general and PbD in particular [3–14]. While each of these contributions presents research and PbD from a distinct perspective and addresses different questions, they have in common that they collect, review, structure and connect existing concepts to guide the reader through the landscape of design research. We have taken the overview of this existing literature as the basis for our mapping. While aware that the list is not and can never be complete and acknowledging that one of the most inspiring ways of navigating an archipelago is by ignoring both guides and maps, we aim to contribute to this collection of research by offering our own cross-sectional reading.

Our contribution with this paper consists of substantiating the importance of positioning oneself within the debates on PbD. For this purpose, we propose to dissect the archipelago of PhD through five topical cross-sections and discuss within each of these sections some of the standpoints, debates and tensions that we have identified in the literature. What makes our contribution distinct from others is that it organises the conceptual discourses on research and PbD along the lines of five topics that we consider to be important for the epistemological positioning of a PbD project within the field of architecture and urban design.

We intersect and dissect the topics of science/design, subjectivity, disciplinarity, literacies and practice/theory (Figure 1). These five cross-sections record debates, tensions and discussions are derived from literature reviews and research activities conducted within the Erasmus+ project titled ‘Mapping, Reflecting and Developing PhD by-Design Programmes’. This Erasmus+ project developed an understanding of PbD and if and how this format can be implemented in specific PhD programmes. The project unfolded over two-and-a-half years and included four universities (University of Liechtenstein, KU Leuven, Chalmers Technical University and the Bergen School of Architecture). The project involved in-depth literature research on specific aspects of PbD, focus group meetings, round table debates, partner discussions, interviews, and an analysis of completed PbD theses.

Each of this paper’s sections is accompanied by a drawing in which we relate the concrete and specific case of the PbD project by Annelies De Smet [15] to the five proposed cross-sections. De Smet’s thesis, which was completed in 2018 at the KU Leuven, serves as an example to illustrate the messy complexity, nuance and internal contradictions that manifest in the positioning of a PbD project in the archipelago of research by design. The selection of this thesis was informed by criteria such as the accessibility of the PhD book, familiarity with its context, the richness of the interview we held with the author, its illustrative potential, and the fact that it was recently completed.

We chose drawing as a method to relate our five cross-sections of the emerging archipelago with the concrete case of De Smet’s PbD. The drawings function as visual artefacts that have been created while working on, and in interaction with, the written part of this paper. Building on the importance that is given to visual literacies and the presence of the experiential in PbD (see the later section on ‘Dissecting Literacies’), these drawings provide a complementary layer by giving an aesthetic expression to the complexity and dynamism that is embodied by the archipelago metaphor – facets that appear strongly when relating the
general discussion to this one concrete case. The drawings emerged throughout the process of writing to balance out the inevitably linear and structured nature of the article format. They were thus created to relate the general and the concrete, to visually articulate the different angles from which the archipelago can be approached, and to render the fragmentary snapshot nature of the cross-sections.

**Figure 1:** The five cross-sections aim to provide insights into the emerging archipelago landscape of different attitudes and positions in research by design [Drawing produced by the authors].
These cross-sections that are presented here – as well as the interpretation of the selected thesis – are informed (and coloured) by the authors’ collective experience in developing, guiding and assessing a diversity of PbD within different institutions. Furthermore, the paper has benefited from peer review by our international partners in the Erasmus+ project. Nevertheless, these cross-sections, the scope of which is being discussed in this paper, encompass but a part of the broader debate, aspects of which, of course, we did not gain access to or which we overlooked due to our own sensitivities, interests and competencies. Like cross-sections in architectural drawings, they provide a single snapshot, frozen in time.

**Dissecting Design/Science**

One of the debates that stands out most in the literature on research by design concerns the relationship between design and science. While some contributions underline the difference between these two enterprises and aim to develop the distinct qualities of design research, others have stressed their inherent interwovenness. In the following we will attempt to present and discuss some stances on how the two terms can be related (Figure 2). We hope that the multiple approaches represent a landscape in which a project for a PhD by Design could start to develop its own specific position.

We will start the section with a much-debated position which situates architectural research as part of an objective universal science. This position is anchored in modernism and underlines the rightness, neutrality and power of scientific research and how it can be put to use in architectural design. Echoing the language and principles of scientific management – as put forth by Frederick Taylor – architecture is not ‘a question of anything more than exploiting intelligently scientific discoveries. Instinct, groping, and empiricism are replaced by scientific principles of analysis, organization, and classification’, to use the Le Corbusier phrase cited by Mary McLeod [16: p. 134]. A scientific perspective on architecture finds obvious resonance when it comes to research on physical aspects of architectural design, such as building physics, material studies, or construction techniques. Apart from these questions of engineering and their effects on the design process, scientific perspectives have also been developed regarding the aesthetics of architectural design. While design principles such as the Golden Ratio or the Fibonacci numbers aim to anchor aesthetic decisions directly in mathematics, other methods of objectifying aesthetic decisions use cognitive science to measure the impact of design factors on human experience and well-being. What characterises this position is ‘not just the utilization of scientific knowledge of artifacts, but design in some sense as a scientific activity itself,’ as Nigel Cross points out [17: p. 53]. While this understanding of design is certainly controversial, we would like to stress that the various ways of performing architectural research as science open a space within which PhDs can be positioned, regarding which scientific methods they implement and how these inform the design process (see also the section on ‘Dissecting Disciplinarity’).

In contrast to the first position, which understands design research as part of the universal sciences, Simon Grand has turned the argument around and shows how any form of research (including scientific research) can be understood as a design process [18]. This idea resonates with Ranulph Glanville, who conceived ‘research as a design activity and viewed scientific research as a restricted subdiscipline of design research’ [18: p. 12]. For architectural design research this position implies that design research may include but can go beyond scientific ways of knowing and thus can embrace scientific and non-scientific modes of working. In line with this thinking, Fraser describes design research as:

![Figure 2: Cross-section of the debates about design and science in PbD within the emerging archipelago](Drawing produced by the authors)
the processes and outcomes of inquiries and investigations in which architects use the creation of projects, or broader contributions towards design thinking, as the central constituent in a process which also involves the more generalized research activities of thinking, writing, testing, verifying, debating, disseminating, performing, validating and so on'. [2: pp. 1–2]

Next to the positions of considering design as a part of science and vice versa, a third position in the debate defines design and science as strictly distinct. Within this stance architects ‘are engaged upon a research process that is noticeably different from, yet equal in value to, the kinds of insight and knowledge from natural scientists, social scientists, historians, geographers, humanities scholars and so on’ [2: p. 3]. Nigan Bayazit goes even further by arguing that artistic practice cannot be considered research at all [3: p. 16].

Similarly, Cross argues that science and design are not alike and stresses the necessity of developing what he calls ‘designerly ways of knowing’ [19]. Unlike science, designerly ways of knowing are not concerned with first defining and then solving problems but work rather in an abductive and reflexive manner which assembles design worlds in a less linear way than the sciences do. It seems important, however, to note the difference between what Cross calls ‘Scientific Design’, ‘Design Science’ and ‘Science of Design’. This distinct resonance with the distinction made by Alain Findeli et al. (following a proposition by Christopher Frayling) between ‘research for design’, ‘research through design’ and ‘research about design’ [20: p. 70]. While research for and research about design can clearly be scientific, Cross calls for establishing design as a discipline which pursues its independent research agenda as research through design. In this sense, design is manifested as a research endeavour apart from science (and the arts), with equal value but an entirely distinct framework.

The conceptual positions presented above give the impression that there is a hierarchy and dichotomy between science and design. The reality of PhD positioning, however, shows it to be one complex, muddled archipelago where objective science can be distanced from, and at the same time, where it can be used to emphasise the academic value of the design aspect within the PhD. The thesis by De Smet emphasises the connectedness of matter and thought in (artistic-led) architectural practice as the ground, the ‘humus’, ‘from which questioning of and for architecture spring[s]’ [15: p. 15, 32]. Displaying an approach that starts from practice, the academic research seems to emerge naturally, and the point at which it becomes ‘academic’ appears to remain consciously blurry. A ‘categorizing’ of PhD positions is to her ‘a way of thinking that is very much driven by coherence, by labelling. The risk is to become diagnosed’ [21]. Referring to Rosi Braidotti, De Smet argues there is a risk of passing over certain qualities or inherent values. From her standpoint it is up to the researcher to be aware, make choices and define things, ‘the hard or blurry way and to know why so’ [21: p. 2].

This messy positioning is endorsed by Wolfgang Jonas when he stresses the undefined and (in the best sense of the word) opportunistic way of flirting with scientific knowledge as an inherent and laudable quality of design. He suggests understanding design expertise as:

‘... the art of dealing with scientific and non-scientific knowledge, with fuzzy and outdated knowledge, and with no knowledge at all, in order to achieve [design's] value-laden fits. The “art of muddling through”, or, more positively of “informed intuition”, should not be scorned, but seen as a core element of designing.’ [22: p. 12]

In taking this stance Jonas draws on Donald Schön’s observation that:

‘there are those who choose the swampy lowlands. They deliberately involve themselves in messy but crucially important problems and, when asked to describe their methods of inquiry, they speak of experience, trial and error, intuition, and muddling through.’ [23: p. 4]

Building upon these diverse stances there exists a discussion on the way of thinking and of producing knowledge in relation to the design process. Findeli defines design research as a systematic search for and acquisition of knowledge ‘... considered from a designerly way of thinking, i.e. project oriented perspective’ [24: p. 294]. Jonathan Hill unfolds the history of designing/drawing and describes research as ‘the drawing forth of ideas’ and as ‘fundamental to the practice of the architect since the Italian Renaissance’ [25: p. 329]. By linking Cross, Hill and Findeli, the production of knowledge is positioned as connected to the core of the design process itself, as we discussed above. Hill’s understanding of drawing forth ideas is fundamentally linked to the architectural ways of knowing (see the section on ‘Dissecting Literacies’). In addition to this debate, Findeli argues that in research through design, the design project and its outputs ‘should never
become the central purpose of the research project [but] find their place in the annex of the dissertation’ [26: p. 111] – that which is created and forms the central purpose of research through design is purely (design) ‘knowledge’. Can designerly ways of knowing stand alone? What then is their role or position within the design and science scape?

De Smet doesn’t explicitly frame her approach as the ‘drawing forth of ideas’ or ‘designerly ways of knowing’, for her this approach is perceived as natural, and rigidly implemented scientific methods feel as forced:

‘At the moment that I started writing [to bring together the references of the thesis], there was something like make a state of the art, or frame it, or contextualize what you are doing, and it was every time such a suffering ... I put myself at my drawing table with my pens and my tools, and I draw them, and that’s it. I just draw and then something unexpected happened, you start to cluster, to organize, to relate in the search for where do I see myself, where do I see the project, what kind of lines are in the project?’ [21: p. 3]

De Smet names the result published in her thesis a ‘firmament and landscape of references’ (see ‘Dissecting Subjectivity’) and in this she defines her own position, echoing the conceptual approaches which plead to develop a designerly way of knowing, as well as staying deliberately open to exploring and appropriating other ways of knowing.

**Dissecting Subjectivity**

Carving a cross-section out of the debate concerning the subjectivity of the PhD puts the long-discussed relation between the personal and collective in knowledge-production prominently on the table (Figure 3). In the literature, a tension can be found between the importance of the personal subject in design research and the way it connects to a growing body of knowledge. How is the individuality of the PhD researcher’s trajectory through the archipelago interacting with the rigour that is linked to transferability and knowledge acquisition?

Within the PhD debate, the author’s individual position becomes significant, rather than the positioning of the project as part of a bigger research project. This seems in contrast to the medical, hard or applied sciences, where the PhD majorly depends on substantial interaction with a larger research project. In the world of science, individual researchers contribute by bringing their personal perspectives, values, and insights into a research process that thus goes beyond their individual work. This collective understanding of research and authorship is also reflected in the large number academic papers with several co-authors, reflecting the work of a larger research collective [27]. Although we do not embrace the binary differentiation between artistic and scientific research (as the previous section has made apparent), in this section we would like to draw attention to the positioning of a PhD as an individual and/or collective endeavour.

![Figure 3: Cross-section of the debates about subjectivity in PhD](drawing-produced-by-the-authors)
One can detect the emphasis on the personal in artistic research. The idea that the researcher as an artist should be the singular focus of attention with their own inherent reasoning and legitimacy that ‘does not necessarily have a need to be communicative to an outside community in any other form than through the production of art works’ [28], forms one end of the spectrum. Other positions call for a more integrated understanding of artistic research. For example, the Belgian website ‘A.pass, Advanced Performance and Scenography Study’, in a recent call for proposals, differentiates between the ‘artist’s research’ and ‘artistic research’, where the latter ‘overwrites the isolation and the hermetics of art production in the classical sense … Artistic research concentrates around a “binding” problem that catches the attention of a pluriform group of participants.’ [28].

Exploring this tension, we would like to invite researchers to find their place somewhere between contributing to a collective research endeavour and the validity of different and diverse ways of knowing. How much space does/can/should the personal take up? How can a researcher transcend their personal epistemology?

The transferring of personal experience into shared knowledge is a challenge that goes beyond matters of communication and requires a sound positioning of the role of the personal in a community of peers – something that is not always evident in architectural and urban design research. Fraser points out that:

‘there is no set format for a PhD by Design, or indeed any idea of what an orthodox thesis of this kind ought to look like … Instead, it is necessary to embrace a climate of diversity in which every student undertaking a PhD by Design is able to seek their individual path of discovery.’ [29: p. 116]

In doing so, he is questioning the authority of the overarching framework. Here, the main characteristic of a PbD seems to be its openness, its lack of formal definition, and its constant state of evolution. This PhD model doesn’t provide rules or procedures to follow, but rather enables design researchers to shape their own research journeys and define their specific investigatory methods. What seems essential in this new paradigm is open-mindedness from architectural academics, while also insisting on adequate intellectual rigor in the process [29: p. 130]. The PbD raises questions hence not only in terms of its formal definition but also around the personal trajectories towards specific methods, how these are brought in (see ‘Dissecting Disciplinarity’) and if they display or should display adequate rigour.

Understanding design and design research as an individual process can also be challenged by emphasising the collectivity of design work. From this perspective, design work is often less individual than designers tend to believe. It is performed in offices, teams, living labs, co-creation… [30; 31]. Design creativity, then, cannot be claimed by one person but is indeed induced by a collective intelligence. Such a stance calls for reflection on design research as collective endeavour, while acknowledging the PhD researcher’s individual contribution. In addition, many of the PbD projects we looked at as part of the MRDPbD research (including the doctorate by De Smet) anchor their PbD in the collectivity of the architectural school’s design studio. In these programmes, students figure as fellow learners, are attributed a role in the research process, and are often also the subject of the more generalisable outcomes.

Harah Chon and Nur Hidayah Abu Bakar use the term ‘collective individualism’ to address the balancing act between collective research and individual contribution [32: p. 2]. Their basic argument is that design establishes itself as a social process where individual practices influence collective references. Sets of common themes are defined and referenced where ‘individual conceptions of design practice undergo the cross-pollination of ideas to inform thematic parallels of design research and identify emerging issues’ [32: p. 9]. We would like to link this approach to the term ‘intersubjectivity’ which is used by social scientists and refers to the sharing of subjective states by two or more individuals [33]. Intersubjectivity thus implies the agreement on a (partially) shared set of meanings or shared divergences of meaning. It is connected to the idea of thought communities:

‘Although not free from tensions and fights, their web binds people together, not only by common features, actions, and habits, but also, and even more so, through interaction and emotional relationships.’ [34: p. 55]

This discussion demands a positioning of the PbD within communities of peers, yet how this relationship manifests itself remains very much open. As has been noted, it is ‘the sum of interactions mediated by
and through the larger external environment that results in the production of shared meaning, norms and values, which, in turn, lead to social, cultural, political and economic structures.’ [35: p. 458]

Christopher Koliba detects in the issue of intersubjectivity a way to bridge the individual and the collective, moving towards intersubjective realities [35]. Although he depicts intersubjectivity in a collective design strategy, it could also function in a research group or PhD community bringing the common to a level of consciousness. This raises the question of how to reveal the intersubjectivity that is at stake in both the design and research facets of a PhD. Chon and Hidayah Abu Bakar explain that handling collective individualism is tied to pushing the boundaries and borders of open, complex, dynamic, and networked problem situations [32: p. 9]. Related to so called wicked problems that cannot be solved nor tackled by one discipline alone, collective individualism expresses the need for a collective interaction (see ‘Dissecting Disciplinarity’), stressing the importance of design research and its counterintuitive thinking, the use of productive jumps, non-cumulative knowledge and hybrid modes of inquiry [36–39]. Here, intersubjectivity helps to construct the shared meaning among the various partners of a group.

A remarkable illustration of intersubjectivity can be found in the work of De Smet as she brings in referenced authors as personas and transits from a ‘I’ to a ‘we’ narrative. In addition, she positions her PhD within a ‘firmament and landscape of references’ [15: p. 13, 27, 32], not only listing the implied references but positioning her work within and relating it to their constellation. In our interview, despite having actively worked to open up the community, De Smet acknowledges the importance of the personal within a PhD trajectory: ‘80% of the time was solo, lonely, so community between me and myself, nothing more nothing less’. Adding to this idea, she reveals how the personal is, to her, the driving force behind her own thought communities: ‘I dare to say what you put on the table should make the community, be able to create the community’ [21: p. 4].

Dissecting Disciplinarity
As our third cross-section to support the positioning of PhD projects, there is the debate evolving around the relational, multi-, or non-disciplinary positioning of research in architecture and urban design (Figure 4). Architecture as a discipline is marked by multi-professionality. Different professions are involved and joined together, such as landscape design, urban planning, interior design, engineering, social and ecological studies. Also, in research the discipline can be considered to be multi-, inter-, or cross-disciplinary in itself, having more than one paradigm or position at work [20, 40]. This aspect brings up several questions and tensions around the disciplinary nature of academic research and how PhD projects relate to this.

PhD projects draw upon a diverse range of disciplines, sometimes heavily, and bring them together within the fields of architecture and urban design. In the literature we can find discussions that link the idea of multidisciplinarity to notions such as bricolage [14, 41], assemblage, composition, stealing and borrowing [42, 43]. Authors of PhD projects talk about cherry-picking and taking journeys in other fields, as well as entering into dialogue with established authors in other fields. The cross-section of disciplinarity calls for the need for a PhD to be positioned in relation to sources and methodologies drawn from different disciplines. Taking a cue from Jane Rendell, we would like to suggest that:

Figure 4: Cross-section of the debates about disciplinarity in PhD [Drawing produced by the authors].
‘the key characteristic of bricolage as a research approach is that it presents research findings/data in a way that potentially challenges its audience to see its subject matter in an unexpected, irregular or offbeat way. It does this by careful consideration of what should be presented or re-presented in a novel form.’ [40: p. 2]

This bricolage approach raises the question of how far the bricoleur should be aware of the different theoretical and philosophical assumptions of the existing elements. In how far do the rules from other disciplines need to be ‘respected’ or to what extent can they be bent or translated to the contexts of architecture and urban design [38: p. 128]?

This links to the discussion on borrowing and stealing within the field of design research, in which Clive Dilnot argues that borrowing as a metaphor positions the field of design as like-something (like-art or like-technology, like-science). Borrowing implies that there is a debt to be paid, there is a ‘fidelity to the model’ [43: p. 149]. ‘The academic thief, by contrast, wants the tools to open the chamber … but he or she discards them once the door is open’ [43: p. 151]. The debate on ‘contemplations regarding the extent to which the rules of the various other fields should be “respected”’ further revolve around ‘whether we should transform them, appropriate them, take them apart and rearrange them in momentary ad-hoc assemblages that happen to make sense to us’ [42: p. 128]. Glanville rebalances this debate by pointing out the ‘danger that an imported approach may totally distort the subject to which it is applied’ [44: p. 5].

Approaches such as bricolage and borrowing imply bringing together content and methods from other disciplines in a way that is improper, even disrespectful, to the established discipline-based framework. Building on the idea that ‘design is a unique area of knowledge in itself’, Sarah Ilstedt takes the position that ‘one important factor for successful borrowing is that the theories are used from a firm position in design’ [45: p. 172]. It requires a solid understanding of what the core of the design discipline is about, especially as it displays a tendency to get ‘swallowed by neighbouring fields’. What such a core might encompass, however, remains fuzzy. Drawing from wider design research discourse, architectural and urban design research is described as ‘a creature that inhabits borderlands, an instance of fragments, hybridity and convergence’ [42: p. 128]. One could argue that the associative bringing together of foreign elements from across disciplines might be the very core of architectural and urban design and research, implying that there are ‘[n]o boundaries on the topic, challenge or research question it applies itself to, nor the research methods used. Research methods do not belong to a discipline or a domain’ [46: p. 135]. Paradoxically, the very core seems to be in the design field’s non-mono-disciplinary nature. It raises a fundamental question on whether, or not, architecture and its research can in fact be enclosed within a discipline – which in turn opens the debate to approaches in which PbD projects can be positioned as non- (or even post-) disciplinary.

Moving away from the disciplinary, we will now turn to the relational perspective that is embedded in reality, in situated knowledge, and in the embodied, or which deals with wicked problems and real-world issues. The debate on where to situate this relational paradigm is open. Allen Repko and Rick Szostak argue that between the cracks of disciplines, non-disciplinary knowledge is created; a knowledge that might be overlooked or undervalued by the academic disciplinary paradigm [47]. The relational reveals different positions, according to which these interstitial spaces are approached as either the discipline’s separations or more as connectors and beyond disciplines. We could even question if the academic boxing of disciplines is still (or has ever been) a fruitful way of researching.

To conclude this cross-section on disciplinarity, we want to highlight that the non-disciplinary and relational can also be found in other scientific PhD projects. Although often not acknowledged or brought up as such, isn’t most research multi-/non-disciplinary by nature [48] – precisely because interesting research areas are dynamic, recurrently merging and emerging, transforming and transmuting? In the PbD work of De Smet, her firmament and landscape of references displays a crossover, a coming together, relational stance between different fields, in which there is also space to bring in references that are non-academic, non-written, and non-architectural. She writes that:

‘architecture is, to say the least, an expanded field – a field in expansion … What was architecture is not (necessarily) architecture of and for the future. By calling the field expansive, essentializing tendencies of what architecture is, what architects (should) do and what an architectural concern is (and should be) about … explode.’ [15: p. 5, 8]
In her work we can read a stance that approaches architecture to be not much of a discipline in terms of content (what), but rather differentiates itself ‘as a means of seeing, feeling, thinking and understanding’ (how) [15: p. 15, 32].

**Dissecting Literacies**

As the fourth cross-section, we chose to look at debates about the literacies within PbD projects (Figure 5). Architectural and urban design projects are produced through various media such as writing, drawing, building or modelling. In this sense, architectural and urban design research displays a tendency to employ rich and layered literacies that intertwine different forms of expression, thinking and knowing. In the literature that discusses this multi-literacy, the diversity of and interrelation between these different literacies are very present, both in terms of how to communicate with peers, and as a means of researching and thinking.

In PbD theses, a broad range of expressions is simultaneously exercised, as confirmed by the those studied in the MRDPbD research project. Their analysis reveals that solely using written text appears to be too limited to communicate the various expressive layers of the research work. Text does remain very present in the communication, however; within the scope of verbal literacy a wide variety of writing styles and expressions can be found. Following Glanville’s position that ‘certain thoughts belong to certain media’, scientific writing does not seem to be the norm for PbD projects [44: p. 125; 49]. It is not unusual for more scientific language to be approached with unfamiliarity and discomfort. Manifesto-like writing, more prosaic narration, storytelling and writing letters, as we can see displayed in, among others, the work of De Smet, can be perceived as an act of creation in itself – often absorbed as part of the design practice [15]. This resonates with Rolf Hughes’ statement that text can be considered not just as an extended caption to the visual, but as a creative and critical tool [49: p. 288]. Positioning oneself requires an awareness of the weight and form given to verbal and/or academic literacy.

Glanville discusses ‘visual logic’ and defends it as a literacy with its own unique and valuable logic that risks being destroyed when translated to the verbal [44: p. 126]. Glenda Rakes describes this visual (or also graphic) literacy as the ‘ability to accurately assign meaning to visual messages combined with the ability to create and communicate with such messages’ [50: p. 14]. That this plays a crucial role in PbD projects is backed up by Sharon Sutton and Suzan Kemp who address its significant role in the communication of doctoral work [51: p. 3]. Like for verbal literacy, a broad range of approaches and positionings toward visual literacy are displayed within PbD. This highlights the need to position oneself in relation to the visual media implemented in both the reasoning (logic) and the expression of the PbD work.

In addition to this key visual literacy, other languages mingle that are close to the acts of architectural and urban designing, such as models, mock-ups, sensor-based mapping, java scripts or performances. The MRDPbD research showed that the forms of expression are as broad as the diversity of the architectural and urban design work that can be conducted within a PbD. The design literacy within PbD projects can expand far beyond the written and visual. A significant language that takes part in this expanded design literacy is that of the artefact. The act of its making can provide ‘a way to open up our minds for things that might

![Figure 5: Cross-section of the debates about the different employed and combined literacies in PbD](Drawing produced by the authors)
happen’ [52: p. 27; 63] and in this sense finds its relevance in both the practice of and research into architecture and urban design. This relates to the importance of making and craftsmanship as a way to ingrain things in the mind [53: p. 39]. The role and position of artefacts is open for discussion; these artefacts can become the core of the research, be mentioned on the side for illustration or clarification, or be explicitly discussed and addressed [54: p. 6].

In addition to the artefact, the experiential is also discussed in the literature on PbD theses. The experiential is highly entangled with the making of artefacts yet reaches beyond the object. The ways in which it does so can be very diverse. In our study, we found examples where the experiential can be brought in as empirical research, performative excursions that expand and form the practice and research, under the form of scientific experiments, or in relation to personal experiences of the researcher. The experiential can translate into a tailor-made method or autoethnographic approach in which their own agency – behaviours and thoughts – are documented and observed [55]. It raises the question on which experiences were crucial in the development of the PbD and how to reveal and communicate these.

Within a PbD, these different forms of literacies – verbal, visual, artefact-based, and experiential – are not disconnected from each other. They are entangled, often in a non-linear way. In a PbD, one system of expression can inspire and inform another with or without a clear hierarchy, or different forms of expression can be communicated as seemingly independent from each other. The notion of multiliteracy, originating from the fields of pedagogy and literacy theory, can be brought in here to address the different literacies and their interrelations. Fraser argues that this kind of multiliteracy is essential for a PbD; he states that proper design research involves the mixing of text with other literacies such as drawings, photographs or models, coming together in ‘a fluid, creative and dialectical process’ [56: p. 83]. Furthermore, Hill proposes that the ‘Architectural Design PhD combines a project and a text that share a research theme and a productive relationship’ [57: p. 103]. Like the concept of bricolage, in which bits and pieces of diverse disciplines are woven together and result in a new form (see ‘Dissecting Disciplinarity’), a PbD can bring together a mix and match of forms of expression to be assembled into tailor-made multiliteracy. The question can be raised here whether these distinctions in literacies may be obsolete in the more relational perspective of PbD work in general.

This relational perspective can be labelled as visual thinking, a means of developing knowledge that is considered a characteristic of disciplines like design and architecture. It entails non-verbal thinking (and communication) that can take form as concrete objects, images and cognitive mapping which Cross describes as ‘designerly ways of knowing, thinking and acting’, embodied in the very process of designing [19]. This brings us back to the discussion of whether or not non-conceptual forms of knowledge and understanding should even be explicitly verbalised [54]. Can and should non-verbal forms of knowing require explicit discursive expression? Or do we support Henk Borgdorff’s position of ‘liberating the content of research in and through artistic practices from the explicit, explanatory, descriptive or interpretive approaches’ [55: p. 60].

In the PbD work of De Smet, her drawings, collages, embodied experiences and performances play a significant role. The embodied experience of ‘walking the walk’ forms the ground of her doctoral work, in her own words: ‘The humus of creating artefacts is “the ground” from which underpinnings are made and to which the study will return and contribute’ [15: p. 21]. Her work expresses the crucial importance, yet also tricky complexity, of its multi-literary nature. Reflecting back upon her thesis, she states:

‘in a way it all started by walking the walk. And trying to do that, it is very strange to just start talking about it, because it kind of already disrupts the intention or the aim of the research … The communication is made in different styles and different languages so it is like: visual materials, you have a more reflective part, different styles of writing, as a way to bring that experience and the richness of it – and also maybe sometimes the vagueness or the blurriness or the contradiction that there are in these experiences – into communication with a public … It [the book of the thesis] was accompanied with a performance and so both go together, because this is also made on my body, so it’s also in a kind of embodied end result, to give an account of what I did, to give an account of that experience.’ [21: p. 1].

Dissecting Practice/Theory

Within the debates revolving around PbD in architecture and urban design research, theory and practice tend to be played out against each other. Resonating with the discussions on design and science (discussed earlier in this paper), this fifth cross section dives into the seemingly juxtaposed notions of theory and practice (Figure 6). Both are very complex terms that take on varied meanings depending on the contexts
in which they appear. We will here zoom in and distinguish two of these debates as they have strongly influenced the discourse around PbD. The first explores the tensions between practice understood as professional work and theory understood as academic knowledge. The second debate takes on a praxeological perspective which is anchored in a pragmatist worldview. It draws on an understanding from Science and Technology Studies according to which any form of knowledge can be understood as being enacted in embodied, materially supported and contingent practice. This second debate inverts the question “is (design) practice a form of knowledge production?” into “is knowledge production not always (design) practice?” As much as these two debates differ, they both raise the question as to when design practice becomes research practice and on how academic practice differs from professional practice [58].

On one end of the spectrum, we find clear scepticism of a purely academic perspective on design, which does not have any obvious relevance for practitioners in architecture [59]. This criticism resonates with a slightly different but similarly critical way of framing theoretical work as something that works only in theory, implying that theories do not live up to the complexities of the ‘real world’, which is the world of practitioners. In tension with this position, we encounter the understanding of architecture as an academic discipline that is at home in universities and thus is expected to live up to the way other disciplines criticise, reflect and generate more or less abstract ways of knowing the world.

Glanville argues that the irrelevance of academic research for architectural practice is an effect of importing theory from other disciplines (such as semiology) into architecture instead of theorising the design process as the core activity of architectural practice [44]. He thus calls for properly framed academic research in architecture which produces ‘knowledge for’ architectural practice. In arguing for architectural knowledge for practitioners, Glanville takes on a middle position that aligns well with recent call for what has been termed as ‘Mode 2’ research within the wider academic context [58; 60].

However, the idea of directing academic research towards its applicability (or usefulness) in practice has been fiercely criticised for limiting academic freedom and intrinsic curiosity. In this sense, Jacques Derrida’s ‘unconditional university’ [61] presents another stance on the role of academic research, the theoretical outputs it may generate and how it should be free from discourses on usefulness in architectural practice. As has been argued:

‘Derrida’s appeal to “search just for the sake of searching, and try for the sake of trying” … powerfully expresses the pleasures of “useless” sensation and the desire for knowledge which has no immediate practical purpose or value.’ [62: p. 447]

The tensions between the positions outlined above also concern the aims of a PbD. Does it contribute to an improvement of practice, or to a growth of abstract and/or academic knowledge that does not have a primary purpose/use for architectural practice? It seems difficult not to fall into one of these camps which critique each other either for producing knowledge for a fully self-referential academic world without...

Figure 6: Cross-section of the debates about the relationship between theory and practice in PbD [Drawing produced by the authors].
any benefit for the ‘real world’ of architecture; or for not producing academic knowledge at all, meaning that design is not communicable, criticisable or debatable. In this debate, advocates of a practice-oriented approach regularly draw on Schön’s concept of the ‘reflective practitioner’ [23]. Cecilia De Marinis’ work, for example, seems to call for a micro research cycle, based on Schön’s concept [4]. This model argues that the practitioner and the researcher should be the same person. An academy with researchers who are specialised in researching design (through whatever method) and reflect upon architectural practice in general is not provided for. It opens debate as to the importance in learning through engagement with one’s own creative process (and not with that of others).

Furthermore, practice-based approaches to architectural knowledge have fuelled the argument that design knowledge should be understood as ‘tacit’ knowledge which cannot be put into words or other forms of representation but is embodied and passed on through practice [4; 63]. It remains unclear, however, if the knowledge is located in the products of design practice, the skilled (or gifted) practitioner or both. The idea of tacit knowledge has been associated with two aspects: first, that the essence of designerly knowledge cannot be translated into verbal accounts (see ‘Dissecting Literacies’); and second, that it cannot be learnt through verbal explanations but only through embodied practice. From a critical perspective, it can be argued that this also shields architectural knowledge from critique, and systematic reflection and development.

Currently, architectural and urban theorising, in the sense of systematic reflection and development of knowledge, is happening mostly outside the design disciplines, including disciplines such as history, civil engineering, sociology, geography, organisation studies, anthropology or philosophy (see ‘Dissecting Disciplinarity’). While these disciplines employ their specific methodologies for exploring the world of urban design and architecture, a design specific research approach is barely to be found. PbD then provides a way for design-driven research where a certain form of theorising can happen through design practice. According to Katharina Bredies, we are experiencing a time during which design is increasingly understood as ‘an epistemic practice in its own right’ [58: p. 12], underlining the above question of how far designerly knowledge can be academisised or if it needs to remain tacit.

This brings us to the second debate which revolves around the idea that any form of knowledge resides in the performance of practice. This performative understanding of knowledge is firmly embedded in a pragmatist ontology and the research conducted under the labels of Science and Technology Studies and Actor-Network-Theory [7]. From this perspective there is no fundamental difference between design and research since both are understood to be assembled (or performed) in practice. Glanville goes as far as arguing that ‘all research is designed’ [44: p. 118; 60], and that research is to be understood as a specific form of design (see ‘Dissecting Science/Design’).

Grand hints at four aspects through which design research can be qualified and distinguished from other forms research [18, p. 159]. These include investigations of design as a creative process, the intentionality of design work, the role of materiality in designing, and the situatedness of design in a socio-material context. In a more general way, Glanville underlines the importance of ‘reflection [as] the element that turns search into research’ [44: p. 118]. While we acknowledge that there are many different forms of reflection in both professional practice and academia, we would like to direct the focus towards the role of theorising as a specific form of reflection. In this we agree with Grand’s statement that:

‘there is no obvious alignment between theory and practice in scientific research, and thus also in design research; the two have to be disassembled and reassembled in varying ways over time: establishing trading zones and discussion platforms that allow multiple controversies and intense competition among alternative approaches to research and design is of central importance for design research.’ [18: p. 161]

Given the above, we find it essential to position, if not a PhD programme, then a PhD project in relation to possible ways of relating theory and practice – or, rather, theorising and practicing. We have alluded to one position above which suggests that these two practices should ideally be executed by one and the same person, based on the idea of the reflective practitioner. But other positionings suggest different roles for theory. Theories (or concepts) can be applied, tested, deconstructed, generated from, adapted to, brought into resonance with or simply ignored in the process of designing.

The final aspect of relating practice and theory concerns the methods of theorising (or conceptualising). The debate here links to discussions on scientific means of analysis, often with a focus on measuring and quantitative methods, such as statistics. However, as discussed above, the multiple forms/literacies and their importance in harnessing analytical purposes should be acknowledged. These can include linguistic, visual,
performative, experimental, affective, poetic, artistic and designerly ways of analysing, or a combination of any of these. What seems important in the context of academic research (as discussed under the cross section on disciplinarity) is less the disciplinary origins of these modes of analysis, but to make explicit and debatable how they contribute to reflection in the world of architecture and urban design. If and how this reflection should feed back into professional practice asks for yet another positioning and can be addressed independently.

Looking at the concrete PbD case of De Smet, knowledge production is anchored in practice. She describes her way of researching as follows:

‘I go out, I walk, I make these drawings, and notes. And I come back with that material inside … and I come back into my studio. And there I can rearrange it, make videos, or performances with it, and by doing this content appears.’ [21: p. 3]

De Smet describes the created content in this way: ‘If there is some knowledge created it’s embodied, it’s transformative, it’s engaging, it’s situated, rather than it’s explanatory, or defining’ [21: p. 1]. Although the emphasis is clearly on the practice and the artistic and professional work, theory is also present throughout the written thesis. This can be seen in how De Smet, in her thesis abstract, positions it as proposing ‘embodied design thinking’ with the ambition to move from one approach (the body of architecture) to another, altering one (the one of architecting bodies) [15: p. 4]. Hence for De Smet, producing a PbD is about changing and diversifying the practice of architecture, mainly as a teacher, through ‘a drive to change and diversify our current modes of designing and thinking about design’ [21: p. 1]. The importance of entangling theory and practice here manifests most evidently in education, where both are in intertwined tension with each other.

Conclusion

Writing this article served to structure our ideas and understandings of what it could mean to do a PhD by Design. In doing so, two things were particularly important to us. First, we had the strong urge to find some orientation within the rapidly growing body of work on PbD and so we decided to organise those contributions that we found particularly interesting. The idea of creating a complete map (in the sense of a full-blown literature review) was however discarded while writing this paper because the literature has grown so extensively, and thus it would be infeasible to scrutinise all the arguments and ideas that have now been presented. In the writing process, we discussed the use of various metaphors that could potentially help us to make sense of what we were doing. Knowing that incorporating the complexities of the full debate on PbD would be unworkable, our discussion was increasingly influenced by the two notions of cross-section and landscape. The first of these notions, that of a cross-section, worked well for us as it allows connections to be made between various contributions, yet at the same time conveys that we are showing a section of something bigger and more complex. Secondly, the notion of landscape was also a fruitful starting point, and shines through in our text, yet it also soon felt too static and final. We were increasingly talking about what is after all still an emerging landscape, which eventually led us to thinking about the PbD through the metaphor of the archipelago.

The cross-sections that we drew up became a set of strategic and momentary snapshots of this archipelago, providing us with some orientation and insight while yet leaving sufficient space for alternative readings and future becomings. Next to the cross-sections, we started to draw out, in words and images, some of the in-betweens, the currents and winds that we encountered on our research journey. As a team of authors, we were attracted by different aspects of PbD and so brought different methods of navigating, and thus reconstructing, the research by design archipelago. In that sense, both metaphors also helped us to organise the complexities within our team, as well as relating to various other mappings of PbD [6; 7].

Knowing the controversies involved in mapping a debate, we were careful – and this became our second endeavour – to create ‘a’ map and not ‘the’ map of the PhD by Design debate. This is important for three reasons. First, we are aware of the limitations of our own knowledge and the impossibility of covering the entire archipelago of PbD. Second, the debate is not only ongoing, but also evolving and shifting in the sense that the meaning and relevance of contributions is changing through newly emerging interrelations. Thinking of the archipelago as a landscape of interrelated fragments allows one to understand how this landscape is not only growing but is in an unending process of enactment. Third, any map becomes meaningful only through its use. We cannot know all the motivations, desires and imaginings that drive PhD students or the architecture and urban design schools they are part of. In that sense, we are aware that our mapping of an archipelago might not help all readers to find their way. Yet, we believe that positioning oneself in relation
to the five cross-sections we have outlined above is a relevant exercise for positioning a PbD project within (or outside) of the map we present.

Having our own clear personal preferences and stances, we paid attention to not bringing them into our mapping too strongly (although they certainly appear here and there), but instead to give space to the different positions that have been articulated and thus make space for yet unformulated ones. We believe that it is less important where on (or off) the map a PhD project or programme is positioned, and we are not interested in strengthening specific positions within the presented cross-sections. Rather we aim to encourage PbD candidates to make explicit their own positions to make their research discussable and debatable. By providing a metaphor and five cross-sections which we believe can potentially be inspiring and meaningful for those who are navigating the world of PbD, we hope to contribute to the constructive development of the emerging archipelago of PhD by design.

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