

Practice-based research in architecture at the University of the Free State

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ABSTRACT

The Department of Architecture at the University of the Free State (UFS) established a new practice-based research programme in 2018, facilitating creative research toward master's and doctoral degrees. The programme is a first for South Africa, and possibly for Africa at large. In this paper, I consider research modalities that are proving to be pertinent to the programme, illustrated by examples of work currently underway at the university and which are new to South Africa. I seek to locate the specificity of creative research within the expanded nature and qualities of architecture conceived as a medium. This medium constitutes a vast nexus of relationships involving persons, environments, and things. I argue that creative research in architecture aims to harness and document the ingenuity of the designer's medium toward a rejuvenation of design practice. I address three primary questions: What is the medium of architecture?; What is research in the medium of architecture?; and How might one go about designing a creative architectural thesis? I also consider operative concepts such as design as proto-research, the research gap, speculative hermeneutics, tacit knowledge, exegesis, and discovery that leads to the renewal of creativity.

Keywords: architectural research, creative research, design-based research, practice-based research, design exegesis, design PhD.

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In 2018, the Architecture Department at the University of the Free State (UFS) launched a new creative research programme offering practice-based research degrees. With some 18 PhD candidates enrolled, the programme is the first of its kind in South Africa, and probably in Africa at large, although this mode of study is well established abroad.¹ Architectural design is unquestionably a social ‘practice’, yet oddly, questions of practice have not always been a locus for dedicated architectural research. In South Africa, postgraduate research in architecture tends to focus on architectural theory (including philosophical, political, social, or pedagogic concerns), architectural and cultural history, urban studies, or conservation-related modes of enquiry. However, creative modes of enquiry have not held much sway. In response to this context, the architecture programme at the UFS has moved to establish new modes of postgraduate research supported by new (at least in South Africa) research degrees.² In this article, I hope to clarify the nature, purpose, methods, and forms of such study, explained with reference to design-based³ research currently underway at the UFS.

Fundamental to this enquiry is the question of what might constitute the research-worthiness of architectural design. This is an important question because, although qualitative design requires critical, reflective and innovative practices, these aspects are not always acknowledged to involve a form of research. Indeed, what are the inherent, but apparently hidden, overlaps between research and design? To approach this question, we need to acknowledge the unique processes and forms of intelligence that motivate architectural design, especially with respect to connections between persons, environments, and things. I previously shared the following observation on this topic:

[c]rossing various economies, technologies, environments, scenarios, role players and flows, architectural design creates new relations between things. Practice-based research allows for an enquiry into this intricate web of connections, with a view to extracting the complex modes of thought and action that are required for success in design – research that recognises the intelligence and ingenuity of design (Noble 2018:34).

We must pause to consider this proposition about the multiple relations and networks that design constitutes. A building project is like a circuit of connecting wires between people, ideas, desires, technology and money. Furthermore, these connections do not merely occur between pre-existing entities; rather, they are formed and are given shape and meaning through the material processes and substance of the architectural project that binds them. Architectural design is constitutive of human, environmental and material relations, and design-based research allows for an enquiry into this ‘intricate web of connections.’ The former

is broadly stated to demonstrate the inherent worth and potential of design-based research, and naturally, what will matter regarding all of this, with respect to any particular research enquiry, will be far more definitive, focused and curtailed.

I start my argument by foregrounding the qualities peculiar to the medium of architecture before addressing research in the medium of architecture and the question of how to design a thesis.

What is the medium of architecture?

Architecture is its own thing. Its uniqueness is such that an enquiry into the nature of practice-based research in architecture must indeed begin with a clarification of the architect's medium. What is the medium of architecture? One answer might be that the architectural medium (at least from the designer's point of view) consists of building, together with the various forms of representations—whether texts, scaled plans, models, or computer simulations—that are required to understand, document, design and create buildings.⁴ Perhaps what really matters for the practice of architecture is the multi-faceted relations that emerge between the various and sometimes disparate elements of the medium, together with the manifold steps and transitions that occur between people, intentions, buildings and representations, and the complex, layered processes that are involved in the practice of design—a matter to which we shall return.

I wish to use an analogy to probe this nexus of relations, considering Alois Riegl's (1858-1905) perceptive analysis of the role of the spectator in painterly composition, specifically in his study of Dutch group portraits of the 17th century. In Riegl's view, Rembrandt's *The Syndics of the Clothdraper's Guild* (1661/2) was the ultimate example of psychological 'attention'—that is, the artistic expression of a mental disposition, an inner orientation, mood or frame of mind—the historical development of which Riegl wished to explore (Iversen 1993:95-96). The painting depicts five figures seated around a table, and a further figure looking in from the background. Riegl (1999) observes that the internal coherence of the work is not principally achieved by pictorial means such as geometric order, hierarchy, or symmetry but rather hinges upon the drama of the event. Indeed, compositional unity here involves the chief syndic (the third figure from the left) who speaks, commanding the attention of the others. His speech holds the space, and the depiction of this scene momentarily unifies the others who are present. Furthermore, the composition invites a sense of tension with the outside, namely, the space from which we, the spectators, observe the work. As Riegl maintains,

[f]rom the way in which the speaker is handled, it is clear that the attention of the spokesman's colleagues is at least partly directed to what is being said. However, these fellow regents are all looking out at the viewer, that is to say, in the direction of the other party (which, to judge from the various angles of their glances, here as elsewhere, should not be thought of as limited to a single individual). Moreover, they look out with expressions full of expectation (Riegl 1999:283).

In doing so, the work gestures beyond itself into the space of the spectator. As Margaret Iversen explains, '[t]he complete picture, so to speak, only exists in the consciousness of the beholder' (Iversen 1993:119) because we, the spectators, are by inference implicated in the depiction of the scene. In this sense, we are party to the event that informs the coherence of the work. Riegl is deemed to be the first art critic to theorise about the dynamic tension which sometimes exists between the internal (i.e. within the painterly frame) and external (i.e. beyond the painterly frame) constitution of a work, and which suggests that we not only project our attention into a work, but that a work might reciprocate by projecting out at us. I am fascinated by this idea of a two-sided artistic projection, and it seems to me that architectural representation involves some version of this duplication. This is principally because an architect's intentions are projected into the representations (drawings, models, simulations of texts) upon which they labour. It must be noted that these representations—which are a vehicle for the transference and communication of design intent—have a certain autonomy of their own. Architectural drawings may be exhibited, reproduced in books, or filed in national archives, and they exist independently of the buildings that they are deemed to represent. An architect's creative endeavour is recorded in the physical repository of their designed media. Yet, at the same time, architectural representations undoubtedly project outwards into the real substance of a lived world. They are arguably always pointing toward the actuality or possibility of physical construction. I would argue that even in the case of visionary designs that were not intended to be built, the expectation of what might occur should they be built—namely, the prospect of a potential outward projection—must surely feature in an appreciation of such works. Life completes the composition that is architecture, and reciprocally, architecture provides a stage for the living of life.

From here, I would like to make three points about the nature of the architectural medium: namely, that it is a super-object, that it dissolves relations between the imagined and the real, and that it is both an object and a material process.

Firstly, architecture is a super-object because it exists in several parallel forms (see Figure 1). Initially, it is created and exists as representations, as already shown, but

later it is performed. Construction is the performance of a building plan, and clearly, the relation between representation and performance is one of projection, where representations point toward construction. Robin Evans notes the inverted realism that results from this when he writes:

[d]rawing in architecture is not done after nature, but prior to construction; it is not so much produced by reflections on the reality outside the drawing, as productive of a reality that will end up outside the drawing. The logic of classical realism is stood on its head, and it is through this inversion that architectural drawing has obtained an enormous and largely unacknowledged generative power: by stealth (Evans 1997:165).

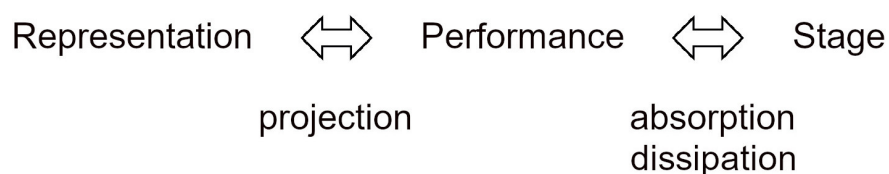


FIGURE **Nº 1**



Architecture as representation, performance and stage. Created by author.

However, this projective relation is two-sided, because the performance that is architecture doesn't always follow the dictates of a building plan. Architectural construction introduces its own innovations and requirements, and once complete, these may be drawn, and the unique qualities of construction and circumstance project back into representation. Indeed, many aspects of architecture derive from building practices rather than design per se. Finally, once built, architecture takes on a further form – as a stage or backdrop for human and natural life cycles. The relationship between performance and stage is arguably less determinate, and might be described as one of absorption and dissipation, rather than projection, to accommodate the cycles of natural and urban life.

Secondly, due to its projective character, architecture is a medium positioned between the imagined and the real. Indeed, it dissolves clear distinctions between those terrains. The architect imagines and draws something that does not yet exist. However, once the drawing is performed, it translates into something absolutely material and very real—architecture melts into the material substance of the urban realm. In this process of transition from the imagined to the real, there is no fixed frame or holding space that can delineate a building to separate it from the world. Artworks, by contrast, are commonly distinguished by the frame and the gallery, which separate art objects from the world. No such defence is available for

architecture.⁵ I am reminded of René Magritte's provocative painting *In Praise of Dialectic* (1936), which depicts a window in a building that looks into what appears to be an interior, with a further building that features similar windows reappearing in the distance. Is this the representation of a real or an imagined building—a dolls' house perhaps, or the disconnected, imagined sequence of a dream? One might interpret this work as dramatising a slippage between reality and representation, the imagined and the real.

Finally, architecture is both object and process. Designing is a process, a series of transformations that take an idea into a descriptive medium—drawing, modelling, simulating— which is itself subjected to a sequence of adaptations and transformations which ultimately project into the possibility of a built object performed through a series of constructive processes. The drawings and models that propel the process are objects, as is the building that is constructed from the final plan. These architectural objects—whether drawings, models or buildings—represent stages within a process of creation, adaptation, transformation, connection and concretisation.

Due to what we might call the expanded nature of the architectural medium—in the sense that it encompasses representation, performance, process, imagination, and reality—creative research in architecture can take on a wide range of forms. Importantly, we need to know what aspect of the medium is being studied and to what end. Is it the representation or the building? The imagined or the real? The object or the process? Or, at least, what is the precise set of connections and transitions that will be focused upon with respect to all of these?

Research in the medium of architecture

Practice-based research in architecture has evolved into a distinct mode of research with its own modalities, orientations and outcomes, all aimed at harnessing the creative ingenuity, processes and unique logic of design. Peter Downton's insights, drawn from many years of supervising creative research, help capture the essential quality of design-based research. He makes a useful three-way distinction between researching about design, researching for design, and researching through design (Downton 2012).

Research about design includes much of traditional architectural scholarship by way of histories or theories of architecture—for example, theories that concern questions of architectural aesthetics or ethics, or the role of the architect, as well as social and political critiques that attempt to unravel the relations of power and

ideology that are entangled with the making of architecture. These are primarily studies about design. Research for design includes studies of how designers think to frame recommendations for good practice, or pedagogic theories, which hope to clarify how we might teach in support of successful design practice, as well as more technical studies regarding the tools that aid design, such as CAD, various forms of imaging, parametric and simulation-based software. In South Africa, doctoral research in architecture has tended to be either one or the other, or a combination. Research through design, however, looks to architectural design itself, its methods and means, to frame the practice of the architect. Harnessing this practice toward a mode of creative research, the researcher is researching through the medium of architectural design itself—it is design that does the research.

Downton's three-way distinction is perhaps not always watertight. We might discover, for example, that one mode of research overlaps with another, and at times, all three might combine. That said, it does help to distinguish what might be called traditional research in architecture (for want of a better term) from design-based or practice-based research. With traditional research, we are primarily concerned with the study of and study for architecture, and the act of designing as such rarely forms part of the researchers' process. With practice-based research, however, the intention is to lead with practice—to position the act of designing, its processes and methods, at the very centre of the research endeavour—which is to mobilise the medium of design itself as the primary means for exploring and understanding design.

When we come to the crux of the matter, design-based research hinges upon a conversation between thinking and making—a drawing towards architecture and a writing about drawing, which will likely result in further drawing. From this, an interesting thought emerges—is this not one of the oldest modes of research in architecture? Consider Andrea Palladio's (1508-1580) *Four Books of Architecture* (Palladio 1965). Palladio draws his design. He curates his drawings and publishes them. He writes about them from an aesthetic and technical perspective and discusses his mode of creation and his ideas of proportion, harmony, and composition. Palladio's treatise is an example of practice-based research, one that has significantly impacted the history of architecture. Or consider Eugène Viollet-le-Duc (1814-1879), whose influence upon the development of architectural modernism is legendary, particularly in terms of how modernism is deemed to have evolved in part from his structural rationalism. How does Viollet-le-Duc develop his ideas? He studies Gothic architecture by drawing it. He uses architectural drawing to examine the rationality of building structure, how forces flow from the vaulted roof to the ground, and how architectural detail celebrates this miraculous flow (Viollet-le-Duc 1990). He uses architectural drawing as his primary mode of research, which fits precisely into the notion of conducting research within the medium of design.

There are many ways to conduct designed-based research, and each designer will likely take up the challenge in a personal and original way. To elaborate on this, I cite work currently underway in the master’s and doctoral degree programme in architecture, specialising in design, offered at the UFS. At the time of writing, Jonathan Jacobson, for example, is completing his practice-based PhD entitled ‘In(de)finite: complexity and ambiguity in the architecture of the house’ (Jacobson 2020-). His journey began with his practice-based master’s thesis, ‘Ha! Kerpow! What? No! OK. Maybe: Improvisation in the collaborative architect-client relationship’ completed in 2019. In the latter, Jacobson (2019a) examines the conceptual development of a single project—House 13, Kerzner Estate—to understand his complex and often lengthy design processes (see Figure 2). He situates this study within what he calls a ‘client-centred’ approach—as opposed to a ‘professionally-centred’ approach—which allows for and encourages collaboration with the client. More specifically, he studies, in substantial detail, the large number of sketches that were needed to develop a satisfactory design concept – satisfactory for both architect and client. Jacobson describes his process as a jazz-like improvisation that plays out between architect and client, and which is facilitated by an acceptance of ‘uncertainty,’ ‘open-endedness,’ ‘delayed resolution,’ ‘provisionality,’ and ‘integration’ (Jacobson 2019a:71-74). He discovers that his final concept for the house is far more complex than he initially imagined; it is richly layered, flexible and resilient (see Figure 3).

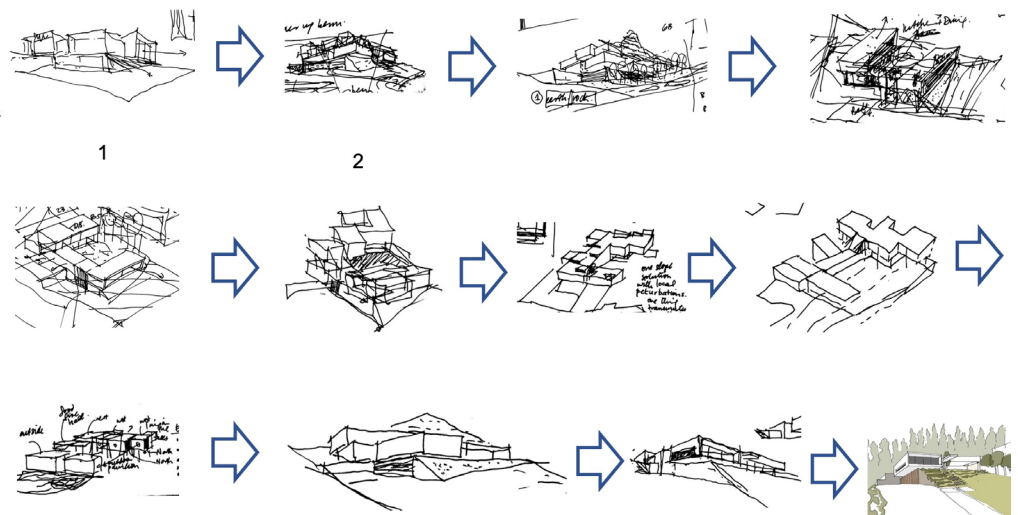


FIGURE **Nº 2**

Curated sequence of drawings, selected from some eighty sketchbook pages, showing the design development of House 13 Kerzner Estate in Hout Bay, Cape Town, by Jonathan Jacobson (Jacobson 2019a: 73). Courtesy Jonathan Jacobson.

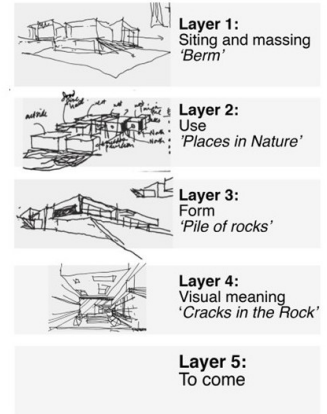
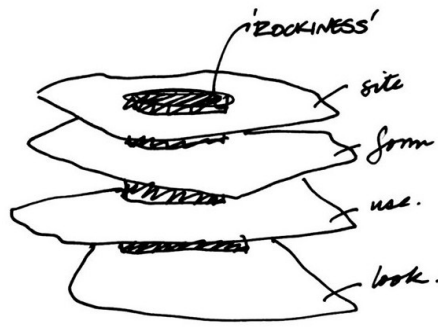


FIGURE N° 3



Layers of design concepts required for the conceptualisation of House 13 Kerzner Estate in Hout Bay, Cape Town. Jonathan Jacobson Masters presentation, March 2019, slide 27. Courtesy Jonathan Jacobson.

A further insight relates to the sequential nature of his sketches. Realising this led Jacobson to explore what he calls *ArchiComix*—a sequence of architectural sketches that build density of conceptual thought in a free-flowing, open-ended, and experimental way (see Figure 4). The intention of *ArchiComix* is not merely to find resolution, but to expand conceptualisation toward flexibility and what Jacobson calls ‘concept resilience’ – ‘[t]he ability for a concept to survive the [collaborative] architectural translation process is given the name “concept resilience”’(Jacobson 2019a: ix).

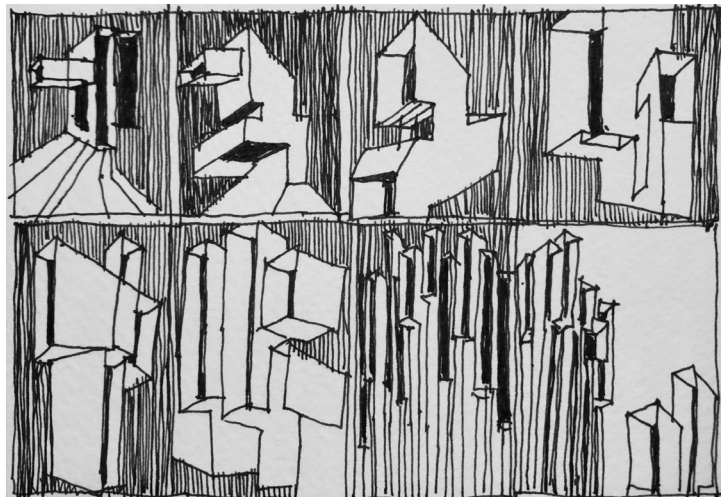


FIGURE N° 4



Archicomix from the “dormatologies” series, with a sequence exploring rock formation-like architectural compositions, by Jonathan Jacobson (Jacobson 2019b:75). Courtesy Jonathan Jacobson.

In his PhD research, Jacobson now hopes to explore the mysterious and ‘in-definite’ qualities of his built work which appear to issue from the improvised and layered character of his design processes. To this end, he has introduced a new mode of conceptual drawing, namely the qoan (see Figure 5). Qoans may be described as conceptual, drawn abstractions that explore various spatial, relational or environmental ambiguities. Qoans belong to the design process and, most importantly, they possess exploratory and emergent qualities and are not merely intended as a representation of something.

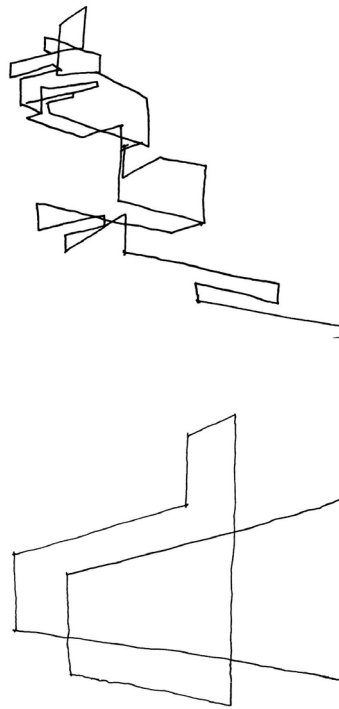


FIGURE **Nº 5**



Qoan drawings, by Jonathan Jacobson.

What is enclosure (above)?

What makes architectural relationship possible (below)?

Jonathan Jacobson PhD presentation, March 2022, slide 22 & 46. Courtesy Jonathan Jacobson.

Jacobson’s exploration of ArchiComix, and more recently, qoans, is fundamental to his evolving research methodology. Sequential and ambiguous drawing had always been an important aspect of Jacobson’s process. He did this all along without fully realising its crucial contribution to his design process. Once framed and understood, this discovery has allowed for a new creative mode of architectural drawing via the ArchiComix and the qoan, which he now uses to reflect upon and extend his design practice, and which clearly constitutes research through the medium of architecture.

Designing a thesis

I now wish to consider how practice-based research may take a form that warrants the awarding of a master's degree or doctorate. An innovative aspect of practice-based research in architecture is that practitioners are permitted to bring the whole body of their design work into their research degree. Furthermore, this oeuvre does not merely enter as material that might be researched. Instead, we acknowledge from the start that the inherent sophistication and intelligence of architectural design is *proto-research*. Design is proto-research because the work's density and originality constitute unique material relations emanating from creative thought, processes and modes of practice. However, for this to count as research within the context of a postgraduate study, the work must be curated, rediscovered, expanded upon, and explained. One might draw a parallel between this and the sciences in that scientific experiments are fundamental pieces of research yet need to be selected, interpreted, and structured in support of a thesis to fulfil the requirements for a scientific research degree. It is not difficult to conceive of building designs akin to experiments conducted within the medium of architecture.

Leon van Schaik drew an infographic of a design-based researcher who looks back into the past, then into the present, before looking into the future (Van Schaik 2011:26). His proposition is simple yet incredibly profound because it captures the process that is required when transforming a body of creative work into a research degree—namely past reflection; explanation and analysis; and the renewal of creative practice. This approach is as suitable for an experienced practitioner who wishes to reflect on their existing body of work as it is for a younger designer who may want to lead their research enquiry with a new creative project.⁶ In either case, looking back is required to understand one's formative influences and community of peers and to document the often very personal trajectories and modes of practice that have led up to this point. Those who enter with a large body of work will want to look back to establish timelines and curate their work around families of projects and recurring themes.

Looking into the present, the researcher needs to ask what matters most about their existing and/or new creative work, as the case may be. What is the essence of the practice that underlies it? In this respect, I refer to an *exegesis*, a deep understanding of design intent to draw out the inherent nature, significance and value of the work.⁷ The written exegesis helps to explain the pertinent contexts, inherent qualities and accomplishments of the work. To achieve this requires a fair degree of conjecture because, often, the most profound qualities of a body of

creative work are not entirely apparent to the author. Philosopher Hans-Georg Gadamer's (1900– 2002) notion of a speculative hermeneutic (or interpretation) is useful in this context. He writes, '[t]hus everything that is language had a speculative unity' (2013: 491), which ultimately requires a 'movement, suspension, and openness which wills to let new possible relationships in being speak to us and address our understanding' (Palmer 1969: 212). This attempt to understand— enriched through deliberate openness and speculation—is an important component of any design-based thesis.

However, creative research should transcend mere verbal explanation by looking forward through new creative explorations framed within the medium of architecture rather than just words. The end goal is to look toward the renewal of practice. What matters in this regard is the journey of genuine enquiry and discovery that might set the stage for a transformed future practice. In many cases, a researcher might begin the process by saying 'My work is about this,' but as they look deeper it becomes apparent that their work relies upon 'tacit knowing' (Schön 1987:25), that it contains hidden and latent content, and achieves ends that were not initially understood. This process of rediscovery involves identifying gaps in their assumptions about their work. Identifying these gaps allows for framing questions that may lead to further creative exploration. Looking forward then, based on new discoveries, the researcher may renew their creativity and transform their practice.

Consider Jan Smit's PhD journey to illustrate the above. Smit is enrolled in the Architecture Department at the UFS, where he is currently completing his practice-based PhD entitled 'Mediating landscape: the power of art in the design process' (2018-). Jan and his wife, Petria Smit,⁸ are the principals at Smit Architects. They work within a critical regionalist tradition and are clearly influenced by the architectural theories of Christian Norberg-Schulz; in particular his notion of *genius loci* (Norberg-Schulz 1980) (see Figure 6). The Smit practice has a large body of work, and the first step was to select the important projects, and to establish timelines, define families of projects, points of transition and reoccurring themes, together with salient aspects of Smit's contribution to the design process. Upon presenting this, an aspect that stood out is the fact that Smit always starts his process with the site, often producing watercolour paintings of the surrounding landscape, to tune his sensibilities to the unique character of the place. Not very many architects do this, and Smit is indeed an accomplished watercolourist (see Figure 7). Highlighting this act of painting raised the question as to what this might have contributed to his design process? Are there clear relations between his landscape paintings and his designs? More importantly, could watercolour painting be used as a medium for research?



FIGURE **Nº 6**



House Enkalweni, Rayton, Bloemfontein, built 2006 by Smit Architects. Courtesy Bernard Viljoen.

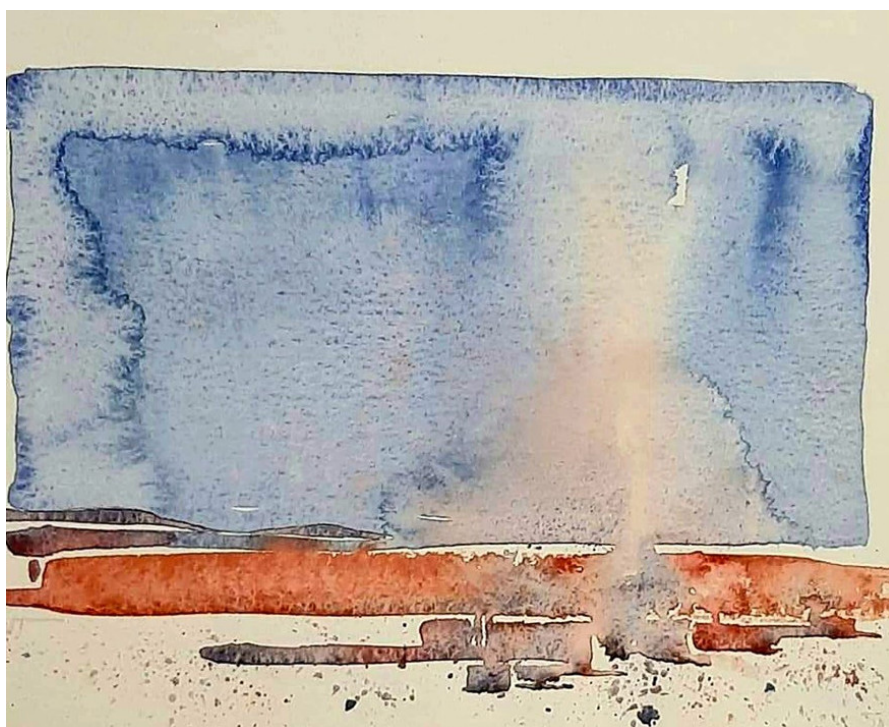


FIGURE **Nº 7**



Dustdevil, Kalahari desert, 2019. Watercolour painting by Jan Smit. Courtesy Jan Smit.

Focusing on his landscape painting as a crucial element allowed Smit to identify gaps in his knowledge that led to a further study of landscape painting, landscape art and land art, which broadened his appreciation for what various artistic modes might contribute to architectural design. A major advance in the evolution of his thesis came from the idea that the work could perhaps be rearranged according to region, with a chapter dedicated to the study of each one. This new approach allowed Smit to revisit the regions, study the art and visual culture that pertain to each, and, importantly, do further drawings and paintings of each area (see Figure 8). Studying and making landscape art in each context facilitated a deeper understanding of what might have influenced his design process and resulted in a renewal and transformation of his practice.



FIGURE **Nº 8**



Eastern Free State, photomontage of photographs and watercolours. Jan Smit PhD presentation, September 2022, slide 6. Courtesy Jan Smit.

A process is something that can be run forwards or backwards. It may be repeated, sped up or slowed down. With Smit's PhD, it is almost as if he hit rewind on his creative process, playing it back again, revisiting the process—only now with the benefit of hindsight, renewed understanding and a transformed mode of practice (see Figure 9). His identification of a gap with respect to landscape art and land art was crucial, inviting him to enter this gap primarily through the practice of drawing and painting.

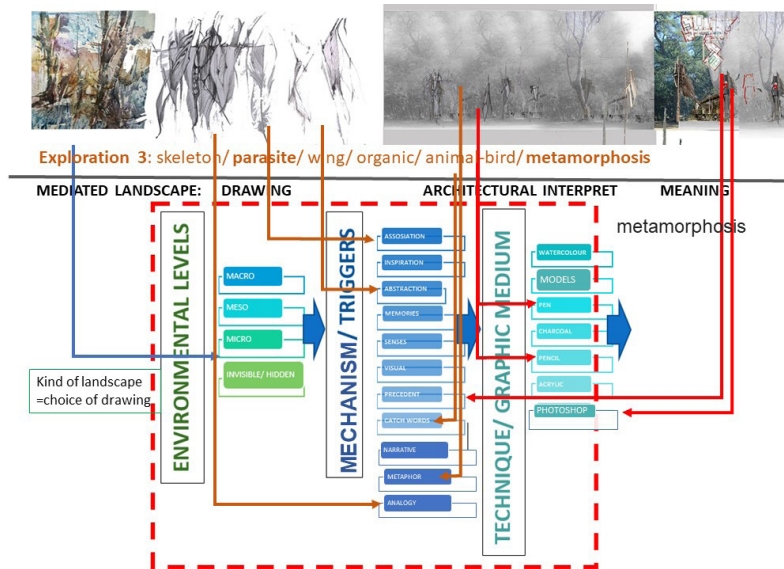


FIGURE N^o 9



Replaying the design process. Jan Smit PhD presentation, September 2022, slide 7. Courtesy Jan Smit.

The important point to note here is that the full significance of Smit’s watercolour painting was not understood at the start of the thesis. ‘The power of art in the design process’, featured in the thesis title, was not something that was introduced, theorised about, or proposed at the start; instead, it emerged from a journey of genuine self-discovery. Furthermore, one will find little, if anything, in critical regionalist theory or the work of Norberg-Schulz that explains how to produce watercolour paintings or how this medium might influence the transformational stages of a design process. Therefore, it is clear that the pivotal focus of Smit’s thesis is not derived from a theory, nor was theory introduced to legitimise a practice. It is also not a critique of anything. Instead, the thesis is tied to the studied renewal and extension of a practice, and this evolves through a process of discovery, which in turn prompts a transformation of the practice. Here, we get to see the true character of practice-based, design-based research.

The more regular, better-known thesis postulates and argues for a proposition, which the thesis then tries to encapsulate and advance. The intentions of the thesis are known from the start, whilst the evidence that supports the proposition is assembled along the way. Smit’s practice-based thesis appears to have inverted this sequence, for at the start, the primary focus of the thesis was simply not known, while the substance—that is, the design projects—was known and had been coherently arranged. Furthermore, although the creative thesis does involve

arguments for certain propositions, propositions as such do not constitute the true focus of the study. The real focus is on discovery and a rejuvenation of practice.

The practice-based thesis begins with practice. It uses modes of practice as its research tools, and, in its conclusion, it returns to practice. As is the case at other international institutions where this mode of study is found, the completed PhD or master's degree at the UFS takes the form of a written and illustrated document together with an exhibition of work. The exhibition is the final invitation to return to practice, for it is conceived as a creative challenge that allows the researcher to crown and conclude their study. The idea that a PhD might be concluded through an act of creativity is perhaps a novel one. Yet, it is entirely consistent with the primary aim of this mode of research, which is self-discovery and the transformation of a practice.

Conclusion

In this article, I considered research modalities that are pertinent to the newly introduced design-based research programme in architecture at the UFS, illustrated by research work currently underway in the programme. I argued that design-based research attempts 'to position the act of designing, its processes and methods, at the centre of the research endeavour; to use the designer's medium as 'the primary means for exploring and understanding design.' This helps to capture the essential difference between what we might call traditional versus design-based or practice-based research in architecture. To clarify this matter, I considered three important questions: What is the medium of architecture?; What is research in the medium of architecture?; and, How might one go about designing a creative architecture thesis? Finally, practice-based research entails a studied exegesis of a designer's practice and a transformation of that practice through the formulation of new knowledge and the renewal of creativity.

Notes

1. The 'invitational' design research program at RMIT University began in the late 1980s and has, over time, spawned new modes of design-based research that have spread to numerous architectural learning sites throughout the world (Van Schaik 2011:15). Especially noteworthy is the European Union's Marie Curie Initial Training Network Grant for 'Architecture Design and Art Practice research' (ADAPTr), which is a four million euro research programme that aims 'to mobilize the adoption of a practice approach to doctoral research training ...' (Blythe 2017:53;55).

2. To clarify, the UFS now offers three types of master's and two doctorate degrees in architecture. The MArch(Prof) at UFS is the commonly offered professional master's degree required for professional practice in South Africa. The MArch (Prof) degree combines research and creative aspects, but it is a course work masters, aimed at professional competence and is not principally a research-oriented degree. The UFS, like other institutions, also offers an MArch and a PhD in architecture, which are traditional research degrees. The Masters and PhD in Architecture with Specialisation in Design are, however, the newly formed creative research degrees with which this paper is concerned.
3. 'Practice-based' research is the broader term that may apply to any mode of practice, whereas 'design-based' concerns research devoted to the practice of design. These terms—practice-based and design-based—are used interchangeably in this paper because the focus here is on design.
4. Admittedly, it is difficult to place definitive limits upon the medium of architecture, because architecture involves a wide variety of materials, agencies and processes. The definition offered here is largely intended as a convenient point of departure for the discussion that follows, while noting that the medium of design matters because the various agencies and social processes that are required to produce architecture are embedded in visual and textual representations of various kinds. Ultimately, a candidate wishing to do design-based research must decide which materials, agencies, and representation are relevant to their specific line of study.
5. I say 'commonly distinguished,' because avant-garde art has often attacked the very limits and character of this constraint, yet invariably without overcoming it.
6. At the UFS we have called the former 'practice-based' and the latter a 'design-led' mode of study.
7. The *Blackwell Dictionary of Western Philosophy* defines exegesis as an attempt to 'interpret a text [although here applied to design] by clarifying its authorship and earlier sources, by understanding it in its original context, and by bringing out the author's meaning from the text itself' (Bunnin 2009:236).
8. Jan and Petria Smit are both registered to complete practice-based PhD's, at the UFS, on their respective contributions to the work of their practise, Smit Architects.

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