The Idea of the Doctorate in Art and Design: A Literature Review using an Argument-Based Approach to Validation

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Abstract

The literature about research education and the doctorate in art and design is fragmented and characterised by disagreement about fundamental issues. A key problem is that no one has published a systematic review of this literature. This dissertation investigates this problem by systematically reviewing what is known in the literature about research education and the doctorate in art and design. The dissertation synthesises the literature and provides a new understanding of the issues.

First, I review a book about doctoral assessment in art and design. I apply an argument-based approach to assessment using analytic concepts developed from validity theory. Second, I use these analytic concepts to inform the systematic literature review to ensure that I connect the results to their context of use. I report the systematic literature review in line with the PRISMA guidelines. I searched for records published between 1900 and 2022 and identified 5,673 records from databases and via other methods. After I excluded duplicates, I assessed the records for eligible studies. The full text of 1,082 publications were included in the review.

I produced a quantitative synthesis of the studies' characteristics and a qualitative synthesis of the substance of their assessment arguments. The quantitative synthesis identifies the extent, range, and nature of the literature about research education and the doctorate in art and design. The qualitative synthesis appraises the inferences and assumptions that underpin the doctoral assessment arguments for arts, design, and practice doctorates. I conclude doctoral studies based on art and design works, or art and design practice, shift the focus from the public discourse and shared discourse of the research tradition to the private studio concerns of personal artistic and designerly development. The study contributes a new understanding of the idea of the doctorate in art and design as an argument that bridges claims about the scoring, generalisation, extrapolation, and implications of doctoral assessment.

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Attestation of Authors

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.



Luke Feast
2023

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Chapter 1: Introduction

Doctoral education has three main purposes. First, it advances knowledge and understanding through scholarship and research.[1] Second, it contributes to economic success and educates professionals to meet societies' needs.[2] Third, it develops the individual student's capacity for independent, purposive thought.[3] The conflict between these often-incompatible purposes contributes to doctoral education's controversy.

Doctoral education was once only available to a small elite group but now is part of mass education and universities' core business. Doctoral education in art and design is relatively new compared to disciplines such as law, medicine, and philosophy. For example, in the UK, it was not possible to get a university degree in design until the 1960s, since most design education was in polytechnics or art schools which only offered diploma level education. The first research education in design in the UK was probably offered at the Royal College of Art from 1976.[4]

In the 1990s, because of changes to higher education systems in the UK and other Western industrialised societies, art and design education was assimilated into universities and funding for departments of art and design became linked to academics' research outputs.[5] Now university departments of art and design needed to articulate how they did research. By the mid-1990s, the nature of art and design research and doctoral education in art and design became important issues[6] and the subject of several international conferences.[7]

There is increasing demand for doctoral education in art and design.[8] However, there is controversy when doctoral examiners claim that art and design works or practices increase the stock of knowledge through original research.[9] This controversy is generated in part by the

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[1] QAA, *Uk Quality Code for Higher Education: Part A: Setting and Maintaining Academic Standards* (Gloucester: Quality Assurance Agency for HE, 2014), 30; Bologna Salzburg Seminar, "Doctoral Programmes for the European Knowledge Society: General Rapporteur's Report," (Salzburg, Austria: European University Association Council for Doctoral Education, 2005), 2.

[2] David Bogle et al., Doctoral Degrees Beyond 2010: Training Talented Researchers for Society, 2010, League of European Research Universities (LERU); Sharon Parry, *Disciplines and Doctorates* (Dordrecht: Springer, 2007), 25-36; Renee Polziehn, Skills Expected from Graduate Students in Search of Employment in Academic and Non-Academic Settings, 2011, University of Alberta..

[3] Kristin Gjesdal, "Georg Friedrich Philipp Von Hardenberg [Novalis]," in *The Stanford Encyclopedia of Philosophy* ed. Edward N. Zalta (2020), Section 5. https://plato.stanford.edu/archives/win2020/entries/novalis/.

[4] Lisa Rotzinger, "Bruce Archer and Research at the Royal College of Art (1961-2002): Theoretical Frameworks for Research in Design in the Context of an Institution" (MA Royal College of Art, 2019).

[5] Judith Mottram, "Asking Questions of Art: Higher Education, Research and Creative Practice," in *Practice-Led Research, Research-Led Practice in the Creative Arts*, ed. Hazel Smith and Roger T. Dean (Edinburgh: Edinburgh University Press, 2009), 233-34..

[6] Christopher Frayling et al., Practice-Based Doctorates in the Creative and Performing Arts and Design, (Lichfield: UK Council for Graduate Education, 1997); Christopher Frayling, "Research in Art and Design," *Royal College of Art Research Papers* 1, no. 1 (1993); L. Bruce Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course* (Loughborough: Loughborough University, 1995).

[7] Richard Buchanan et al., "Doctoral Education in Design: Proceedings of the Ohio Conference, October 8-11, 1998" (Pittsburgh, 1999); David Durling and Ken Friedman, "Doctoral Education in Design: Foundations for the Future: Proceedings of the Conference Held 8-12 July 2000, La Clusaz, France" (Stoke-on-Trent, 2000); David Durling and Kazuo Sugiyama, "Doctoral Education in Design: Proceedings of the 3rd Doctoral Education in Design Conference Held Tsukuba, Japan 14-17 October 2003 " (Japan, 2003); Theo van der Voordt, Herbert van Hoogdalem, and Herman van Wegen, *Doctorates in Design and Architecture*, Eaae/Aee Conference, (Delft: Delft University of Technology, Faculty of Architecture, 1996).

[8] David Durling and Ken Friedman, "Guest Editorial: Best Practices in Ph.D. Education in Design," *Art Design and Communication in Higher Education* 1, no. 3 (2002).

[9] Frayling, "Research in Art and Design," 5; Ken Friedman, "Research into, by and for Design," *Journal of Visual Art Practice* 7, no. 2 (2008).

emergence of art and design programs in higher education in the early to mid-20th century as extensions of visual arts. Davis explains that most of these art and design programs evolved graduate study under a visual arts model.[10] More recently, design fields have started to focus on design in large-scale systems and have expanded their research areas into management, social science, and technology. But many design programs remain under art administration, hindering their response to emerging research needs in design education. Consequently, there is a lack of consensus about what constitutes "knowledge" in art and design and greater variation in epistemological positions than in established disciplines such as medicine or law.

Examining doctoral research involves making judgements about what a doctoral candidate can do and what they know.[11] Examiners' judgements are supported by their interpretations of the candidate's thesis and their discussions during the candidate's viva voce.[12] Examiners infer from their interpretations of the candidate's performance to conclusions about the candidate's attributes and capacities.[13] The examiners' judgements provide how the candidate is passed or fails, and they provide the basis for decisions on whether the candidate qualifies for the doctoral award.[14] How confident we ought to be in the examiners' judgements should be informed by the plausibility of their arguments for their interpretations and decisions—their validity.[15]

There is more to a doctoral thesis than its format. We are not only interested in doctoral examiners' reports for their conclusions about the candidate's thesis. Examiners' reports and judgements are also used to support claims about whether the candidate can perform research, can think like a researcher, and can advance knowledge in the university. However, these claims are not self-evident and merit evaluation.

Research Design

My personal and professional background has shaped my positionality. In 2015, I earned a Ph.D. in design that investigated collaboration in interdisciplinary design teams as an informal argument-based activity.[16] I have held academic positions at universities in Australia, Denmark, Finland, and New Zealand. And I have taught various fields of art and design education, ranging from visual communication to engineering design. Through this professional experience, I have gained a broad perspective on art and design education and research. I acknowledge that my research questions, methods, and data interpretations may be

[10] Meredith Davis, *Teaching Design: A Guide to Curriculum and Pedagogy for College Design Faculty and Teachers Who Use Design in Their Classrooms* (New York, NY: Allworth Press, 2017), Ch. 1.
[11] David Boud and Associates, "Assessment 2020: Seven Propositions for Assessment Reform in Higher Education," (Sydney: Australian Learning and Teaching Council, 2010), 1; Gordon Joughin, "Assessment, Learning and Judgement in Higher Education: A Critical Review," in *Assessment, Learning and Judgement in Higher Education*, ed. Gordon Joughin (Springer, 2009), 1.
[12] Vernon Trafford and Shosh Leshem, "Doctorateness as a Threshold Concept," *Innovations in Education and Teaching International* 46, no. 3 (2009): 305, https://doi.org/10.1080/14703290903069027.
[13] Ibid., 311; Gregory J. Cizek, *Validity: An Integrated Approach to Test Score Meaning and Use* (Milton, UK: Taylor & Francis Group, 2020), 24.
[14] Howard Green and Stuart Powell, *Doctoral Study in Contemporary Higher Education* (Maidenhead: Society for Research into Higher Education & Open University Press, 2005), 192.
[15] Michael T. Kane, "Validating the Interpretations and Uses of Test Scores," *Journal of Educational Measurement* 50, no. 1 (2013): 2-3, https://doi.org/10.1111/jedm.12000.
[16] Luke Feast, "Investigating Collaboration in Interdisciplinary Design Teams" (Ph.D. Swinburne University of Technology., 2015), http://hdl.handle.net/1959.3/403216.

influenced by my positionality. As a result, I strive for transparency in describing my research process.

First, I review a book about doctorateness in art and design.[17] The term "doctorateness" emerged in the 1990s in discourses about threshold academic standards for degrees.[18] The book claims that doctorateness in practice-based doctoral research in art and design should uphold and maintain art and design practitioners' values.[19] In contrast, Pamela Denicolo and her colleagues argue that doctorateness is the ability to conduct independent research that contributes publishable new knowledge.[20] I evaluate the book's argument using analytic concepts from validity theory. I conclude that the book's argument undermines the research-teaching-study nexus.

Second, I use these analytic concepts to inform a systematic literature review. The literature on doctoral education in art and design is complex. The studies use incompatible research methods and make contrasting epistemological assumptions. Today, the literature has grown to include several thousand items. However, no comprehensive review of this literature has been published. My objective is to investigate this gap by conducting a systematic literature review to answer the question: What is known in the literature about research education and the doctorate in art and design?

Frayling et al.'s 1997 report *Practice-based Doctorates in the Creative and Performing Arts and Design* refers to "practitioner" disciplines including architecture, creative writing, design, music, performing arts, and visual arts.[21] I use art and design to refer to the disciplines identified by Frayling et al. but also include newer design fields such as interaction design and service design. One of this study's limitations is that I did not target literature relating to doctoral education in engineering, management, or information systems.

I searched for sources published between 1900 and 2022. The search returned 5,673 records. After I excluded duplicates from the dataset, I systematically investigated the records for potentially relevant studies. To be assessed for eligibility, the full text had to be retrieved and had to meet a quality threshold.

The quantitative synthesis of the studies' characteristics provides a comprehensive picture, capturing the extent, range, and nature of the 1,082 studies included in the review (see Table 2 and Table 3). Despite their epistemological and methodological differences, all doctoral education is assessed. The qualitative synthesis used validity theory as a conceptual framework to identify evidence about scoring, generalization, extrapolation, and implications of doctoral assessment in art and design. I chose validity theory because it captures relevant comparable features of doctoral assessment that show meaningful insights about the similarities and differences of arts, design, and practice doctorates. By applying systematic review methods and analysing the content using validity theory, I implemented a rigorous and transparent approach to synthesizing evidence from multiple studies.

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[17] Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens, eds., *Perspectives on Research Assessment in Architecture, Music and the Arts: Discussing Doctorateness* (New York: Routledge, 2017).
[18] Christopher Frayling et al., *Practice-Based Doctorates in the Creative and Performing Arts and Design*, UK Council for Graduate Education (Lichfield, 1997), 10-11.
[19] Nilsson, Dunin-Woyseth, and Janssens, *Perspectives on Research Assessment in Architecture, Music and the Arts: Discussing Doctorateness*, x.
[20] Denicolo et al., *Delivering Inspiring Doctoral Assessment*, 142.
[21] Frayling et al., *Practice-Based Doctorates in the Creative and Performing Arts and Design*, 7.

I argue that the debate about doctoral education in art and design involves clashing value judgements about the purpose of the modern research university. Furthermore, I argue that the idea of the doctorate in art and design is not found in either artefacts, practices, methods, or capabilities. Instead, it is an integrative argument that bridges claims about observations of doctoral candidates' performances, the generalizability of doctoral education, its extrapolation to real-world capabilities in real-world contexts, and the consequences of universities' decisions to award doctoral degrees. I highlight the need to distinguish research education from preparation for professional art and design practice. I answer the research question with:

- A critical appraisal of the concept of doctorateness in practice-based doctoral education in art and design (Chapter 2).
- A bibliography of the literature about research education and the doctorate in art and design (Appendix C).
- A quantitative synthesis showing the extent, range, and nature of the studies included in the review (Table 2 and Table 3).
- A conceptual framework that successfully compares arts, design, and practice doctorates (Figure 3).
- A qualitative synthesis provides insights into what is known in the literature about the assessment of arts, design, and practice doctorates (Chapter 3).
- A new understanding of the idea of the doctorate in art and design as an argument that bridges claims about the scoring, generalization, extrapolation, and implications of doctoral assessment (Chapter 3).

Dissertation Structure

I structured this dissertation according to the formatting conventions allowed by the Auckland University of Technology Postgraduate Handbook.[22] Specifically, this dissertation follows the Format 2 – Manuscript Structure, which allows research students to include manuscripts they prepared as they progressed through their degree. Accordingly, Chapters 2 and 3 are formatted as manuscripts prepared for publication in peer-reviewed journals. In addition, I include short preludes which link the manuscripts in a sequential and cohesive dissertation. Chapter 4 discusses the dissertation's findings and insights. Since this dissertation follows the Format 2 – Manuscript Structure, some repetition is allowed between the chapters.[23]

The manuscripts are presented in their postprint article form. However, the figures, table numbers, and the referencing format have been standardized throughout the dissertation. I use the Chicago Manual of Style (17th Edition) numbered footnote system to avoid encumbering text and since the reader might need to quickly see the cited sources' bibliographic information.[24]

I utilised assistance with some data entry tasks during the initial stages of the systematic literature review. The search identified 5,673 records. Ken Friedman provided about 60 of these records. Laveda Pasang, Phoebe Lee, and T'heniel Chetty assisted me to enter the records' bibliographic information into an Endnote database. However, this dissertation is

[22] Auckland University of Technology, *Postgraduate Handbook 2022* (Auckland, NZ: Graduate Research School, 2022), 91-94.
[23] Ibid., 92.
[24] *The Chicago Manual of Style Online*, 17 ed. (Chicago: University of Chicago Press, 2017).

entirely my own independent research, and I am solely responsible for the arguments advanced here.

Table 1: Manuscripts Included in the Dissertation

Chapter	Publication
Chapter 2 Published in a peer-reviewed journal	Feast, Luke. 2022. "Down the Brain Drain: Searching for Doctorateness in all the Wrong Places." *She Ji: The Journal of Design, Economics, and Innovation* 8 (1): 147-170. https://doi.org/10.1016/j.sheji.2021.11.001.
Chapter 3 Submitted to a peer-reviewed journal	Feast, Luke. 2023. "The Idea of the Doctorate in Art and Design: A Systematic Literature Review using an Argument-Based Approach to Validity"

Chapter 2: Down the Brain Drain
Searching for Doctorateness in all the Wrong Places

Preface

This chapter is a manuscript of a review article of a book about doctorateness in art and design. The article reviews *Perspectives on Research Assessment in Architecture, Music and the Arts: Discussing Doctorateness*. Its editors' aim is to establish a framework for applying the concept of "doctorateness" to the assessment of practice-based doctoral research in art and design fields.

The book's principal claim is that the purpose of practice-based doctorates is to uphold and maintain art and design practitioners' values. I review each chapter and I evaluate the chain of inferences that lead from scoring the thesis to doctoral education's purpose. I conclude that the authors' argument undermines the research-teaching-study nexus.

I evaluate the book's argument using analytic concepts developed from validity theory. Subsequently, I use these analytic concepts to inform the systematic literature review presented in Chapter 3.

Introduction

Perspectives on Research Assessment in Architecture, Music and the Arts: Discussing Doctorateness, edited by Fredrik Nilsson, Halina Dunin-Woyseth and Nel Janssens, is a book about practice-based doctorates. They base the book on discussion papers from a symposium held in Sweden in 2014 about developing a separate research assessment framework that upholds and maintains the values of art and design practitioners.[25] Instead, the participants mostly discussed the place of practice-based doctorates in higher education systems and the inclusion of artistic performances and designed artifacts within theses.[26]

Doctoral education and research training is a cognate field with extensive literature about research assessment.[27] And there is a rich literature about doctoral education in design.[28] But many of the book's authors do not engage with this literature in sufficient depth, assuming that practice-based doctorates are fit for purpose when, in fact, their arguments take necessary

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[25] Halina Dunin-Woyseth, Nel Janssens, and Fredrik Nilsson, "Editorial: The Art of Assessment—Focusing Research Assessment from Different Perspectives," in *Perspectives on Research Assessment in Architecture, Music, and the Arts: and Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), x–xi.
[26] Ibid., xv, the final product subject to examination is known in the European-style system as a thesis and the North-American-style system as a dissertation.
[27] For example, see Pam Denicolo, Dawn Duke, and Julie Reeves, *Delivering Inspiring Doctoral Assessment* (Los Angeles: Sage, 2019); also, see Peggy L. Maki and Nancy A. Borkowski, eds., *The Assessment of Doctoral Education: Emerging Criteria and New Models for Improving Outcomes* (Sterling, VA: Stylus, 2006); also, see Barbara E. Lovitts, *Making the Implicit Explicit: Creating Performance Expectations for the Dissertation* (Sterling, Virginia: Stylus, 2007); Stuart Powell and Howard Green, *The Doctorate Worldwide* (Maidenhead: Society for Research into Higher Education & Open University Press, 2007).
[28] For example, see Richard Buchanan et al., eds., *Doctoral Education in Design: Proceedings of the 1st Conference of Doctoral Education in Design* (Pittsburgh: Carnegie Mellon University, 1998), available at https://dl.designresearchsociety.org/conference-volumes/49/; David Durling and Ken Friedman, eds., *Proceedings of the 2nd Conference of Doctoral Education in Design (2000): Foundations for the Future* (Stoke-on-Trent, UK: Staffordshire University Press, 2000), available at https://dl.designresearchsociety.org/conference-volumes/29; David Durling and Kazuo Sugiyama, eds., *Proceedings of the 3rd Conference of Doctoral Education in Design* (Tsukuba, Japan, October 14–17, 2003) , available at https://dl.designresearchsociety.org/conference-volumes/48/.

steps for granted. Since examiners' decisions have significant consequences, the evidence that doctoral research assessment provides should have the meaning they claim.[29]

There is more to a doctoral thesis than its format. We are not only interested in doctoral examiners' reports on their conclusions about the examinee's thesis. Examiners' reports and judgements are also used to support claims about whether the examinee can perform research, can think like a researcher, and can advance knowledge in the modern research university. However, these claims are not self-evident and merit evaluation.

I review the authors' arguments and use Michael Kane's argument-based approach to validating educational assessment to evaluate the authors' claims.[30] I conclude that the book's argument is not convincing, because it relies on implausible assumptions and fallacious reasoning. Practice-based advanced study leads to unacceptable side effects for research universities as it does not educate the next generation of researchers with "the standards of work and modes of thought" needed to produce research that extends the frontier of knowledge of their disciplines.[31] Practice-based advanced study can fragment the unity of the research-teaching-study nexus by draining the next generation of researchers away from the public sphere into the private sphere.[32] The contribution this review article makes is to show that the debate about practice-based doctorates in art and design centres on clashing value judgements about the purpose of the modern research university.[33]

An Argument-Based Approach to Doctoral Research Assessment

Kane's argument-based approach to validating assessment begins with laying out an interpretative argument—the chain of inferences and assumptions that bridge claims about the scoring, generalization, extrapolation, and implications of assessment.[34] "To claim that a proposed interpretation or use is valid," Kane writes, "is to claim that the interpretive argument is coherent, that its inferences are reasonable, and that its assumptions are plausible."[35] In this section, I follow Kane's approach to describe an interpretative argument for research-based advanced study in general.

Scoring

The examination process begins after the student completes research work within the doctoral education program. Mario Bunge defines research as "methodical search for knowledge"[36] and the OECD's *Frascati Manual* defines research and experimental development work (R&D) as "creative and systematic work undertaken to increase the stock of knowledge—

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[29] Gregory J. Cizek, *Validity: An Integrated Approach to Test Score Meaning and Use* (New York: Routledge, 2020), 17.
[30] Michael T. Kane, "Validating the Interpretations and Uses of Test Scores," *Journal of Educational Measurement* 50, no. 1 (2013): 1–73, DOI: https://doi.org/10.1111/jedm.12000.
[31] Harriet Zuckerman, *Scientific Elite: Nobel Laureates in the United States* (New York: Free Press, 1977), 123.
[32] Burton R. Clark, *Places of Inquiry: Research and Advanced Education in Modern Universities* (Berkeley: University of California Press, 1995), 207–9; In contrast, see Helina Dunin-Woyseth, "Some Notes on Mode 1 and Mode 2: Adversaries or Dialogue Partners?," in *The Routledge Companion to Research in the Arts*, ed. Michael Biggs and Henrik Karlsson (London: Routledge, 2011), 72–74.
[33] See, Peter De Graeve et al., "Transvaluation: The Dream Made Real: A Manifesto," cited from Rolf Hughes, "When Will It Thunder?," in *Perspectives on Research Assessment in Architecture, Music and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 172, notes no. 13.
[34] Michael T. Kane, "Validation," in *Educational Measurement*, 4th ed., ed. Robert L. Brennan (Lanham, MD: Rowman & Littlefield Publishers, 2006), 10–11.
[35] Ibid., 23.
[36] Mario Bunge, *Philosophical Dictionary* (New York: Prometheus Books, 2003), 251.

including knowledge of humankind, culture and society—and to devise new applications of available knowledge."[37] Hence, producing a substantive contribution to knowledge worthy of peer review and publication is the primary activity of research-based advanced study.[38]

Examiners judge what an examinee knows from inferences about what the examinee can do based on observations of the examinee's performance.[39] The examiners provide a report that recommends a score. The examinee's university's regulations define what scores examiners may recommend, such as pass, minor corrections, major corrections, or fail.[40]

Generalization

The first inference is that if an examinee is passed, then their thesis is complete, and all the essential components of research meet the required standards. This inference is a generalization from the examinee's score (based on observed performance) to standards that apply to all research-based advanced studies. It is a generalization from the score to a conclusion about expected performance over the universe of generalization, which includes performances on similar tasks.[41] According to Vernon Trafford and Shosh Leshem, examiners use 12 "inescapable prerequisites" to judge how the thesis relates to academic standards (Figure 1).[42]

<table>
<tr><td>Contribution to knowledge</td><td>Stated gap in knowledge →</td><td>Explicit research questions</td><td>Conceptual framework</td></tr>
<tr><td>Conceptual conclusions</td><td colspan="2" rowspan="2">When synergy exists between the components, then doctorateness is demonstrated</td><td>Explicit research design</td></tr>
<tr><td>Research questions answered</td><td>Appropriate methodology</td></tr>
<tr><td>Cogent argument throughout</td><td>Full engagement with theory</td><td>Clear/precise presentation</td><td>"Correct" data collection</td></tr>
</table>

Figure 1. Components of doctorateness[43]

Standards are textual artifacts that communicate expectations of quality and level of performance.[44] Judgment is private, but judgements made using standards are defensible and

[37] OECD, *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development* (Paris: OECD Publishing, 2015), 44, DOI: https://doi.org/10.1787/9789264239012-en.
[38] Denicolo et al., *Delivering Inspiring Doctoral Assessment*, 5.
[39] Gordon Joughin, "Assessment, Learning and Judgement in Higher Education: A Critical Review," in *Assessment, Learning and Judgement in Higher Education*, ed. Gordon Joughin (Dordrecht, NL: Springer, 2009), 16, DOI: https://doi.org/10.1007/978-1-4020-8905-3_2.
[40] Denicolo et al., *Delivering Inspiring Doctoral Assessment*, 154.
[41] Kane, "Validation," 51.
[42] Vernon Trafford and Shosh Leshem, *Stepping Stones to Achieving Your Doctorate: By Focusing on Your Viva from the Start* (Maidenhead, UK: Open University Press, 2008), 38.
[43] I have redrawn this model from Vernon Trafford and Shosh Leshem, *Stepping Stones to Achieving Your Doctorate: By Focusing on Your Viva from the Start* (Maidenhead, UK: Open University Press, 2008), 38.
[44] Val Klenowski and Claire Wyatt-Smith, *Assessment for Education: Standards, Judgement, and Moderation* (Los Angeles: Sage, 2014), 15.

transparent.[45] Standards are prime index points that allow for judgements of what examinees can do, and what they know, that reflects the features of the standards themselves, rather than how the examinee compares to the average performance of a group.[46] There are two key sources of contemporary standards for doctoral education. The *Frascati Manual* is an ongoing publication by the OECD that includes five criteria for defining whether an activity is a Research and Experimental Development (R&D) activity:[47]

1. Systematic. The activity is conducted in a planned way, with records kept of both the outcomes and process followed such as the conceptual framework, methodology and fieldwork.
2. Uncertain. The process of research must aim to resolve an uncertainty about the project's outcome and there should be the possibility of not achieving the intended results.
3. Novel. The activity must entail an attempt to expand the state of the art. Advancements in knowledge have to be assessed by comparison with the existing stock of knowledge. Routine activity or routine use of available knowledge is excluded.
4. Creative. The activity must create original concepts or ideas that improve on existing knowledge or devise new applications of existing knowledge or new uses of available techniques or technologies. This excludes any routine development or changes to buildings, products or processes.
5. Transferable and/or reproducible. The results must be able to be passed on. Results cannot remain tacit (solely in the minds of the researchers), or they would be at risk of being lost. The outcomes must be freely transferrable to sectors responsible for their application, which ensures their use and allows other researchers to reproduce the results as part of their R&D activities.

A Framework for Qualifications of the European Higher Education Area, published by the Bologna Working Group on Qualifications Frameworks, describes learning outcomes for third-cycle education in the European Qualifications Framework.[48] Qualifications that signify completion of the third cycle are awarded to students who

- Have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field;
- Have demonstrated the ability to conceive, design, implement, and adapt a substantial process of research with scholarly integrity;
- Have made a contribution through original research that extends the frontier of knowledge by developing a substantial body of work, some of which merits national or international refereed publication;
- Are capable of critical analysis, evaluation, and synthesis of new and complex ideas;

[45] David Lambert and David Lines, *Understanding Assessment: Purposes, Perceptions, Practice* (London: Routledge, 2000), 17–18.
[46] Anne Anastasi, *Psychological Testing*, 4th ed. (New York: Macmillan Publishing, 1976), 97.
[47] OECD, *Frascati Manual 2015*, 46-48.
[48] Bologna Working Group, *A Framework for Qualifications of the European Higher Education Area* (Copenhagen: Danish Ministry of Science, Technology and Innovation, 2005), 196–97, available at http://ehea.info/media.ehea.info/file/WG_Frameworks_qualification/71/0/050218_QF_EHEA_580710.pdf.

- Can communicate with their peers, the wider scholarly community, and society in general about their areas of expertise; and
- Can be expected to promote technological, social, or cultural advancement within academic and professional contexts in a knowledge-based society.

Extrapolation

The second inference is that if the examiners recognize the synergy between the essential components of research, then they can extrapolate to claim that the examinee's handling of the system of mutually interdependent components of research shows "doctorateness" (Figure 1).[49] Successfully integrating the essential components of research requires the methodological awareness that the collective effectiveness of the whole is greater than the sum of its parts.

The term "doctorateness" emerged in the 1990s in discourses about threshold academic standards for degrees.[50] According to Trafford and Leshem, doctorateness is a personal attribute that results from a transformative learning process.[51] Jan Meyer and Ray Land describe transformational learning metaphorically as passing through a threshold, gateway, or portal to a new way of thinking.[52] Trafford and Leshem describe doctorateness as a threshold concept to argue that only once doctoral students have understood the complexities of high-quality doctoral-level research can they display doctorateness.[53] Pamela Denicolo and her colleagues also support the view that doctorateness is a quality possessed by the researcher, not the project. They argue that the purpose of a thesis or dissertation within a doctoral degree is

> "to demonstrate in a public form that a candidate has achieved 'doctorateness,' that is, in summary: the ability to conduct autonomously and within restricted boundaries of resources, including time, research that is ground-breaking, in the sense that it results in a novel/unique, non-trivial contribution to knowledge, and that is publishable in some form."[54]

Similarly, after conducting focus group interviews with 276 faculty in 74 departments in nine US universities, Barbara Lovitts found that outstanding doctoral students, who seamlessly integrate the thesis's research components, are creative, intellectually adventurous, passionate about what they are doing, curious, willing to leap into unfamiliar territory, and typically think and work independently.[55] Likewise, Harriet Zuckerman found through intensive interviews with over ninety Nobel laureates that research-based advanced study imparts

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[49] Trafford and Leshem, *Stepping Stones*, 38.
[50] "Doctorateness" is more commonly used than "doctoralness" because it relates to "graduateness," a term used in UK education discourses around the same time. For example, see Christopher Frayling, *Practice-Based Doctorates in the Creative and Performing Arts and Design* (Lichfield, UK: UK Council for Graduate Education, 1997), 10–11; also, see Anthony Woollard, "Core Skills and the Idea of the Graduate," *Higher Education Quarterly* 49, no. 4 (1995): 317, DOI: https://doi.org/10.1111/j.1468-2273.1995.tb01684.x.
[51] Vernon Trafford and Shosh Leshem, "Doctorateness as a Threshold Concept," *Innovations in Education and Teaching International* 46, no. 3 (2009): 305–16, DOI: https://doi.org/10.1080/14703290903069027.
[52] Jan H. F. Meyer and Ray Land, "Threshold Concepts and Troublesome Knowledge: An Introduction," in *Overcoming Barriers to Student Understanding: Threshold Concepts and Troublesome Knowledge*, ed. Jan H. F. Meyer and Ray Land (London and New York: Routledge, 2006), 3.
[53] Trafford and Leshem, *Stepping Stones*, 51.
[54] Denicolo et al., *Delivering Inspiring Doctoral Assessment*, 142.
[55] Lovitts, *Making the Implicit Explicit*, 38–39.

something more than research skills and understanding of the literature. Rather, students acquire values and norms such as a questioning attitude to knowledge, a sense for a good question or a key problem, and a critical stance towards performing research or theorizing.[56] Doctorateness is thus not just executing research methods successfully, it is the methodological awareness and inquiring attitude that characterizes thinking like an independent researcher.

Implications

The third inference is that if the examinee shows doctorateness, then they can advance knowledge in the university and contribute to maintaining the unity of the research-teaching-study nexus. These two ideas emerged in 19th century Europe and underpin the modern research university's purpose. First is John Henry Newman's idea that a university is a place of inquiry for knowledge worth possessing for what it is and not merely for what it does.[57] Second is Wilhelm von Humboldt's idea that integrating research, teaching and learning are mutually beneficial—student participation in a research environment can be an active mode of learning.[58] Burton R. Clark's extensive study reveals the significant role played by the notion of the research-teaching-study nexus in the historical development and current state of research organizations and advanced education in Germany, Great Britain, France, the United States, and Japan.[59] Clark's research found that organizing research-based advanced study around inquiry puts universities in the best position to advance knowledge in tandem with educating the next generation of researchers as stewards of their disciplines.[60]

Chapter Summary

Perspectives on Research Assessment in Architecture, Music and the Arts: Discussing Doctorateness has three parts. The first part contains three chapters that discuss doctorateness in art and design concerning assessment. These chapters develop new theories and report new research. The second part has six chapters, two dealing with various institutional viewpoints and four about the problem of tacit knowledge and practice-based study. The experiences and views discussed are interesting, but they do not present any particularly new ideas or solutions. The third part contains three chapters that speculate about what artistic research is and how it works. These chapters discuss artistic research with no serious engagement with the literature on doctoral education or assessment. The book begins with an editorial by Halina Dunin-Woyseth, Nel Janssens, and Fredrik Nilsson.

Editorial: "The Art of Assessment—Focusing Research Assessment from Different Perspectives," by Halina Dunin-Woyseth, Nel Janssens, and Fredrik Nilsson

[56] Harriet Zuckerman, *Scientific Elite: Nobel Laureates in the United States* (New York: Free Press, 1979), 129.
[57] Sheldon Rothblatt, *The Modern University and Its Discontents: The Fate of Newman's Legacies in Britain and America* (Cambridge: Cambridge University Press, 1997), 17, DOI: https://doi.org/10.1017/CBO9780511582943.
[58] Clark, *Places of Inquiry,* 219.
[59] Burton R. Clark, ed., *The Research Foundations of Graduate Education: Germany, Britain, France, United States, Japan, vol. Berkeley* (Berkeley: University of California Press, 1993).
[60] Ibid., 240.

Dunin-Woyseth and her colleagues state that the Bologna Declaration requires creative arts researchers to articulate how they produce knowledge.[61] In response, scholars working in creative fields have experimented with new modes and formats of research. The authors align their view with the claim that the creative fields should create their own model of doctorateness with their own doctoral format and assessment approach:[62]

> "We can only evaluate whether something has been successfully done or not in relation to some kind of agreed objective or purpose. What qualifies as doctorateness in creative fields has to relate to what ultimately are the objectives of practice-based research."[63]

The authors' view is that the ultimate purpose of practice-based advanced studies in creative fields is to uphold and maintain art and design practitioners' values.[64]

Section 1. "Framing 'Doctorateness'"

The three chapters in Section 1 contain the book's most sustained discussion of doctorateness and doctoral research assessment. Biggs's institutional theory of artistic research, Dunin-Woyseth and Nilsson's case studies of applying Elliot Eisner's connoisseurship and criticism approach to doctoral examinations in Norway, and Anne Solberg's analyses of the learning outcomes in the European qualifications framework make useful contributions to the discourse on doctoral education in art and design.

Chapter 1: "Doctorateness: Where Should We Look for Evidence?," by Michael Biggs

The chapter's principal contribution is Biggs's "Institutional Theory of Artistic Research."[65] Biggs's position is that artistic performances are research—a claim both distinct from and compatible with general research standards. To support his theory, Biggs makes two arguments. The first combines an analogy between the art world and the academic world with an appeal to authority.[66] The second is that artistic research is compatible with general research standards.

Here is the first argument: in the art world, those authorized by society decide what constitutes art.[67] The academic world is like the art world. Therefore, the right thing to do in the academic world is for those authorized by society to decide what constitutes research.

Biggs concludes that "what artistic research is" ought to be defined by what academics say artistic research is.[68] Biggs's wording is ambiguous. He does not state clearly whether he means that authority comes from academic expertise or from their right to exercise command

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[61] Dunin-Woyseth et al., "Editorial," ix.
[62] Ibid., x.
[63] Ibid., xv.
[64] Ibid., x.
[65] Michael Biggs, "Doctorateness: Where Should We Look for Evidence?," in *Perspectives on Research Assessment in Architecture, Music, and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 7–10.
[66] Douglas N. Walton, *Informal Logic: A Handbook for Critical Argumentation* (Cambridge: Cambridge University Press, 1989), 305–15, 209–22.
[67] George Dickie, "Defining Art," *American Philosophical Quarterly* 6, no. 3 (1969): 253–56, available at http://www.jstor.org/stable/20009315; Arthur Danto, "The Artworld," *The Journal of Philosophy* 61, no. 19 (1964): 571–84, DOI: https://doi.org/10.2307/2022937.
[68] Biggs, "Where Should We Look?," 6.

over others through holding a position of administrative power.[69] If it is the former, then Biggs restates the conventional view that assessment involves judgement.[70] If it is the latter, then doctoral examiners' decisions are arbitrary, and Biggs's appeal to authority closes off debate rather than inviting dialogue.[71]

Biggs says he resists the isolationist position that academics "are free to claim whatever they wish as valid research." Instead, he recognizes that "there are certain general qualities that research must meet to be recognized as research."[72] Here, Biggs introduces his second argument. Biggs claims that his position is not isolationist if, rather than adapting artistic research to meet general research standards, he alters the fundamentals of research in all disciplines to accommodate artistic research. "In due course," Biggs writes, "artistic research will become less strange; not because it will become more familiar, but because we will have to re-describe research in other disciplines as a consequence of the way we describe artistic research."[73] Biggs backs this claim with an analogy between artistic research and David Bloor's strong program or "strong sociology" of knowledge.[74]

Here is the second argument: the right thing to do is to alter general research standards to include subjective sociological research methods because Bloor's strong program shows that all kinds of knowledge are socially constructed and relative, including knowledge of natural science and mathematics.[75] The impact of artistic research could be like the impact of Bloor's strong program. Therefore, the right thing to do is to alter the general research standards to include visual, tacit, embodied, or non-linguistic artistic research methods.[76]

Biggs believes that the impact of artistic research could be comparable to the impact that subjectivism had on the domain of sociology in the 1970s. However, he states that "what exactly we mean when we use the term 'methodology' in relation to creative arts is, as yet, unclear."[77] Currently, general research standards exclude artistic performance because it fails the novelty test and does not satisfy the reproducibility criterion.[78] So Biggs's second argument is a prediction rather than a matter of fact. It might be true in the future, or it might not. Therefore, in line with Biggs's "Institutional Theory of Artistic Research," when academics define artistic performances as research, they are taking the isolationist position that artistic researchers "claim whatever they wish as valid research."[79]

Chapter 2: "Emerging Epistemic Communities and Cultures of Evidence: On the Practice of Assessment of Research in the Creative Fields," by Halina Dunin-Woyseth and Fredrik Nilsson

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[69] Walton, *Informal Logic*, 211.
[70] David Boud and Associates, "Assessment 2020: Seven Propositions for Assessment Reform in Higher Education" (document, Australian Learning and Teaching Council, Sydney, 2010), 1, available at https://www.uts.edu.au/sites/default/files/Assessment-2020_propositions_final.pdf.
[71] Joseph Raz, *Between Authority and Interpretation: On the Theory of Law and Practical Reason* (Oxford: Oxford University Press, 2011), 134–42.
[72] Biggs, "Where Should We Look?," 11.
[73] Ibid., 12. The "we" Biggs refers to in this passage is the creative arts community.
[74] David Bloor, *Knowledge and Social Imagery* (Chicago: University of Chicago Press, 1976); for comparison see Markus Seidel, *Epistemic Relativism: A Constructive Critique* (Basingstoke, UK: Palgrave Macmillan, 2014).
[75] Biggs, "Where Should We Look?," 11.
[76] Ibid., 11.
[77] Ibid., 11–12.
[78] OECD, *Frascati Manual 2015*, 64–65.
[79] Biggs, "Where Should We Look?," 6.

According to Dunin-Woyseth and Nilsson, there exists a community of practitioner-researchers with a novel skillset conjoining professional art and design practice, education, and research. They claim that assessing practitioner-researchers' work requires a special approach because their skills do not align with general research standards, so Dunin-Woyseth and Nilsson draw on Eliot Eisner's connoisseurship and criticism approach to educational evaluation.[80] Connoisseurship is the private awareness of "particular qualitative complexities and subtleties," and criticism is disclosing the content of connoisseurship into the public sphere through describing, interpreting, and evaluating the work's significant features.[81] Dunin-Woyseth and Nilsson claim that academics should not examine practitioner-researchers' theses, rather the examiners should be connoisseurs or critics of professional art and design practice and connoisseurs or critics of art and design research.[82]

Dunin-Woyseth and Nilsson use this connoisseurship and criticism approach in their report on four doctoral examinations at Norway's Oslo School of Architecture and Design (AHO). The doctoral project topics were derived from art and design practice and two were examined from 2004 to 2005, and two from 2014 to 2015. The data include the four doctoral theses and three examiners' reports written by the adjudication committees. Dunin-Woyseth and Nilsson claim their study shows that the examiners based their 2004–2005 assessments of the doctorates on traditional academic standards, which led to "unsatisfactory" outcomes for the candidates. In contrast, the 2014–2015 doctorates were assessed as "satisfactory," the authors claim, because the examiners used the connoisseurship and criticism approach to assessment.[83] According to Dunin-Woyseth and Nilsson, the different assessment outcomes show that the meaning of doctorateness has changed over time. They claim, therefore, that the general research standards should be redefined to include artistic performance as research.[84]

The most interesting case is the examination of Pavlina Lucas's 2014 thesis *The Photographic Absolute: An Architectural Beginning*, since this is the only case where the examiners interpret the examinee's artistic performances (photographs, ceramic artifacts) as research, as well as apply the connoisseurship and criticism approach to assessment. Dunin-Woyseth and Nilsson pay particular attention to the examiners' credentials and backgrounds, noting that all the examiners had PhDs, were based in academia and art and design practice, and "were very involved in and acquainted with the international developments of practice-, arts- and design-based research."[85] Dunin-Woyseth and Nilsson's claim that the credibility of the examiners' conclusion that Lucas's thesis is a "valuable and genuine contribution to the development of design-led architectural research" is justified by the examiners' background

[80] Elliot W. Eisner, "Educational Connoisseurship and Criticism: Their Form and Functions in Educational Evaluation," *Journal of Aesthetic Education* 10, no. 3/4 (1976): 135–50, DOI: https://doi.org/10.2307/3332067.
[81] Elliot Eisner, "Educational Connoisseurship and Educational Criticism: An Arts-Based Approach to Educational Evaluation," in *International Handbook of Educational Evaluation*, vol. 9, ed. Thomas Kellaghan, Daniel L. Stufflebeam, and Lori A. Wingate (Dordrecht, NL: Kluwer Academic Publishers, 2003), 153, DOI: https://doi.org/10.1007/978-94-010-0309-4_11.
[82] Halina Dunin-Woyseth and Fredrik Nilsson, "Doctorateness in Design Disciplines. Negotiating Connoisseurship and Criticism in Practice-Related Fields," *FORMakademisk* 5, no. 2 (2012): 8, DOI: https://doi.org/10.7577/formakademisk.499.
[83] Halina Dunin-Woyseth and Fredrik Nilsson, "Emerging Epistemic Communities and Cultures of Evidence: On the Practice of Assessment of Research in the Creative Fields," in *Perspectives on Research Assessment in Architecture, Music, and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 28.
[84] Ibid., 30.
[85] Ibid., 26.

and expertise as "connoisseur/critics" rather than by evidentiary argument referenced to standards.[86]

However, there were variations to the typical examination process that may have introduced bias. First, the examiners were directed to take into account that Lucas's doctoral project was selected as part of an institutional change to expand AHO's "existing PhD programme in the direction of 'research by design'".[87] Consequently, the examiners wrote in their report that "'much is at stake' for the parties involved, including the candidate, the institution, the authority of Norwegian third-level education, as well as the credibility of the committee members themselves."[88] It is conceivable that these circumstances added extra pressure on the examiners to pass the examinee. Second, the examiners were "instrumental in making the exhibition part of the final defence and therefore of including artifacts as part of the final assessment."[89] Lucas's thesis artifacts presumably did not explicitly demonstrate doctorateness, hence the examiners had to make a lengthy cognitive leap from the artifacts' physical forms to their conclusions about the examinee's attributes. Indeed, Dunin-Woyseth and Nilsson state that the variation to the examination process "might reflect that there had been tense discussions before the final assessment was agreed."[90] These variations may have introduced bias.

Dunin-Woyseth and Nilsson's chapter emphasizes the examiners' credentials and background rather than the substance of their judgements. In contrast, Eisner states that the connoisseurship and criticism approach to validation requires that the evidence that supports the evaluators' conclusions be transparent, that the examiners' interpretations are credible, and that there should be inter-judge reliability.[91] There is some doubt that the examination process that Dunin-Woyseth and Nilsson report met Eisner's criteria. This highlights that preventing inconsistency is the key problem with the connoisseurship and criticism approach. If connoisseurs and critics are to fulfil their role as examiners, then they incur the obligation to produce grounds for their conclusions.[92] Otherwise, their arguments fail since they complete the fallacy of evading the burden of proof.[93]

Chapter 3. "Setting the Scene: The Development of Formal Frameworks for Doctorates in Europe," by Anne Solberg

Solberg's chapter presents a useful analysis of the Bologna Process and its implications for doctoral education in art and design. According to Solberg, the Bologna Process meetings and outcomes are intended to harmonize the standards and quality of higher education qualifications in European member states. The Process is driven by academic independence and governmental institutionalization, and *The framework for qualifications of the European Higher Education Area*, commonly referred to as the Dublin Descriptors, are its major

[86] Ibid., 25.
[87] Ibid., 25.
[88] Ibid., 25.
[89] Ibid., 26.
[90] Ibid., 25.
[91] Eisner, "Educational Connoisseurship," 161–63.
[92] Frans H. van Eemeren and Rob Grootendorst, *A Systematic Theory of Argumentation: The Pragma-Dialectical Approach* (Cambridge: Cambridge University Press, 2004), 191.
[93] Frans H. van Eemeren, *Strategic Maneuvering in Argumentative Discourse: Extending the Pragma-Dialectical Theory of Argumentation* (Amsterdam: John Benjamins B.V., 2010), 213–16.

achievement.[94] Solberg reports that the Dublin Descriptors represent the current best consensus on the generic learning outcomes for the progression of qualifications across three cycles. The three cycles broadly map to bachelor's, master's, and doctoral education levels. According to Solberg, the Bologna Process outcomes are not strictly legally binding at the national level; rather, they are best considered a form of "soft law" that is quasi-binding, such as via standardization of language. However, Solberg notes there may be binding effects, for example, on the free movement of professionals.[95]

The Dublin Descriptors represent a form of outcome-based, standards-referenced assessment. The textual artifacts, and the learning outcomes they describe, are intended to provide clear reference points for member states to establish qualification frameworks. The Bologna framework defines learning outcomes as "statements of what a learner is expected to know, understand and/or be able to do at the end of a period of learning."[96] Learning outcomes describe competencies that a learner can demonstrate in a way that allows evaluation of the level of their achievement.[97]

The Dublin Descriptors framework for third-cycle education does not specify separate learning outcomes for the PhD, professional doctorate, or practice-based doctorate. According to Solberg, Scandinavian art and design schools criticized the Dublin Descriptors for excluding "artistic development work" from doctoral education.[98] For example, Solberg reports that the Norwegian Qualifications Framework includes "research and academic and artistic development work" in doctoral education, but the Dublin Descriptors do not.[99] At a hearing within the Norwegian legislative process about harmonizing the Norwegian Qualifications Framework with the Dublin Descriptors, the Oslo School of Architecture and Design (AHO) and the Bergen Academy of Art and Design (KHIB) commented that the Dublin Descriptors were inappropriate for doctoral education in the arts because the learning outcomes do not include a specific category for artistic research. Solberg reports that "KHIB requested learning outcomes through personal, independent work and the transforming of knowledge into art or design results."[100]

Solberg notes the Dublin Descriptors use the word "research" three times but do not define its meaning. However, she points out that the European qualification framework document that adopts the Dublin Descriptors includes a footnote that contains an inclusive definition of research:

> "The word 'research' is used to cover a wide variety of activities, with the context often related to a field of study; the term is used here to represent a careful study or investigation based on a systematic understanding and critical awareness of knowledge. The word is used inclusively to accommodate the range of activities that support original and innovative work in the whole range of academic, professional and technological

[94] Anne Solberg, "Setting the Scene: The Development of Formal Frameworks for Doctorates in Europe," in *Perspectives on Research Assessment in Architecture, Music, and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 36–37.
[95] Ibid., 42.
[96] Bologna Working Group, "A Framework," 29.
[97] Stephen Adam, "Learning Outcomes" (background paper, United Kingdom Bologna Seminar, Heriot-Watt University, Edinburgh, July 2004), 1–23, available at http://ehea.info/cid102015/learning-outcomes-edinburgh-2004.html.
[98] Solberg, "Setting the Scene," 38–39.
[99] Ibid., 38.
[100] Ibid., 38.

> fields, including the humanities, and traditional, performing, and other creative arts. It is not used in any limited or restricted sense, or relating solely to a traditional 'scientific method.'"[101]

Solberg claims that the "conflicting understanding of the Dublin Descriptors may depend on whether importance is attached to the definition of research."[102] According to Solberg, if artistic researchers understand the definition of "research" contained in the footnote, then the Dublin Descriptors permit "personal, independent work and the transforming of knowledge into art or design results" as learning outcomes for third-cycle education.[103]

Solberg bases her argument on a careful analysis of the literature and policy documents. It is plausible that overlooking the footnote containing the inclusive definition of research explains why some academics in art and design dispute the Dublin Descriptors. However, it is also the case that the controversy surrounding artistic research predates the publication of the Dublin Descriptors by a decade or more. The footnote is an interesting piece of the puzzle.

It is also the case that despite the inclusive definition of research, the *Frascati Manual* excludes research where the results are artistic performances or designed artifacts since they fail the novelty test "as they are looking for new expression, rather than new knowledge," and because they cannot meet the transferability/reproducibility criterion since the results must "increase of the existing stock of knowledge" rather than "remain tacit (remain solely in the minds of the researchers)."[104] Indeed, doctorateness requires synergy between all the essential components of research, not only the definition of research.

Summary

In Section 1, Biggs describes his institutional theory of artistic research and explains why he believes artistic research is not an isolated position but compatible with the general research standards. The twist is that Biggs's argument rests on the prediction that the community of creative arts practitioner-researchers will change the general research standards to accommodate artistic research. So, until the general research standards are revised, artistic research remains isolated. Dunin-Woyseth and Nilsson's chapter uses the connoisseurship and criticism approach to assessment to analyse four doctoral examinations in Norway. They emphasize the examiners' credentials and background rather than the substance of their judgements, so their approach comes across more like an argument from authority rather than expert judgement. Solberg analyses the Dublin Descriptors within the Bologna Process. Solberg notes that some academics in Scandinavia have claimed that the Dublin Descriptors' learning outcomes for third-cycle education are inappropriate for third-cycle education in art and design because they exclude outcomes that remain tacit in doctoral students' minds. Solberg's major claim is that the footnote's definition of research resolves the dispute. Finding the footnote is an interesting piece in the puzzle, but it is not likely to dispel the current controversy.

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[101] Bologna Working Group, "A Framework," 195.
[102] Solberg, "Setting the Scene," 45.
[103] Ibid., 38.
[104] OECD, *Frascati Manual 2015*, 48, 65.

Section 2. "Various Experiences, Cases and Concerns"

Section 2 contains six chapters. The first two address different perspectives on institutional aspects of doctoral assessment, and the other four deal with the problem that practice-based advanced study in art and design produces personal knowledge for individual artists and designers rather than increasing the stock of knowledge.

Chapter 4. "Criteria for 'Doctorateness' in the Creative Fields: A Focus on Architecture," by Oya Atalay Franck

Recently, Swiss schools of applied science have begun to award doctoral degrees.[105] According to Franck, current doctoral programs in Switzerland focus on the "side branches" of the field such as history, sociology, and theory, rather than the core activities of architecture—design and construction.[106] Franck criticizes awarding of doctorates for merely inducting students into a professional elite by fulfilling a contract, paying fees, and conferring prestige.[107]

Instead, Franck maintains that there are two types of doctorates that have greater potential to contribute to Swiss architecture. First, a "super masters" degree program, employing what she calls a "research by design" approach, that produces, for example, methodological and conceptual knowledge for design and construction. Franck argues that assessment of a "super masters" project should relate to the quality of the design work and "whether the design succeeds in making a bold, new, artistic statement."[108] Second, a doctoral degree program that educates architectural theoreticians/critics to conduct "research on design," that contributes, for example, knowledge of building typology and construction techniques to architectural discourses.[109] According to Franck, a "research on design" study should be assessed like a "doctor of philosophy" and examiners should focus their evaluation on intellectual depth and rigor, argumentation, and contribution to knowledge.[110] Franck concludes, by stating, following Nigel Cross, that all research must meet the fundamental criteria of being purposive, inquisitive, informed, methodical, and communicable.[111]

Franck's claim that "super masters" degree is equivalent to a doctoral degree is troubling, because research-based advanced study is qualitatively different from master's level education in art and design practice.[112] Furthermore, as Franck notes, "research by design" is limited due to the "inherent subjectivity" of the process and product, consequently, it does not produce a contribution that increases the stock of knowledge.[113]

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[105] Oya Atalay Franck, "Criteria for 'Doctorateness' in the Creative Fields: A Focus on Architecture," in *Perspectives on Research Assessment in Architecture, Music, and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 52.
[106] Ibid., 54.
[107] Ibid., 65–66.
[108] Ibid., 55.
[109] Ibid., 56.
[110] Ibid., 55.
[111] Ibid., 55–56.
[112] Despite the fact that some doctoral programs, such as the RMIT model, are incremental developments of master's level study, see Leon van Schaik, "The Evolution of the Invitational Program in Design Practice Research," in *The Pink Book: By Practice, By Invitation: Design Practice Research at RMIT*, ed. Leon van Schaik and Anna Johnson (Melbourne: onepointsixone, 2011), 28.
[113] Ibid., 64.

Chapter 5. "Preserving Openness in Design Research in Architecture," by Murray Fraser

Fraser maintains that openness is more important than assessment criteria in doctoral research in architecture.[114] And he calls for researchers in other disciplines to be open and tolerant of architectural design research.[115] He states that the PhD in Architectural Design at the Bartlett School of Architecture at the University of Westminster in the UK, involves investigations in which architects create designed artifacts as their central constituent.[116] Despite his claim that criteria are not useful in doctoral assessment, Fraser identifies six characteristics of doctorateness in architectural design research:[117]

1. Design research in architecture needs to be open ended and speculative in nature and, hence, self-reflective rather than conceptually fixed.
2. It also seeks to resist economic or political instrumentality.
3. It is thus often critical of existing social conditions and power structures and prefers to search for newer and fairer ways of organizing the world.
4. Design research, when properly carried out, mixes text, drawings, models, photographs, and so on in what is a fluid, creative, dialectical process.
5. As such, it openly welcomes cross-disciplinary research and blurred intellectual boundaries.
6. Through a combination of these characteristics, it wishes above all to resist easy definitions or normative readings.

Fraser mentions little about the thesis except that although the project itself may include artifacts, "in all cases a deeper textural analysis absolutely has to be present". [118] Regarding assessment, Fraser maintains that a doctorate in architectural design is no different than any other doctoral thesis. It "needs to contain a substantial amount of serious and innovative historical/theoretical research as written text, with this being combined with creative propositions realized through a symbiotic mixture of drawings, models, and textual analysis." However, these aspects are not readily apparent in Fraser's chapter. For example, the chapter does not include textual analysis or serious theoretical research of the literature on doctorateness, doctoral education, or research training. Consequently, Fraser misunderstands doctorateness as characteristics of design projects rather than as a personal attribute or attitude of researchers.

Fraser suggests that defining doctorateness conflicts with preserving openness in architectural design research. However, this view raises the problem of how examiners should assess something undefined. In contrast, Boud and Associates define assessment as "the making of judgements about how students' work meets appropriate standards."[119] Standards-referenced judgements are defensible and transparent since they allow for judgements of what students can do and what they know that reflect the features of the standards themselves.[120]

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[114] Murray Fraser, "Preserving Openness in Design Research in Architecture," in *Perspectives on Research Assessment in Architecture, Music, and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 69.
[115] Ibid., 72.
[116] Ibid., 71.
[117] Ibid., 83.
[118] Ibid. 72.
[119] David Boud and Associates, "Assessment 2020," 1.
[120] Klenowski and Wyatt-Smith, A*ssessment for Education*, 13; Lambert and Lines, *Understanding Assessment*, 17–18.

Chapter 6. "Design Practice Research in Architecture and Design at RMIT University: Discovery, Reflection, and Assessment," by Colin Fudge and Adriana Partal

The core idea underpinning the RMIT model of practice-based research is that practitioners create designed artifacts and artistic performances within a learning community to examine past projects, reflect on their understanding, and then speculate about the future.[121] The RMIT model has five key ideas: understanding mental space, research through design, insight into issues of practice, integration of the academy and the profession, and providing a forum for students to explore practice with peers.[122] They developed these foundational ideas for master's level study and then extended to the PhD level by increasing the number of action-reflection cycles from one to three.[123] The main learning activity is the twice-yearly Practice Research Symposium (PRS)—a social gathering over a long weekend where visiting critics give lectures and students give half-hour work-in-progress presentations to panels including their supervisors and critics.[124] The PhD examination process involves the candidate presenting an exhibition of designed artifacts to a panel of examiners and a 40,000-word thesis.[125]

Fudge and Partal conducted informal interviews with doctoral examiners about the RMIT model.[126] The interviewee quotations are insightful, but visually cluttered: it is difficult to distinguish one quote from another and to perceive the similarities and differences among them. It would also have been useful to have included more information about the interviewees and the analysis methods used.

Fudge and Partal conclude that "whilst there does seem to be quite extraordinary personal knowledge gained through this PhD process, nevertheless this knowledge is relatively closed to the outside world, and the knowledge domains and benefits mostly the individual candidate and their practice, the practice they work for or lead and the design practice community at RMIT."[127] However, despite its failure to contribute to knowledge in the field, Fudge and Partal claim the RMIT model externalizes its impact by moving the individual's practice to "a new register and direction which in turn influences others and the nature of practice itself."[128] Fudge and Partal do not explain how the RMIT model achieves this impact, they note that "there is still a large body of work over the years that needs documenting, interrogating further and further disseminating."[129] Fudge and Partal suggest they could use this information in a large sociological study of the professional architect.

The chapter usefully delineates the historical development of the RMIT model and adds new evidence. Fudge and Partal believe that the learning community and forum established by the Practice Research Symposium approach could support professional development in other

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[121] Colin Fudge and Adriana Partal, "Design Practice Research in Architecture and Design at RMIT University: Discovery, Reflection, and Assessment," in *Perspectives on Research Assessment in Architecture, Music and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 86.
[122] Ibid., 88–89.
[123] Ibid., 87; Also, see van Schaik, "The Evolution of the Invitational Program," 28.
[124] Van Schaik, "The Evolution of the Invitational Program," 16–19.
[125] Fudge and Partal, "Design Practice Research in Architecture and Design at RMIT University," 90.
[126] Ibid., 91–94.
[127] Ibid., 95.
[128] Ibid., 95–96.
[129] Ibid., 96.

professions and disciplines.[130] This claim is plausible, although a learning community and forum is not a substitute for effective supervision or assessment of research-based advanced study. Fudge and Partal admit the RMIT model produces personal knowledge that benefits the individual candidate. But they argue they could use the information produced by the RMIT model within a sociological study of the professional architect. This claim is plausible, but it does not change the fact that the production of a substantive contribution that increases the stock of knowledge worthy of peer review and publication defines the PhD.

Chapter 7: "Doctoral Scholarship in Popular Music Performance," by Tor Dybo

Dybo's chapter describes and discusses issues arising from a new PhD programme in popular music performance at the University of Agder in Norway. Dybo's main point is that is it difficult to document popular musical knowledge because it is usually transmitted orally and tacitly.[131] Dybo claims it is challenging to train students to recognize and verbalize oral and tacit knowledge via transparent research results.[132] By contrast, Dybo claims that written scores effectively transmit their creators' acquired classical musicological knowledge. Dybo notes that alternative modes of documentation, such as audios and videos, are becoming more accepted.[133]

Dybo promotes a PhD thesis combining a portfolio of artistic practice and written text that contextualizes that practice. According to Dybo, this format raises the issue of whether candidates can be both high-level scholars as well as accomplished professional musicians.[134] Consequently, Dybo states that the PhD by portfolio program only accepts candidates with a professional background in the popular music profession. Dybo argues that this practice-based approach is effective for researching insider knowledge in the popular music profession.[135]

Dybo's discussion is clear and supported by literature from popular music theory. However, he does not engage with the literature on doctorateness, doctoral education studies, doctoral education in art and design, research training, and research assessment. Consequently, Dybo's main point about the problem of documenting tacit knowledge remains disconnected from the key theoretical strands and concepts. For example, he claims that written scores transmit their creators' classical musicological knowledge. But this confuses information and knowledge. Musical scores represent knowledge in the form of musical information. A performer engages with the information to create embodied knowledge of the performance. This epistemological confusion undermines Dybo's argument.

Chapter 8. "Exploring, Enhancing, and Evaluating Musical 'Doctorateness': Perspectives on Performance and Composition," by Karen Burland, Michael Spencer, and Luke Windsor

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[130] Ibid., 95.
[131] Tor Dybo, "Doctoral Scholarship in Popular Music Performance," in *Perspectives on Research Assessment in Architecture, Music, and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 101.
[132] Ibid., 109.
[133] Ibid., 108.
[134] Ibid., 111.
[135] Ibid., 112.

Burland and her colleagues state that practice-based studies are relatively new in creative and performing arts and there is uncertainty around supervision and assessment.[136] Practice-based studies at Leeds University in musical composition and performance include a portfolio of practice and a 15,000–50,000 word written commentary.[137] Although there is growing interest in the program from professional musicians, there is some conflict between practice and academic requirements.[138]

The authors interviewed two practice-based doctoral graduates and two supervisors and identified four themes relating to "musical doctorateness."[139] First, practice-based doctoral students possess intrinsic motivation and a critical approach to their practice.[140] Second, practice-based studies should have a clear focus and rationale, and an opportunity for critical self-reflection.[141] Third, students closely intertwine their identity and practice-based study.[142] Fourth, there may be confusion about the relationship between the practice component and the purpose of the written component, leading to inconsistent outputs.[143] The major claim is that practice-based studies produce personal knowledge, and the quotations from the doctoral students and their supervisors usefully support these claims.

Chapter 9. "Constructing Publics as a Key to Doctoral Research: A Discussion of Two PhD Projects Engaging in Societal Issues with Artistic and Design-Based Methods," by Liesbeth Huybrechts and Marijn van de Weijer

According to Huybrechts and van de Weijer, key issues in PhD education in art and design at Flemish universities relate to professional autonomy and the contrast between artistic research and scientific research.[144] However, Huybrechts and van de Weijer's primary focus is the third domain of practice-based studies in art and design, which addresses societal issues.[145] The authors claim that this kind of research in art and design is projective, exists between the academy and society, and draws on the traditions of socially responsible design and Scandinavian participatory design.[146]

Huybrechts and van de Weijer describe two PhD projects that undertake a form of "minor activism" through socially embedded design research.[147] The students implemented public co-design processes to investigate social concerns and dissolve the boundary between objects and subjects.[148] They used design activity with qualitative social research methods to intervene in

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[136] Karen Burland, Michael Spencer, and Luke Windsor, "Exploring, Enhancing, and Evaluating Musical 'Doctorateness': Perspectives on Performance and Composition," in *Perspectives on Research Assessment in Architecture, Music, and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 114.
[137] Ibid., 116.
[138] Ibid., 117–18.
[139] Ibid., 118.
[140] Ibid., 121.
[141] Ibid., 122.
[142] Ibid., 123.
[143] Ibid., 125.
[144] Liesbeth Huybrechts and Marijn van de Weijer, "Constructing Publics as a Key to Doctoral Research: A Discussion of Two PhD Projects Engaging in Societal Issues with Artistic and Design-Based Methods," in *Perspectives on Research Assessment in Architecture, Music, and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 129.
[145] Ibid., 129.
[146] Ibid., 130–31.
[147] Ibid., 131.
[148] Ibid., 132–33.

social reality and understand meaning in a social context.[149] However, some stakeholders did not readily accept design practice as a mode of inquiry or design artifacts as research results.[150] They claim that balancing the demands of academia and the outside world is difficult, and so doctoral students need critical capacity and scientific maturity to conduct interdisciplinary design research.[151] They maintain that complex problems require a deep understanding of theory.[152]

The chapter provides fresh evidence to the discourse about doctoral education in social design. The authors found that it is demanding to accomplish interdisciplinary research with diverse stakeholders since there may be diverse, even conflicting, interests. Consequently, the authors maintain that strong interdisciplinary supervision teams are needed. Furthermore, candidates need to develop an adequate understanding of theoretical frameworks and concepts from outside the design discipline and the critical capacity to integrate this knowledge with design work in a complex context.[153]

Summary

Section 2 explores diverse views on institutional aspects of doctoral assessment and the problem of tacit knowledge in doctoral education in art and design. Franck criticizes the level of the doctorate and Fraser criticizes the notion of outcome-based assessment. The remaining four chapters discuss different aspects of the problem of tacit knowledge in doctoral research. The chapters provide evidence that results of practice-based studies often remain tacit in the minds of the researchers rather than contribute to the stock of knowledge.

Section 3. "Doctorateness to Come?"

Section 3 contains three chapters that speculate about what artistic research is and how it works.

Chapter 10. "Non-observational Research: A Possible Future Route for Knowledge Acquisition in Architecture and the Arts," by Nel Janssens and Gerard de Zeeuw

Janssens and de Zeeuw state that because of the Bologna Declaration, applied disciplines must articulate how they produce knowledge.[154] They claim architecture and the arts produce non-observational, situated knowledge for action.[155] The authors argue that non-observational research "operates on our preferences and values rather than on our observations," in contrast "observational research aims at empirically evidencing knowledge that is sufficiently stable and certain to predict phenomena in the world."[156] In non-observational research, people take the place of data and theory.[157] The authors further claim non-observational research is related

[149] Ibid., 133–34.
[150] Ibid., 136, 139.
[151] Ibid., 141.
[152] Ibid., 142.
[153] Ibid., 142.
[154] Nel Janssens and Gerard de Zeeuw, "Non-observational Research: A Possible Future Route for Knowledge Acquisition in Architecture and the Arts," in *Perspectives on Research Assessment in Architecture, Music, and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 147.
[155] Ibid., 150.
[156] Ibid., 157
[157] Ibid., 156.

to practice-based research.[158] According to Janssens and de Zeeuw, doctorateness in non-observational architectural research is "the ability to systematically extend the knowledge required for high-quality architectural design."[159]

Janssens and de Zeeuw's chief claim is that non-observational research is equivalent to traditional research.[160] The grounds are the discussion of themes in the literature, intertwined with a PhD student's reflection on their doctoral journey. The discussion comprises several broad and disconnected claims. The authors name several new concepts but do not define them clearly.

Chapter 11. "When Will It Thunder?," by Rolf Hughes

Hughes's chapter is a discussion of themes and concepts with supporting literature. He states that communicating experiential knowledge is the most intractable problem for practice-based researchers, as it involves synthesizing a broad range of information and situated knowledge.[161] So, artistic researchers should have skills in the appropriate architectonic argumentation for inter- and trans-disciplinarity.[162]

Hughes claims doctorateness is an undefinable, open-textured concept, so we should evaluate it on a case-by-case basis.[163] According to Hughes, artistic research is typically visual, not verbal, communicated by sympathetic engagement not text, and brings "the artistic researcher's own sensibility into play as a legitimate area of research."[164] He claims that artistic research should pursue unknowing or not knowing.[165] Consequently, he argues that the university's purpose should be rethought.[166] Hughes outlines his view in a manifesto for a future university. According to Hughes and colleagues, within this future university, the proper value of research and education is "worlding," or "the desire to enact and transform the world as a space of poetics ('making')."[167] Hughes and colleagues propose that rather than being evaluated by "technologies of measurement," research should be reoriented towards "social, political, and poetical values able to manifest—or *materialize*—the worlds to come."[168]

Hughes chapter strikes a defiant and subversive tone but fails to present a plausible argument for an alternative concept of doctorateness. Rather, like many practice-based studies, the chapter presents itself as a revelatory self-proposition that supposedly gains its legitimacy from its valiant struggle against an oppressive society—or in Hughes's case the Bologna Process.[169]

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[158] Ibid., 150.
[159] Ibid., 153.
[160] Ibid., 150.
[161] Rolf Hughes, "When Will It Thunder?," in *Perspectives on Research Assessment in Architecture, Music and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 162.
[162] Ibid., 164.
[163] Ibid., 164–165.
[164] Ibid., 169.
[165] Ibid., 169.
[166] Ibid., 167.
[167] Ibid., 172.
[168] Ibid., 172, italics original.
[169] Peter Murphy, "Design Research: Aesthetic Epistemology and Explanatory Knowledge," *She Ji: The Journal of Design, Economics, and Innovation* 3, no. 2 (2017): 126, DOI: https://doi.org/10.1016/j.sheji.2017.09.002.

Chapter 12. "Precision: The Compositional Accuracy of Artistic Judgement," by Catherina Dyrssen

Dyrssen claims that artistic research challenges contemporary research discourse, since "making art" is synonymous with "doing research."[170] However, now that artistic researchers are seeking to collaborate with other disciplines, for example, to get funding, they need to articulate artistic research approaches.[171] Dyrssen's chapter describes her view of judgement in artistic research in music.

Dyrssen claims that judgement connects to argument, but this connection threatens to reduce values to economic indicators or taste.[172] In contrast, she believes artistic research judgements connect to non-reductive and performative concepts such as "worlding."[173] Dyrssen argues that artistic research is situated compositional judgement, so transforming it into a verbal argument risks diminishing the amount of information derived from the work.[174]

Dyrssen lists five aspects of doctorateness in artistic research: situated knowledge, relational approaches, explorative "thinking-making," assemblages and performative actions, and relational space and identity.[175] Given these aspects, she argues that judgement in artistic research does not reduce complexity—it helps discover possibilities and enhances problem-solving.[176] The five contextual processes of doctorateness are undefined, and the preceding discussion does not establish their meaning. Dyrssen concludes that artistic research "does not focus on evaluation standards but emphasizes and continuously encourages relational discourse and evolving, compositional explorative judgement and logics with accuracy and precision while making and thinking through serious-playful invention-intervention-shaping-learning processes."[177] Despite Dyrssen's chapter being about precision, the writing is vague and unsubstantiated.

Summary

The chapters in Section 3 are speculative pieces that develop notions and analyse concepts about what artistic research is and how it works. Janssens and de Zeeuw describe their notions of "non-observational research" and describe how these notions are equivalent to traditional theory construction. Hughes speculates examiners should evaluate artistic research on a case-by-case basis. Dyrssen describes her view of artistic judgement in musical performance research. Dyrssen claims that transforming artistic judgement into an argument will reduce its situatedness and contextual character.

Evaluating the Authors' Doctoral Research Assessment Argument

[170] Catharina Dyrssen, "Precision: The Compositional Accuracy of Artistic Judgement," in *Perspectives on Research Assessment in Architecture, Music and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 176.
[171] Ibid., 176.
[172] Ibid., 177.
[173] Ibid., 178.
[174] Ibid., 180.
[175] Ibid., 185.
[176] Ibid., 186.
[177] Ibid., 186.

Validity theory has a long history in psychology and education. The first definition of validity—the extent that a test measures what it purports to measure—appeared in 1915.[178] In 1955, Cronbach and Meehl's research on construct validity instigated the Trinitarian model based on criterion-related, content, and construct validity.[179] In the late 1970s, validity theory shifted from a model of different kinds of validity towards a unified theory of validity as an integrative judgement.[180] Contemporary validity theory takes an argument-based approach drawing on informal logic and defensible argumentation rather than formal deductive-nomological explanation.[181]

The book's authors do not use validity theory, but they provide arguments intended to support examiners' claims about practice-based doctorates. In this section, I apply the argument-based approach to validation of the authors' research assessment argument. I lay out the authors' assessment argument and evaluate the soundness and strength of the chain of inferences and assumptions that lead from scoring the examinee's performances to the assessment's implications.

Scoring

The examination process begins after the student completes practice-based advanced study within the doctoral education program. The authors state that practice-based studies involve action-reflection cycles of designing artifacts or creating artistic performances. For example, Fudge and Partal report that students examine their past architectural projects to identify the underlying intentions, create newly designed artifacts given these intentions, and imagine future architectural projects through creating speculative design artifacts.[182] Similarly, Burland and colleagues note that music-based thesis protocols allow examinees to produce a portfolio of practice including "theatrical performance, dance and installation artworks, as well as music composition and performance, including improvisation."[183] And, Dybo reports that practice-based advanced study in music concentrates on performance practices as part of the study of popular music.[184] Hence, the authors maintain that creating designed artifacts or artistic performances is the primary activity of practice-based study.

The examiners observe the examinee's thesis and provide a report that recommends a score. However, recommending a passing score based on the designed artifacts or artistic performances is unconvincing because the examiner assumes that designed artifacts or artistic performances are themselves contributions to the knowledge of the field. This assumption is implausible because it is grounded on a mistaken conception of research. As Peter Murphy makes clear, research is a specific, structured act of explanation, not a construction, fabrication, installation, exhibition, or act of cultural communication.[185]

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[178] Michael T. Kane, "All Validity Is Construct Validity. Or Is It?," *Measurement: Interdisciplinary Research and Perspectives* 10, no. 1-2 (2012): 66, DOI: https://doi.org/10.1080/15366367.2012.681977.
[179] Lee J. Cronbach and Paul E. Meehl, "Construct Validity in Psychological Tests," *Psychological Bulletin* 52, no. 4 (1955): 281–302, DOI: https://doi.org/10.1037/h0040957.
[180] Samuel Messick, "Validity," in *Educational Measurement*, ed. Robert L. Linn (New York: American Council on education and Macmillan, 1989), 13.
[181] Stephen E. Toulmin, *The Uses of Argument*, Updated ed. (Cambridge: Cambridge University Press, 2003).
[182] Fudge and Partal, "Design Practice Research," 86; van Schaik, "The Evolution of the Invitational Program," 86.
[183] Burland et al., "Exploring, Enhancing, and Evaluating," 116.
[184] Dybo, "Doctoral Scholarship," 104.
[185] Murphy, "Design Research," 126–27.

Generalization

The authors believe practice-based studies should be examined and assessed by way of an exhibition of designed artifacts or a presentation of artistic performances rather than apply standards-referenced judgment. For example, Biggs argues that the general research standards should be fundamentally re-described to faithfully represent the creative arts community's values.[186] Hughes argues that doctorateness is undefinable so examiners should judge each practice-based thesis on a case-by-case basis.[187] Dunin-Woyseth and Nilsson argue examiners should reference practice-based doctoral assessment to examiners' authority as connoisseurs and critics rather than standards.[188] Fraser claims that doctorateness in architectural design research resists definition.[189]

However, examining each exhibition or performance on a case-by-case basis is not convincing, since this inference completes the fallacy of hasty generalization.[190] Examiners complete the fallacy of hasty generalization when they infer from an exhibition that the examinee's designed artifacts or artistic performances show all the essential components of doctoral-level research. For example, when Dunin-Woyseth, Janssens, and Nilsson assume that "what qualifies as doctorateness in creative fields has to relate to what ultimately are the objectives of practice-based research that is being developed and how these objectives are best met,"[191] they blind themselves to the fact that the examinee's exhibition cannot show the variety of essential components required of research-based advanced study (Figure 1) or meet the general research standards.

The *Frascati Manual* identifies the five core criteria for an activity to be called a Research and Experimental Development (R&D) activity.[192] The activity must demonstrate all five criteria: novel, creative, uncertain, systematic, transferable and/or reproducible. The manual excludes routine design activity and artistic performances from R&D since they fail either the uncertainty, novelty, or reproducibility criteria. Routine design activity, such as using existing tools or methods to develop, adapt, or customize a product, is normally excluded from R&D because it does not aim to systematically resolve a scientific and/or technological uncertainty or yield unexpected results.[193] Artistic performances are excluded from R&D since they fail the novelty test "as they are looking for new expression, rather than new knowledge," and because they fail to meet the reproducibility criterion since the results "remain tacit (i.e. remain solely in the minds of the researchers)" rather than "increase of the existing stock of knowledge."[194] There is doubt that an exhibition of designed artifacts or artistic performances meets the *Frascati Manual's* five core criteria for research.

Extrapolation

The authors maintain that graduates of practice-based advanced study can accomplish art and design practice and critically reflect on their work. For example, according to Burland and

[186] Biggs, "Where Should We Look?," 11.
[187] Hughes, "When Will It Thunder?," 165.
[188] Dunin-Woyseth and Nilsson, "Emerging Epistemic Communities," 18.
[189] Fraser, "Preserving Openness," 83.
[190] Christopher W. Tindale, *Fallacies and Argument Appraisal* (Cambridge, UK: Cambridge University Press, 2007), 151–52.
[191] Dunin-Woyseth et al., "Editorial," xv.
[192] OECD, *Frascati Manual 2015*, 44–48.
[193] Ibid., 63–66.
[194] Ibid., 48, 65.

colleagues, graduates develop their haptic facility as well as a critical approach to their practice.[195] And Dybo claims graduates develop intuitive decision making where the performer can adapt on the spot, whether it be in a studio or on the stage.[196] So, it makes sense from the authors' perspective that practice-based advanced study be focused on action-reflection cycles of designing artifacts or artistic performances, given that the skills needed for practice-based advanced study are essentially the same as those needed for reflection in or on art and design practice.

However, the authors' perspective is unconvincing concerning research-based advanced study because the premise that the examinee can perform reflective practice is not relevant to the extrapolation that the examinee shows doctorateness.[197] Doctorateness relates to the methodological awareness needed to achieve synergy between the essential components of research and the inquiring attitude that characterizes thinking like an independent researcher.

Implications

The authors state that practice-based advanced study is intended to benefit students' art and design practice and uphold and maintain art and design practitioners' values. For example, Fudge and Partal found that practice-based research produces personal knowledge that primarily benefits the individual student and their practice.[198] Similarly, Dybo expects that practice-based studies will allow students to develop their artistic signature as performers.[199] Biggs argues that the purpose of practice-based advanced study is to uphold and maintain the values of creative arts practitioners.[200] And Hughes argues that the university should be transformed into a space of poetics centred on values of practice.[201]

The argument from consequences is, hence, fallacious.[202] The problem is that doctoral education that primarily benefits individual art and design practitioners is not an acceptable purpose for research-based advanced study since it fragments the unity of the research-teaching-study nexus. Awarding research doctorates based on practice-based advanced study leads to unacceptable side effects for research universities, as the practice does not cultivate the methodological awareness and inquiring attitude required for active stewardship of a discipline after the degree is completed. Practice-based advanced study shifts the focus from the public discourse and shared discourse of the research tradition to the private studio concerns of personal artistic development.

Conclusion

I began this review article by stating that two ideas underpin the purpose of the modern university—inquiry for knowledge valued for what it is not what it does, and the unity of research-teaching-study. I have argued that awarding research doctorates for practice-based advanced studies is a force of fragmentation against these two ideas. It may be objected that

[195] Burland et al., "Exploring, Enhancing, and Evaluating," 120.
[196] Dybo, "Doctoral Scholarship," 146.
[197] On relevance, see Tindale, *Fallacies and Argument Appraisal*, 23–34; also, see Douglas Walton, *Fundamentals of Critical Argumentation* (Cambridge: Cambridge University Press, 2006), 267–71.
[198] Fudge and Partal, "Design Practice Research," 95.
[199] Dybo, "Doctoral Scholarship," 107.
[200] Biggs, "Where Should We Look?," 11; Hughes, "When Will It Thunder?," 167.
[201] Hughes, "When Will It Thunder?," 172.
[202] Tindale, *Fallacies and Argument Appraisal*, 184.

Kane's argument-based approach to validation is an inappropriate assessment model for doctoral research in art and design. However, the argument-based approach is consistent with the book's editors' position that evaluation must be done in relation to the assessment's purposes.[203] The value of this analysis is that it reveals that the debate about practice-based doctorates in art and design centres on clashing value judgements about the purpose of the modern research university.

The issues discussed here provide insight into the assessment argument of practice-based doctorates in art and design. I demonstrate that when considered against the two ideas that underpin the purpose of the research university, the authors' doctoral research assessment argument is not convincing—it rests on implausible assumptions and fallacious reasoning. The discussion highlights the value of identifying the assessment's purpose and laying out the chain of inferences that span from scoring to generalization, to extrapolation, to implications. I conclude that the learning activities and assessment events associated with practice-based advanced study are not aligned with the learning outcomes and purposes of research-based advanced education. I hope that by making these arguments, I have clarified (to some extent) the major argument that underpins the assessment of practice-based doctorates and its implications for research universities.

[203] Ibid., xv.

Chapter 3: Research Education and the Doctorate in Art and Design:
A Systematic Literature Review using an Argument-Based Approach to Validation

Preface
This chapter presents the findings and insights of a systematic review of the literature on research education and the doctorate in art and design. I present quantitative and qualitative syntheses of the literature. I argue that the idea of the doctorate in art and design is not found in either artefacts, practices, methods, or capabilities. Instead, it is an argument that bridges claims about observations of doctoral candidates' performances, the generalizability of the components of doctoral education, its extrapolation to real-world capabilities in real-world contexts, and the consequences of universities' decisions to award doctoral degrees. I argue that arts doctorates and practice doctorates do not effectively distinguish research education from preparation for expert professional practice.

Introduction
Doctoral education's purpose is contested. Doctoral education is principally aligned with knowledge advancement since doctoral degrees are awarded to students who increase the stock of knowledge through original research.[204] However, doctoral education's purpose may also involve students' individual development and service to society since, for example, it may include training in the ethical conduct of research and transferable skills that contribute to the economy.[205] Attempting to achieve these often-incompatible purposes contributes to doctoral education's controversy.

Doctoral education in art and design is relatively new compared to disciplines such as law, medicine, and philosophy. The debate about research education and the doctorate in art and design has generated extensive literature and is the subject of several international conferences.[206] However, the literature is fragmented and characterised by disagreement about fundamental issues. A key problem is that no one has published a systematic review of the literature. This article aims to address this problem by systematically reviewing the literature about research education and the doctorate in art and design, using the argument-based approach to validation as a conceptual framework. The study answers the question: What is known in the literature about research education and the doctorate in art and design? The main contributions are:

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[204] QAA, *Uk Quality Code for Higher Education: Part A: Setting and Maintaining Academic Standards*, 30; Bologna Salzburg Seminar, "Doctoral Programmes for the European Knowledge Society: General Rapporteur's Report," 2.
[205] Bogle et al., Doctoral Degrees Beyond 2010: Training Talented Researchers for Society; Parry, *Disciplines and Doctorates*, 25-36; Polziehn, Skills Expected from Graduate Students in Search of Employment in Academic and Non-Academic Settings..
[206] Buchanan et al., "Doctoral Education in Design: Proceedings of the Ohio Conference, October 8-11, 1998."; Durling and Friedman, "Doctoral Education in Design: Foundations for the Future: Proceedings of the Conference Held 8-12 July 2000, La Clusaz, France."; Durling and Sugiyama, "Doctoral Education in Design: Proceedings of the 3rd Doctoral Education in Design Conference Held Tsukuba, Japan 14-17 October 2003 "; van der Voordt, van Hoogdalem, and van Wegen, *Doctorates in Design and Architecture*.

- A comprehensive bibliography of the literature about research education and the doctorate in art and design (Appendix C).
- A quantitative synthesis showing the extent, range, and nature of the studies included in the review (Table 2 and Table 3).
- A conceptual framework that successfully compares arts, design, and practice doctorates (Figure 3).
- A qualitative synthesis that provides insights into what is known in the literature about the assessment of arts, design, and practice doctorates.
- A new understanding of the idea of the doctorate in art and design as an argument that bridges claims about the scoring, generalization, extrapolation, and implications of doctoral assessment.

Methods

I conducted a systematic literature review to identify the extent, range, and nature of the literature related to research education and the doctorate in art and design. My approach had seven key steps:

1. Desk research on the doctorate in art and design to develop the search keywords.
2. Searching databases and using other methods to identify records.
3. Screening the records for relevant reports and excluding duplicates.
4. Retrieving the reports' full text and assessing their quality.
5. Coding and categorizing the eligible studies.
6. Synthesizing studies' characteristics.
7. Synthesizing and evaluating the studies' interpretation and use arguments.

Data Collection

I conducted Boolean searches for keywords and keyphrases in five databases: EBSCO, ACM, SCOPUS, SAGE, and Taylor & Francis. I searched websites including Google Search, Google Scholar, Academia.edu and Research Gate. I used the same Boolean search strategy in each database according to the search options allowed. The search protocols included different combinations of keywords and keyphrases, such as architecture, art, communication, design, digital, fashion, HCI, industrial, interaction, music, performance, product, service, writing, doctorate, PhD, artistic research, arts-based research, creative practice research, practice-based research, research through design (for full details see Appendix A).

I also identified studies based on contacts' knowledge of the field and I targeted specific journals, conferences, books, and edited books. Therefore, I included studies not identified through searching databases. I identified over half the records via other methods than searching databases.

The search returned 5,673 records, which were imported into an EndNote database. I evaluated all the records for potentially relevant publications. To be included, records had to be book chapters, books, conference papers, journal articles, reports, or web pages written in English.

I applied the preferred reporting items for systematic reviews and meta-analysis (PRISMA) [207] guidelines to the results (see Appendix B). After I excluded duplicates from across the dataset, I evaluated the titles and abstracts of all the records for potentially relevant publications. I excluded records with titles and abstracts that were obviously irrelevant to research education and the doctorate in art and design. To be assessed for eligibility, the full text had to be retrieved.

To be included in the review, the full text had to meet a quality threshold. Quality is multidimensional, so requires a holistic judgement. I used a set of critical questions related to relevance, acceptability, and sufficiency to judge quality.[208] Relevant sources provide useful information about the topic, irrelevant sources do not include the search keyphrases, keywords or concepts. Acceptable sources' conclusions are self-evidently acceptable, or a reasonable person would accept the conclusions given the reasons or evidence provided in support. Unacceptable sources are factually inaccurate, contain contradictions or inconsistencies between premises and conclusions, have semantic problems because of the text being essentially vague such that no reasonable person could be certain of a premise's meaning, or the references or peer review are unsatisfactory. Sufficiency is when there are enough good grounds so that together the grounds provide adequate support for the conclusion. A source has insufficient good grounds when there is not enough information to decide either way whether there is adequate support for the conclusion.

I processed data from eligible studies using a standardized data-processing tool designed for this study. I updated the data-processing tool in an iterative process. The tool captured the relevant information on key characteristics and contributions. I processed the data for each report by entering the data into custom fields in an Endnote database. I sought data about each report's bibliographic characteristics, including the year of original publication, geographical location of the first author's affiliated institution, study type, the study's field of research or practice, research keyphrase, and award level. I also sought information in each study relevant to the assessment of doctoral education. I exported the dataset to Excel to chart the data. And I exported the dataset to NVivo to analyse the studies' full texts. Appendix C contains the bibliographic reference for each study included in the review.

Data Analysis

I analysed the 1,082 publications to determine the extent, range, and nature of the literature, and the major arguments related to doctoral assessment. I analysed the studies using analytical constructs from validity theory to make sure that I coded the texts considering their context of use.[209] Appendix D contains the qualitative data analysis protocols.

Results

Table 1 summarizes the sources' characteristics. The earliest study was published in 1944, however, the frequency of publication sharply increased in the 1990s. 82% of the studies were

[207] Andrea C. Tricco, Erin Lillie, and Wasifa Zarin et al, "Prisma Extension for Scoping Reviews (Prisma-Scr): Checklist and Explanation," *Annals of Internal Medicine* 169, no. 7 (2018), https://doi.org/10.7326/m18-0850 %m 30178033.
[208] Ralph H. Johnson and J. Anthony Blair, *Logical Self-Defense* (International Debate Education Association, 2006), 49-55; Trudy. Govier, *A Practical Study of Argument* (Cengage Learning, 2013), 87-93.
[209] Klaus Krippendorff, *Content Analysis: An Introduction to Its Methodology* (SAGE Publications, 2018), 42-43.

published between 2000-2020, with 70% of studies from the United Kingdom, Australia, or the United States. 90% of the studies were published in book sections, journal articles, and conference papers. 38% of the studies relate to the Design field, 18% to Studio Arts, and 18% to Creative Arts and Design.

Table 2. Study Characteristics

Category	Characteristic	Frequency	%
Decade of publication	1940-1949	1	0%
	1950-1959	0	0%
	1960-1969	5	0%
	1970-1979	9	1%
	1980-1989	15	1%
	1990-1999	101	9%
	2000-2009	368	34%
	2010-2019	515	48%
	2020-2022	63	6%
	No Date	5	0%
Country	UK	312	29%
	Australia	210	19%
	USA	203	19%
	Netherlands	49	5%
	Norway	33	3%
	Sweden	26	2%
	Finland	24	2%
	Denmark	23	2%
	Belgium	22	2%
	Canada	21	2%
	All Others	159	15%
Publication Type	Book Section	383	35%
	Journal Article	355	33%
	Conference Paper	225	21%
	Book	90	8%
	Report	13	1%
	Pamphlet	8	1%
	Web Page	2	0%
	Unpublished Work	2	0%
	Blog	2	0%
	Discussion Forum	2	0%
Field	Design	412	38%
	Studio Arts	195	18%
	Creative Arts and Design	190	18%
	Architecture	118	11%
	Performing Arts	86	8%

	Education	29	3%
	HCI and IxD	27	2%
	Creative Writing	25	2%
Study Type	Theoretical	362	33%
	Interpretivist	244	23%
	Social Science	236	22%
	Humanities	198	18%
	Interview	26	2%
	Report	9	1%
	Review	7	1%

Research Keyphrases

A major subject of debate within the literature about doctoral education in art and design is the nature of characteristically artistic or designerly ways of researching. One of the most cited publications on this subject is Christopher Frayling's 1993 pamphlet *Research in Art and Design*.[210] Frayling reinterpreted Herbert Read's[211] distinction between "education *to* art" and "education *through* art," to claim that there are three kinds of art and design research: "Research *into* art and design;" "research *through* art and design;" and art and design as research or "research *for* art and design." Looking back on his pamphlet's reception, Frayling wrote:

> There was the great debate—in the literature and policy papers and at countless conferences—about prepositions: Research through practice versus research in practice; research in art, for art, through art, as art. This was matched a little later by an equivalent debate about suffixes: Practice-led, practice-based, practice-related; research into practice, through practice, practice as research. Practice or praxis. Reflection or reflexivity. No wonder my postgraduates were confused… Discussions of these (and related issues) have usually ended up with both feet planted firmly in the air.[212]

Despite the confusion Frayling's pamphlet generated, the debate about prepositions and suffixes is a significant part of the literature about research education and the doctorate in art and design. Table 3 collects the various research keyphrases found in this debate into four major categories: arts research, design research, practice research, and research. Appendix E contains example quotations for each keyphrase code. I found research keyphrases coding the "design research" category beginning in the 1960s, research keyphrases coding the "practice research" category in the 1980s, and research keyphrases coding the "arts research" category in the 1990s. I found most studies coding the "practice research" category in the literature from the United Kingdom and Australia. Studies from all other countries most frequently code the "design research" keyphrase category. Approximately 10% of studies use the term "research" without a modifier.

[210] Christopher Frayling, *Research in Art and Design*, vol. 1 (London: 1993).
[211] Herbert Read, *Education through Art* (London: Faber and Faber, 1944).
[212] Christopher Frayling, "'"...To Know the Place for the First Time…": Exploring and Researching through the Arts," in *The Artist and Academia*, ed. Helen Phelan and Graham F. Welch (Milton, UK: Taylor & Francis Group, 2021), 38-39.

Table 3. Research Keyphrase Categories and Codes

Category	Frequency, %	Code
Arts Research	171, 16%	A/r/tography[213]
		Art practice as research[214]
		Artist-led research[215]
		Artistic research[216]
		Arts-based research[217]
		Arts-informed research[218]
		Arts-based research practice[219]
		Creative arts research[220]
		Creative research[221]
		Creative writing as research[222]
		Performance as research[223]
		Research for art and design[224]
		Research into art and design[225]
		Research through art and design[226]
Design Research	388, 36%	Architectural design research[227]
		Architectural research[228]
		Constructive design research[229]
		Design as research[230]
		Design-based research[231]
		Design inquiry[232]
		Design methodology[233]

[213] Stephanie Springgay, Rita L. Irwin, and Sylvia Wilson Kind, "A/R/Tography as Living Inquiry through Art and Text," *Qualitative Inquiry* 11, no. 6 (2005): 899, https://doi.org/10.1177/1077800405280696.
[214] Graeme Sullivan, "The Artist as Researcher New Roles for New Realities," in *See It Again, Say It Again: The Artist as Researcher* ed. Janneke Wesseling (Amsterdam: Valiz, 2016), 95.
[215] Rachel Mason, "Problems of Interdisciplinarity: Evidence-Based and/or Artist-Led Research?," *International Journal of Art & Design Education* 27, no. 3 (2008): 279, https://doi.org/10.1111/j.1476-8070.2008.00586.x.
[216] Henk Borgdorff, "Where Are We Today? The State of the Art in Artistic Research," in *Art and Research: Can Artists Be Researchers?*, ed. Janet Ritterman, Gerald Bast, and Jürgen Mittelstraß (Vienna: Springer-Verlag/Wien, 2011), 74.
[217] James Haywood Rolling, Jr., *Arts-Based Research Primer* (New York: Peter Lang, 2013), 8.
[218] A. L. Cole and J. G. Knowles, "Arts-Informed Research," in *Handbook of the Arts in Qualitative Research*, ed. A. L. Cole and J. G. Knowles (Thousand Oaks, CA: Sage, 2008), 59.
[219] Patricia Leavy, *Method Meets Art: Arts-Based Research Practice* (New York, NY: Guilford, 2009), 2-3.
[220] Estelle Barrett, "Introduction: Extending the Field: Invention, Application and Innovation in Creative Arts Enquiry," in *Material Inventions: Applying Creative Arts Research*, ed. Estelle Barrett and Barbara Bolt (London: I.B. Tauris, 2014), 3.
[221] Paul Carter, *Material Thinking: The Theory and Practice of Creative Research* (Carlton, Victoria: Melbourne University Press, 2006), xii.
[222] Graeme Harper, "Creative Writing: Words as Practice-Led Research," *Journal of Visual Arts Practice* 7, no. 2 (2008): 161, https://doi.org/10.1386/jvap.7.2.161/1.
[223] Shannon Rose Riley and Lynette Hunter, "Introduction," in *Mapping Landscapes for Performance as Research: Scholarly Acts and Creative Cartographies*, ed. Shannon Rose Riley and Lynette Hunter (New York: Macmillan, 2009), xv.
[224] Frayling, *Research in Art and Design*, 5.
[225] Ibid., 5.
[226] Ibid., 5.
[227] Murray Fraser, *Design Research in Architecture: An Overview* (London: Ashgate, 2013), 1-2.
[228] EAAE, *Eaae_Charter Architectural Research*, (2012), 1.
[229] Ilpo Koskinen et al., *Design Research through Practice: From the Lab, Field, and Showroom* (Amsterdam: Morgan Kaufmann/Elsevier, 2011), 5; Anne Louise Bang et al., "The Role of Hypothesis in Constructive Design Research," in *The Art of Research Iv: Making, Reflecting and Understanding* (Aalto University School of Arts, Design and Architecture, Helsinki, Finland: 2012), 9.
[230] Frayling, *Research in Art and Design*, 4.
[231] Daniel Andriessen, "Combining Design-Based Research and Action Research to Test Management Solutions" (paper presented at the 7th World Congress Action Learning, Action Research and Process Management, Groningen, 2007), 2.
[232] Richard Buchanan, "Strategies of Design Research: Productive Science and Rhetorical Inquiry," in *Design Research Now: Essays and Selected Projects*, ed. Ralf Michel (Basel, Switzerland: Birkhäuser, 2007), 58.
[233] Nigel Cross, *Developments in Design Methodology* (Chichester: Wiley, 1984), vii-viii.

		Design-oriented research[234] Design research[235] Design science[236] Design science research[237] Experimental design research[238] Programmatic design research[239] Project-grounded research[240] Research about design[241] Research by design[242] Research for design[243] Research into design[244] Research through design[245] Science of design[246]
Practice Research	411, 38%	Action research[247] Creative practice research[248] Creative research methodology[249] Design practice research[250] Embodied research[251]

[234] Daniel Fallman, "Why Research-Oriented Design Isn't Design-Oriented Research," in *Nordes 2005: In the Making* (Royal Danish Academy of Fine Arts, School of Architecture: 2005), 2-3.
[235] L. Bruce Archer, "A View of the Nature of Design Research," in *Design: Science: Method*, ed. R. Jacques and J. Powell (Guildford, UK: Westbury House; IPC Science and Technology Press, 1981), 31; Meredith Davis, "What Is a 'Research Question' in Design?," in *The Routledge Companion to Design Research*, ed. Paul A. Rodgers and Joyce Yee (London; New York: Routledge, 2015), 132; Nigel Cross, *Designerly Ways of Knowing* (London: Springer, 2006), 101.
[236] Vladimir Hubka and W. Ernst Eder, *Design Science: Introduction to the Needs, Scope and Organization of Engineering Design Knowledge*, ed. 2nd Revised (London: Springer, 1996), 73.
[237] Alan R. Hevner and Samir Chatterjee, *Design Research in Information Systems: Theory and Practice*, Kluwer's Integrated Series on Information Systems, (New York; Dordrecht; Heidelberg; London: Springer, 2010), 5.
[238] Imre Horváth, "Theory Building in Experimental Design Research," in *Experimental Design Research: Approaches, Perspectives, Applications*, ed. Mario Štorga, Philip Cash, and Tino Stanković (Switzerland: Springer, 2016), 211.
[239] Johan Redström, *Making Design Theory* (Cambridge, MA: The MIT Press, 2017), 96.
[240] Alain Findeli, "A Quest for Credibility: Doctoral Education and Research at the University of Montreal " in *Doctoral Education in Design, Proceedings of the Ohio Conference*, ed. Richard Buchanan et al. (Wexner Center of the Ohio State University: School of Design, Carnegie Mellon University, 1998), 111.
[241] Maria João Félix, "A Systematic Review on International Design Research, in Order to Ensure That the Findings Can Compare Design Capabilities in the Portuguese Reality," in *Perspective on Design: Research, Education and Practice*, ed. Daniel Raposo, João Neves, and José Silva (Cham, Switzerland: Springer, 2020), 79.
[242] Birger Sevaldson, "Discussions & Movements in Design Research: A Systems Approach to Practice Research in Design," *FORMakademisk* 3, no. 1 (2010): 11, https://doi.org/10.7577/formakademisk.137.
[243] João Félix, "A Systematic Review on International Design Research, in Order to Ensure That the Findings Can Compare Design Capabilities in the Portuguese Reality," 78.
[244] Sevaldson, "Discussions & Movements in Design Research: A Systems Approach to Practice Research in Design," 12-13.
[245] Jodi Forlizzi, Erik Stolterman, and John Zimmerman, "From Design Research to Theory: Evidence of a Maturing Field," in *Iasdr International Conference 2009* (Seoul, Korea: 2009), 2894; João Félix, "A Systematic Review on International Design Research, in Order to Ensure That the Findings Can Compare Design Capabilities in the Portuguese Reality," 79.
[246] Herbert A. Simon, *The Sciences of the Artificial*, Third ed. (Cambridge: The MIT Press, 2019), 113.
[247] Chris Argyris and Donald A. Schön, *Organizational Learning Ii: Theory, Method, and Practice* (Reading, Massachusetts: Addison-Wesley Publishing Company, 1996), xxi-xxii; L. Bruce Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course* (Wellesbourne, UK: The Design and Technology Association (DATA), 2004), 14.
[248] Richard Blythe, "A Validation Model Proposal Based on the Use of Existing Disciplinary Mechanisms as Dashboard Indicators for Validating Research Outputs of Creative or Artistic Works," in *Evaluating Art and Design Research*, ed. Walter Ysebaert (Brussels: Academic and Scientific Publishers, 2018), 16.
[249] Lyndall Adams et al., "This Is Not an Article: A Reflection on Creative Research Dialogues (This Is Not a Seminar)," *Educational Philosophy and Theory* 47, no. 12 (2015): 1336, https://doi.org/10.1080/00131857.2015.1035630.
[250] Leon van Schaik, "Differentiation in Vital Practice: An Analysis Using Rmit University of Technology and Design Interfaces with Architects," *Architectural Design* 83, no. 1 (2013): 108, https://doi.org/10.1002/ad.1532.
[251] Ben Spatz, *What a Body Can Do: Technique as Knowledge, Practice as Research* (London; New York: Routledge, 2015), 233.

		Performance practice as research[252] Performative research[253] Practice as research[254] Practice-based research[255] Practice-led research[256] Practice research[257] Practitioner-centered research[258] Practitioner research[259] Research through practice[260]
Research	112, 10%	Applied research[261] Basic research[262] Clinical research[263] Engaged scholarship[264] Fundamental research[265] Option research[266] Research[267] Strategic research[268]

An Argument-based Approach to Evaluating Doctoral Assessment in Art and Design

All doctoral education is assessed. Examiners use assessment data to make judgments about what a student knows and what they can do. Examiners' judgements provide how the student is passed or fails, and they provide the basis for decisions such as whether the candidate qualifies an award. Because examiners' judgements may have significant consequences, the evidence they provide should have the meaning they claim.[269] Assessment should be constructed so that it achieves its intended purposes. Our confidence in examiners' judgements should be informed by the plausibility of their arguments for the interpretations

[252] Baz Kershaw, "Performance Practice as Research: Perspectives from a Small Island," in *Mapping Landscapes for Performance as Research: Scholarly Acts and Creative Cartographies*, ed. Shannon Rose Riley and Lynette Hunter (New York: Macmillan, 2009), 4.
[253] Brad Haseman, "A Manifesto for Performative Research," *Media International Australia* 118, no. 1 (2006): 103, https://doi.org/10.1177/1329878x0611800113.
[254] Baz Kershaw et al., "Practice as Research: Transdisciplinary Innovation in Action," in *Research Methods in Theatre and Performance*, ed. Baz Kershaw and Helen Nicholson (Edinburgh: Edinburgh University Press, 2011), 64.
[255] Linda Candy, *Practice Based Research: A Guide*, University of Technology, Sydney (2006), 3.
[256] Ibid.
[257] The Salisbury Forum Group, "The Salisbury Statement," *Social Work and Society* 9, no. 1 (2011): 5.
[258] Tom Bourner and Penny Simpson, "Practitioner-Centred Research and the Ph.D," *Action Learning: Research & Practice* 2, no. 2 (2005): 141, https://doi.org/0.1080/14767330500206789.
[259] Linda Candy, *The Creative Reflective Practitioner: Research through Making and Practice* (London; New York: Routledge, 2020), 237.
[260] Sevaldson, "Discussions & Movements in Design Research: A Systems Approach to Practice Research in Design," 11.
[261] Richard Buchanan, "Design Research and the New Learning," *Design Issues* 17, no. 4 (2001): 18, https://doi.org/10.1162/07479360152681056.
[262] Ibid., 19.
[263] Ibid., 17-18.
[264] Andrew H. Van der Ven, *Engaged Scholarship: A Guide for Organizational and Social Research* (Oxford: Oxford University Press, 2007), 9.
[265] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 14.
[266] Ibid., 14.
[267] Mario Bunge, *Philosophical Dictionary* (Amherst, New York: Prometheus Books, 2013), 251; Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 14.
[268] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 14.
[269] Gregory J. Cizek, *Validity: An Integrated Approach to Test Score Meaning and Use* (New York: Routledge, 2020), 17.

and uses of assessment. The challenge of validation is to connect observations of students' performances to the proposed interpretations and uses of the assessment. "Ultimately," Michael Kane writes, "the need for validation derives from the scientific and social requirement that public claims and decisions be justified."[270]

Validity theory informed my approach to evaluating doctoral assessment. Typically, behavioural and social scientists use validity theory to validate measurements and tests.[271] However since contemporary validity theory uses an argument-based approach, it provides a flexible and practical method for evaluating the assessment of doctoral education.[272] Nonetheless, I use validity theory for its conceptual framework, not its statistical machinery.[273] Argument-based approaches employ practical argumentation rather than formal deductive-nomological scientific explanation.[274] They supply confidence but not certainty.

Kane explains that an argument-based approach to validation employs two kinds of arguments, an interpretation and use argument, and a validity argument. Validation begins by clearly specifying an interpretation and use argument—the chain of inferences and assumptions that bridge claims about the scoring, generalization, extrapolation, and implications of assessment.[275] The validity argument provides an evaluation of the interpretation and use argument. A proposed interpretation or use of assessment is valid if its interpretation and use argument is coherent, its inferences are reasonable, and its assumptions are plausible.[276]

Validity in doctoral assessment is not a property of the dissertation or thesis; it is a property of the intended interpretations and uses of doctoral assessment.[277] Although the authors of the studies do not use validity theory, they provide reasons and evidence intended to inform examiners' claims within doctoral assessment in art and design. Kane explains that more ambitious claims require stronger supporting evidence than less ambitious claims.[278] Furthermore, proposed interpretations and uses of assessment are not valid when the evidence does not support or contradicts the interpretation and use argument.[279]

I model the interpretation and use argument of a doctoral education assessment system as a chain of inferences connecting observations of students' performances to the intended uses and consequences of doctoral assessment (see figure 2). The model clarifies the reasoning inherent in the proposed interpretation and use argument so that we can better understand and evaluate it.[280]

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[270] Michael T. Kane, "Validation," in *Educational Measurement*, ed. R. L. Brennan (Westport: American Council on Education and Praeger, 2006). 17
[271] Robert L. Brennan, *Generalizability Theory* (New York, NY: Springer, 2001).
[272] Michael T. Kane, "Validation," in *Educational Measurement*, 4th ed., ed. Robert L. Brennan (Lanham, MD: Rowman & Littlefield Publishers, 2006)
[273] Despite this, my review did not identify any significant statistical studies of doctoral research assessment in art and design.
[274] Stephen Toulmin, *The Uses of Argument*, Updated ed. (Cambridge: Cambridge University Press, 2003).
[275] Michael T. Kane, "Validation," in *Educational Measurement*, 4th ed., ed. Robert L. Brennan (Lanham, MD: Rowman & Littlefield Publishers, 2006), 10–11.
[276] Ibid., 23.
[277] The final product subject to examination is known in the European-style system as a thesis and the North American-style system as a dissertation.
[278] Kane, "Validating the Interpretations and Uses of Test Scores," 3.
[279] Ibid., 3.
[280] Kane, "Validation," 23.

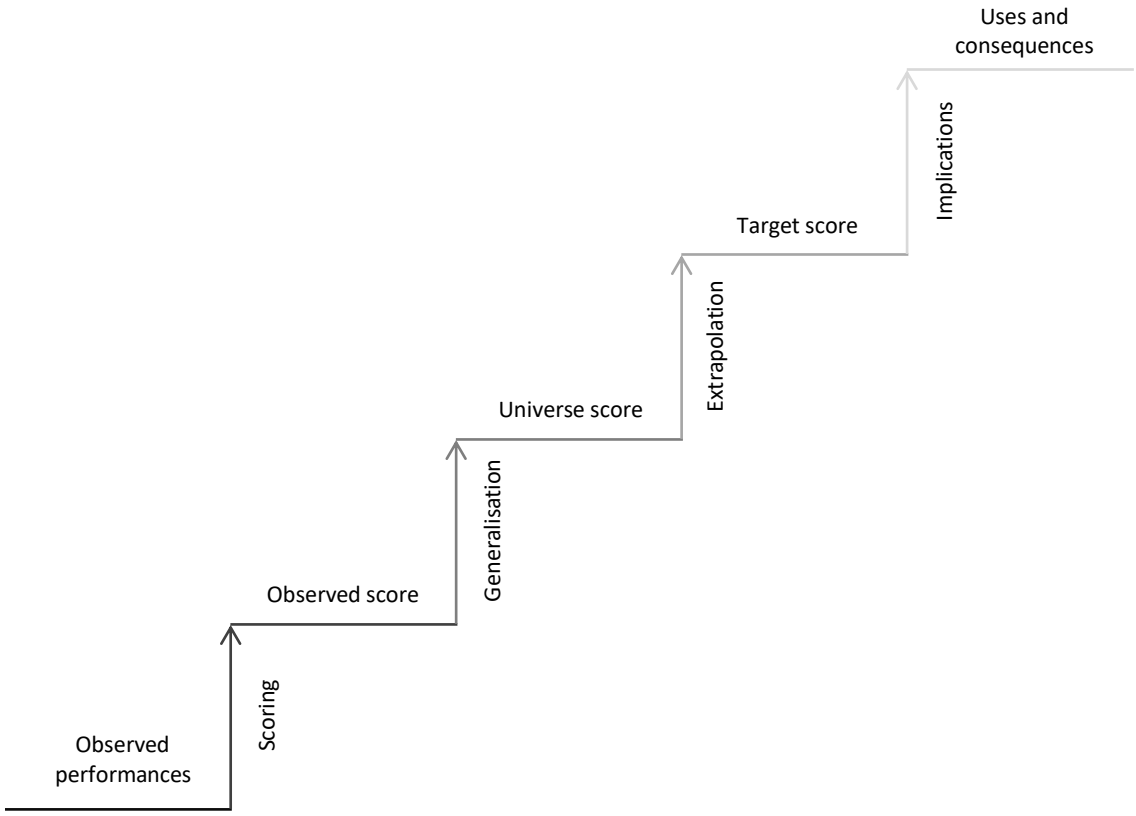


Figure 2. Model of a doctoral education assessment system[281]

Examiners conduct scoring when they make judgements about observations of the student's performance in the assessment situation to recommend an observed score.[282] The student's university's regulations define the examination procedure, the scoring criteria, and the scores examiners may recommend, such as pass, pass with minor corrections, pass with major corrections, or fail.[283] Examiners also provide narrative comments in written reports or during a viva voce. Scoring assumes that the examination procedure is appropriate, that the examiners follow the procedure correctly, and apply the scoring criteria without bias.

Brennan explains, generalization infers from the student's observed performance to their expected performance within a universe of possible performances.[284] The generalization inference expands the score's interpretation. Generalizations from observed performance to expected performances over a universe of possible performances rely on evidence that the interpretation generalizes over different conditions, such as doctoral assessment by different examiners, of different candidates, in different universities, doing different research, in different disciplines. For example, Vernon Trafford and Shosh Leshem found examiners use

[281] I created this model by interpreting validity theory's conceptual framework. See, f.ex. Michael T. Kane, "Validation," in *Educational Measurement*, 4th ed., ed. Robert L. Brennan (Lanham, MD: Rowman & Littlefield Publishers, 2006). 33
[282] Gordon Joughin, "Assessment, Learning and Judgement in Higher Education: A Critical Review," in *Assessment, Learning and Judgement in Higher Education*, ed. Gordon Joughin (Dordrecht, NL: Springer, 2009), 16, https://doi.org/10.1007/978-1-4020-8905-3_2.
[283] Denicolo et al., *Delivering Inspiring Doctoral Assessment*, 154.
[284] Brennan, *Generalizability Theory*, 5-6.

12 “inescapable prerequisites” to judge how the dissertation relates to general features of doctoral research (Figure 3).[285]

According to Kane, extrapolation connects the universe of generalisation to the target domain of real-world performances in real-world contexts.[286] The extrapolation inference is a leap from claims about doctorates to claims about the full range of skills, knowledge, and competences that doctoral graduates exemplify in the real world. Again, the score’s interpretation is broadened. Standardizing the dissertation format, the components of research, and the examination procedures has the advantage that it supports doctoral assessment’s generalizability by defining a universe of generalisation that is distinct from and narrower than the intended real-world target domain. However, a narrowly defined universe of generalisation tends to underrepresent the target domain’s variety. The trade-off between generalization and extrapolation demonstrates the well-known reliability/validity paradox.[287]

<table>
<tr><td>Contribution to knowledge</td><td>Stated gap in knowledge →</td><td>Explicit research questions</td><td>Conceptual framework</td></tr>
<tr><td>Conceptual conclusions</td><td colspan="2" rowspan="2">When synergy exists between the components, then doctorateness is demonstrated</td><td>Explicit research design</td></tr>
<tr><td>Research questions answered</td><td>Appropriate methodology</td></tr>
<tr><td>Cogent argument throughout</td><td>Full engagement with theory</td><td>Clear/precise presentation</td><td>“Correct” data collection</td></tr>
</table>

Figure 3. Components of doctorateness[288]

Doctorateness is a construct used in extrapolation inferences in doctoral assessment. Trafford and Leshem argue that if the examiners recognize the synergy between the essential components of doctoral research, then they may conclude that the student’s handling of the system of mutually interdependent components shows they possess “doctorateness” (Figure 3).[289] Pamela Denicolo and her colleagues define doctorateness as “the ability to conduct autonomously and within restricted boundaries of resources, including time, research that is ground-breaking, in the sense that it results in a novel/unique, non-trivial contribution to knowledge, and that is publishable in some form.”[290] Doctorateness is not directly observable. It is a theoretical construct that postulates mental abilities or cognitive processes, such as methodological awareness and an inquiring attitude, that we assume account for real-world performances in real-world contexts.

[285] Vernon Trafford and Shosh Leshem, *Stepping Stones to Achieving Your Doctorate: By Focusing on Your Viva from the Start* (Maidenhead, UK: Open University Press, 2008), 38.
[286] Kane, "Validating the Interpretations and Uses of Test Scores," 30-31.
[287] Ibid.
[288] I have redrawn this model from Vernon Trafford and Shosh Leshem, *Stepping Stones to Achieving Your Doctorate: By Focusing on Your Viva from the Start* (Maidenhead, UK: Open University Press, 2008), 38.
[289] Trafford and Leshem, *Stepping Stones*, 38.
[290] Denicolo et al., *Delivering Inspiring Doctoral Assessment*, 142.

The implications inference connects the target score to the intended uses and consequences of doctoral education. Analyses of consequences as either repugnant or desirable typically depend on values and concepts of fairness. For example, the implications inference might claim that if the student possesses doctorateness, then they can maintain the unity of universities' research-teaching-study nexus and educate the next generation of researchers as stewards of their disciplines.[291] The implications inference might also support uses of doctoral awards in hiring and promotions decisions or to provide some protection to the public from unethical or fraudulent research.

In the next section I outline the major interpretation and use arguments for the assessment of doctoral education in art and design and evaluate the interpretation and use arguments to investigate their inferences and assumptions.

Validating Doctoral Assessment in Art and Design

I used validity theory's conceptual framework to investigate what is known in the literature about art and design doctorates, their examination criteria and procedures, their generalizability, their real-world target constructs, and their uses and consequences.[292] Interpretation and use arguments have legitimate confirmatory bias because their purpose is to seek evidence that supports the intended interpretations and uses.[293]

Universities use assessment to facilitate defensible decisions about doctoral candidates. Validity arguments critically evaluate the coherence of the interpretation and use argument and the plausibility of the inferences and assumptions, since an argument only deserves our trust when it has survived serious attempts to falsify it.[294]

Arts Doctorates

The interpretation argument for arts doctorates claims that a pass score means the candidate has achieved artistic self-discovery and self-emancipation. The use argument claims that a pass score is grounds for the university to decide to award the candidate a Philosophical Doctorate (Ph.D.) degree. The consequence argument claims that arts doctoral graduates can create meaningful art works.

Specifying the Interpretation and Use Argument for Arts Doctorates

Arts doctoral candidates are usually mid-career artists looking to deepen their understanding of their art practice. Arts doctorates typically require candidates to produce an exhibition or portfolio of artistic works and an essay.[295] The essay should adhere to academic standards, with a word count ranging from 5,000 to 50,000 words.[296] The essay may provide an account of the artistic works' development and place them in their historical, social, or disciplinary

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[291] Sheldon Rothblatt, *The Modern University and Its Discontents: The Fate of Newman's Legacies in Britain and America* (Cambridge: Cambridge University Press, 1997), 17, DOI: https://doi.org/10.1017/CBO9780511582943. Also, see Clark, *Places of Inquiry,* 219.
[292] Michael Kane, "Validity Studies Commentary," *Educational Assessment* 25, no. 1 (2020): 84, https://doi.org/10.1080/10627197.2019.1702465.
[293] Ibid., 85.
[294] Ibid., 85.
[295] The essay may be called an "exegesis."
[296] Kerry Dally et al., "The Processes and Parameters of Fine Art Phd Examination," *International Journal of Educational Research* 41, no. 2 (2004): 143, https://doi.org/10.1016/j.ijer.2005.04.010.

contexts.[297] According to Borgdorff, artistic research doctorates derive their significance by producing meaningful artistic works.[298]

The artistic works form the core of the arts doctorate examination.[299] Jones claims examiners apply judgement as connoisseurship.[300] The examination procedure acknowledges the unique nature of arts doctorates as a hybrid activity.[301] Wilson claims that non-academics from the art world should play a role in assessing the value the doctorate makes to art.[302] Dally et al. found that examiners expected substantial, technically proficient, and mature artistic works that can stand on their own.[303] The essay should not justify the artistic works, but together they should form an integrated whole.[304] Baker argues that although the essay is primarily for the examiners, we should expect highly literate and articulate artists at the doctoral level.[305]

Arts doctorates typically focus on the candidate's creative process beyond routine or commercial art making.[306] The doctorates typically involve making artistic works with the intention that the candidate gains a new understanding of their art.[307] Alternatively, Leavy claims that making artistic works may be utilized as part of a qualitative research approach that combines science and art, expanding researchers' tools and methods by using artistic representation to create emotional connections with audiences and raise critical awareness.[308]

Sullivan argues that rigorous theoretical principles and basic research practices should underpin the studio-based inquiry in visual arts,[309] and it should aim to achieve rigor comparable to those in other fields of inquiry, including social sciences, physical sciences, and humanities.[310] By adhering to these basic research practices, Sullivan claims studio-based inquiry in visual arts is like the visual research methods used in human sciences, and the research is both creative and systematic, ultimately producing valuable insights and knowledge in visual arts.[311] Similarly, Rolling claims arts-based research should be like naturalistic inquiry that builds theoretical models through grounded theorizing.[312]

According to Newbury, doctoral education should equip creative arts and design candidates with writing skills and the ability to obtain, evaluate and synthesize information

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[297] Barbara H. Milech and Ann Schilo, "'Exit Jesus': Relating the Exegesis and the Creative/Production Components of a Research Thesis," *Text: Journal of Writing and Writing Courses* 7, no. 1 (2004): 4, www.textjournal.com.au/speciss/issue3/milechschilo.htm.
[298] Henk Borgdorff, *The Conflict of the Faculties: Perspectives on Artistic Research and Academia* (Leiden, The Netherlands: Leiden University Press, 2012), 146.
[299] Dally et al., "The Processes and Parameters of Fine Art Phd Examination," 149.
[300] Timothy E. Jones, "A Method of Search for Reality: Research and Research Degrees in Art and Design," in *Thinking through Art: Reflections on Art as Research*, ed. Katy Macleod and Lin Holdridge (New York, USA: Routledge, 2006), 235.
[301] Clive Cazeaux, *Art, Research, Philosophy* (London; New York: Routledge, 2017), 111.
[302] Jenny Wilson, *Artists in the University: Positioning Artistic Research in Higher Education* (Singapore: Springer, 2018), vii.
[303] Dally et al., "The Processes and Parameters of Fine Art Phd Examination," 148.
[304] Ibid., 148.
[305] Su Baker, "Collegial Conversations: The Role of Writing in Creative Arts Doctoral Education," in *Doctoral Writing in the Creative and Performing Arts*, ed. Louise Ravelli, Brian Paltridge, and Sue Starfield (Oxfordshire: Libri, 2014), 46-47.
[306] Wilson, *Artists in the University: Positioning Artistic Research in Higher Education*, 67-68.
[307] G. James Daichendt, *Artist Scholar: Reflections on Writing and Research* (Bristol: Intellect, 2012), 79.
[308] Leavy, *Method Meets Art: Arts-Based Research Practice*, 13; Rolling, *Arts-Based Research Primer*, 30.
[309] Sullivan, "The Artist as Researcher New Roles for New Realities," xiii.
[310] Ibid., 223.
[311] Ibid., 180.
[312] Rolling, *Arts-Based Research Primer*, 31-32.

from a variety of sources.[313] Draper and Harrison found that students who pursue musical arts doctorates gain the ability to articulate tacit knowledge and understand their artistic processes.[314] Hughes argues that artistic research candidates perform embodied knowledge in practice and refine their skilled judgment.[315] For Sullivan, artists develop their capacity for artistic thinking during making art works.[316]

Arts doctorates serve the purpose of promoting individual development by encouraging self-reflection and self-emancipation.[317] Furthermore, they may aim to challenge traditional academic outputs,[318] or critique institutional and academic infrastructures.[319]

Butt claims that artistic research should provide means for creative artists to escape "pre-programming" and make their mark.[320] Similarly, Slager claims art academies' Ph.D. programmes should "present artists with an intellectual sanctuary where they can reconsider their artistic motives and strategies for a number of years."[321] Hunnula et al. claim artistic research should offer "the opportunity to withdraw oneself from the rapid and myopic cycle of making art,"[322] or, alternatively, critically study real-world issues and promote awareness of social injustices.[323] Cherwitz and Beckman claim that arts Ph.Ds. have the potential to make a significant impact on society and align with the university's goal of producing research that benefits the broader community.[324]

Evaluating the Interpretation and Use Argument for Arts Doctorates

The arts doctorate is a generative and discovery inquiry not a justificatory inquiry.[325] The claim that works of art embody knowledge is an example of the intentional fallacy.[326] On one hand, arts doctorates undermine other fields' doctoral research and undervalue artistic researchers who generate new techniques through research.[327] On the other hand, there is

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[313] Darren Newbury, "Research Training in the Creative Arts and Design," in *The Routledge Companion to Research in the Arts*, ed. Michael Biggs and Henrik Karlsson (London: Routledge, 2011), 383-84.
[314] Paul Draper and Scott Harrison, "Beyond a Doctorate of Musical Arts: Experiences of Its Impacts on Professional Life," *British Journal of Music Education* 35, no. 3 (2018): 280, https://doi.org/10.1017/s0265051718000128.
[315] Rolf Hughes, "When Will It Thunder?," in *Perspectives on Research - Assessment in Architecture, Music and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 161.
[316] Graeme Sullivan, *Art Practice as Research: Inquiry in the Visual Arts* (Thousand Oaks, California: Sage, 2005), 124.
[317] Kathleen Coessens, Darla Crispin, and Anne Douglas, *The Artistic Turn: A Manifesto* (Ghent, Belgium: Lueven University Press, 2009), 174; Mika Hannula, Juha Suoranta, and Tere Vaden, *Artistic Research Methodology. Narrative, Power and the Public* (Frankfurt: Peter Lang, 2014), 80; Klaus Jung, *Enabling Knowledge* (Bergen: Bergen National Academy of the Arts, 2008), 36.
[318] Natalie Loveless, *How to Make Art at the End of the World: A Manifesto for Research-Creation* (Durham: Duke University Press, 2019), 57.
[319] Tom Holert, *Knowledge Beside Itself: Contemporary Art's Epistemic Politics* (Berlin: Sternberg Press, 2020), 25.
[320] Danny Butt, *Artistic Research in the Future Academy* (Bristol: Intellect, 2017), 8.
[321] Henk Slager, *The Pleasure of Research* (Berlin: Hatje Cantz Verlag, 2015), 18.
[322] Mika Hannula, Juha Suoranta, and Tere Vadén, *Artistic Research: Theories, Methods and Practices* (Espoo, Finland Cosmoprinr Oy, 2005), 22.
[323] Ibid., 67.
[324] Richard A. Cherwitz and Gary D. Beckman, "Re-Envisioning the Arts Phd: Intellectual Entrepreneurship and the Intellectual Arts Leader," *Arts Education Policy Review* 107, no. 4 (2006): 18, https://doi.org/10.3200/AEPR.107.4.13-20.
[325] Ken Friedman, "Unflattening by Nick Sousanis," in *PHD-DESIGN* (UK: JISCMail, 9 October 2015). Section 6.3
[326] Ken Friedman, "Heuristic Reflections on Assessing Creativity in the Design Disciplines," in *Creativity, Design and Education: Theories, Positions and Challenges*, ed. Anthony Williams, Michael J. Ostwald, and Hedda Haugen Askland (Sydney: Australian Learning and Teaching Council, 2010), 175; W. K. Wimsatt and M. C. Beardsley, "The Intentional Fallacy," *The Sewanee Review* 54, no. 3 (1946), http://www.jstor.org/stable/27537676.
[327] Spatz, *What a Body Can Do: Technique as Knowledge, Practice as Research*, 232-33.

potential for compromised artistic outcomes and a lack of recognition in the art world for graduates of these programs.[328]

Arts doctorates promote individual development through self-reflection and self-emancipation,[329] which is distinct from doctorateness, which is the ability to conduct independent research that results in a unique and non-trivial contribution to knowledge that is publishable.[330] Consequently, there may be a conflict between the individualistic and innovative goals of arts doctorates and the inquiry based goals of doctoral education to advance knowledge.[331]

Design Doctorates

The interpretation argument for design doctorates claims that a pass score means the candidate has literature awareness, methodological awareness, and expertise in theory construction. The use argument claims that a pass score is grounds for the university to decide to award the candidate a Philosophical Doctorate (Ph.D.) degree or a Professional Doctorate degree (e.g., D.Des.). The consequences argument claims that design doctoral graduates can do independent research and educate the next generation of researchers as stewards of their discipline.

Specifying the Interpretation and Use Argument for Design Doctorates

Design doctorates equip candidates with skills, knowledge, and competences to lead and supervise research in the design discipline. Design doctoral candidates are usually recent graduates of master programs, and some may have professional experience. The final submission for design doctorates is usually a written thesis or dissertation but it may also include various non-written materials.[332] The requirements for professional and philosophical doctorates in design differ, but both usually involve formal research training or coursework and a written thesis or dissertation.[333] While a professional design doctorate involves a shorter dissertation and a project, a philosophical design doctorate is usually 50,000 to 100,000 words in book or monograph format[334] that may incorporate 2-3 articles or papers.[335] Any design works or non-written materials cannot substitute for the written thesis or dissertation.[336]

The typical examination procedure for design doctorates includes assessment of the final submission and an oral defence or viva voce.[337] Two to four examiners assess the thesis, and the candidate is examined through an oral defence or viva voce with an opponent in a private

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[328] Wilson, *Artists in the University: Positioning Artistic Research in Higher Education*, 66.
[329] Coessens, Crispin, and Douglas, *The Artistic Turn: A Manifesto*, 174; Hannula, Suoranta, and Vaden, *Artistic Research Methodology. Narrative, Power and the Public*, 80; Jung, *Enabling Knowledge*, 36.
[330] Denicolo et al., *Delivering Inspiring Doctoral Assessment*, 142.
[331] Ibid., 240.
[332] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 38-39.
[333] Trudi Cooper and Terence Love, "Designing Doctoral Education Programs in Design: Articulation with Post Doctoral Career Pathways," in *Doctoral Education in Design: Proceedings of the 3rd Doctoral Education in Design Conference Held Tsukuba, Japan 14-17 October 2003*, ed. David Durling and Kazuo Sugiyama (Japan: Chiba University, 2003), 9.
[334] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 37-43; University of California Irvine, *Proposal for a School of Design at the University of California, Irvine* (California: UCIrvine, 2002), 48.
[335] Pieter Jan Stappers and Annemiek van Boeijen, *Phd in Design - a Map and Glossary: First Report of the Erasmus+ Project Docs4design (Doctoral Courses System for Design)* (European Union, 2022), 32-34.
[336] University of California Irvine, *Proposal for a School of Design at the University of California, Irvine*, 48.
[337] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 37-41.

or public forum. Examination criteria typically include originality, contribution to knowledge, coherence and rigor of the research methodology, critical evaluation of literature, and communication of the research findings.

Research in design asks questions systematically.[338] A research question is an intellectual tool to elicit information.[339] Research questions should define key terms, imply a hierarchy, reflect the investigation's purpose, and anticipate how the findings will be used.[340] Also, a good research question is answerable in a reasonable time and impacts the field of design and beyond.[341] Candidates should explain research questions' relevance through literature reviews.[342] The research questions and literature reviews should frame theoretical perspectives, and inform the choice of research methods.[343]

Design doctorates typically use either experimental/empirical, instrumental, or intersubjective research designs. Experimental/empirical research designs use descriptive, prescriptive, and evaluative studies, to test artefacts, hypotheses, empirical facts, or rational concepts.[344] Instrumental research designs employ action-based problem-solving in practice.[345] Intersubjective research designs use social research approaches such as interviews and ethnographic studies to produce narrative and thick description.[346]

Qualities of experimental/empirical design theories are validity, reliability, objectivity, and generalizability.[347] Qualities of instrumental design theories include warranted assertability and potential to guide further inquiry.[348] Qualities of intersubjective design theories are credibility, transferability, dependability, and confirmability.[349]

Candidates who pursue a design doctorate gain expertise in theory construction and research methods needed to interpret and question experience and conceptualize changes to solve complex problems.[350] They develop skills in scholarship, evidence-based reasoning,[351]

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[338] Ken Friedman, "Theory Construction in Design Research. Criteria, Approaches, and Methods," in *Common Ground: Design Research Society International Conference 2002*, ed. David Durling and Shackleton John (London: Staffordshire University Press, 2002), 7-8.
[339] Christopher Crouch and Jane Pearce, *Doing Research in Design* (London/New York: Berg, 2015), 19.
[340] Davis, "What Is a 'Research Question' in Design?," 135-39.
[341] S. Poggenpohl and K. Sato, "Models of Dissertation Research in Design," in *Doctoral Education in Design: Proceedings of the 3rd Doctoral Education in Design Conference Held Tsukuba, Japan 14-17 October 2003*, ed. David Durling and Kazuo Sugiyama (Japan: Chiba University, 2003), 127.
[342] Linda Groat and David Wang, *Architectural Research Methods* (Hoboken, New Jersey;: Wiley, 2013), 142.
[343] Terence Love, "Theoretical Perspectives in the Phd Thesis: How Many?," in *Doctoral Education in Design: Foundations for the Future*, ed. David Durling and Ken Friedman (La Clusaz, France: Staffordshire University Press, 2000), 262.
[344] Lucienne T.M. Blessing and Amaresh Chakrabarti, *Drm, a Design Research Methodology* (Dordrecht; Heidelberg; London; New York: Springer, 2009); Aline Dresch, Daniel Pacheco Lacerda, and José Antônio Valle Antunes, Jr., *Design Science Research: A Method for Science and Technology Advancement* (Cham, Switzerland: Springer, 2015); Hevner and Chatterjee, *Design Research in Information Systems: Theory and Practice*; Horváth, "Theory Building in Experimental Design Research."; Poggenpohl and Sato, "Models of Dissertation Research in Design."; John Zeisel, *Inquiry by Design: Environment / Behaviour / Neuroscience in Architecture, Interiors, Landscape, and Planning*, Revised ed. (New York: W. W. Norton & Company, 2006).
[345] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 27-31.
[346] Groat and Wang, *Architectural Research Methods*, 78.
[347] Ibid., 81-83
[348] Brian S. Dixon, *Dewey and Design: A Pragmatist Perspective for Design Research*, Design Research Foundations., (Cham, Switzerland: Springer, 2020), 80.
[349] Groat and Wang, *Architectural Research Methods*, 83-86.
[350] Friedman, "Theory Construction in Design Research. Criteria, Approaches, and Methods," 19.
[351] Michael W. Meyer and Don Norman, "Changing Design Education for the 21st Century," *She Ji: The Journal of Design, Economics, and Innovation* 6, no. 1 (2020): 43-45, https://doi.org/10.1016/j.sheji.2019.12.002.

project management, and entrepreneurial skills,[352] which prepares them for careers in academia and research leadership in the design industry.

Professional design doctorates offer opportunities for candidates to acquire advanced skills in professional practice and analytical skills.[353] The philosophical design doctorate produces knowledge,[354] organized in theory or methods or tools,[355] that contributes to the discipline of design.[356] The philosophical design doctorate plays a role in the university achieving its missions by preparing candidates to lead and supervise research activities.[357] They equip these graduates to assume teaching and research positions in design schools[358] and nurture the next generation of scholars.[359]

Evaluating the Interpretation and Use Argument for Design Doctorates

Any non-written design works in a philosophical design doctorate cannot substitute for the written thesis or dissertation.[360] However, if the non-written design works contribute significantly to the knowledge advanced, then, arguably, they should be acknowledged as equally important as the written thesis.[361] So, the thesis length should be reduced. Otherwise, candidates undertake twice the workload when both writing a long thesis and creating the non-written design works.

Categorizing research designs into only three types oversimplifies the range of theoretical perspectives that exist within design research. This oversimplification fails to acknowledge the possibility of hybrid approaches that recognize the significance of non-written design works in design doctorates.[362]

Design doctorates that prioritize basic and applied research create a divide between theory and practice and do not adequately prepare graduates for advanced practice in the design profession where unique problematic situations require artful practice not instrumental problem solving.[363] Design doctorates do not recognize other forms of research, such as Mode

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[352] Stappers and van Boeijen, *Phd in Design - a Map and Glossary: First Report of the Erasmus+ Project Docs4design (Doctoral Courses System for Design)*, 31.
[353] Cooper and Love, "Designing Doctoral Education Programs in Design: Articulation with Post Doctoral Career Pathways," 10.
[354] Brian Allison, "Research in Art and Design: Research Problems, Programmes and Databases," *International Journal of Technology and Design Education* 1, no. 1 (1990): 9; Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 9.
[355] Buchanan, "Design Research and the New Learning," 19; Cees de Bont et al., *Advanced Design Method for Successful Innovation: Recent Methods from Design Research and Design Consultancy in the Netherlands* (The Hague: Design United, 2013), 213; Horváth, "Theory Building in Experimental Design Research," 216; Simon, *The Sciences of the Artificial*, 211; University of California Irvine, *Proposal for a School of Design at the University of California, Irvine*, 55.
[356] Cross, *Designerly Ways of Knowing*, 13; Simon, *The Sciences of the Artificial*, 113; University of California Irvine, *Proposal for a School of Design at the University of California, Irvine*, 47.
[357] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 9.
[358] University of California Irvine, *Proposal for a School of Design at the University of California, Irvine*, 49.
[359] Dennis P. Doordan, "Design Doctorate Leadership for Institutional Change," in *Doctoral Education in Design, Proceedings of the Ohio Conference*, ed. Richard Buchanan et al. (Wexner Center of the Ohio State University: School of Design, Carnegie Mellon University, 1998), 237.
[360] University of California Irvine, *Proposal for a School of Design at the University of California, Irvine*, 48.
[361] Frayling et al., *Practice-Based Doctorates in the Creative and Performing Arts and Design*, 12.
[362] Jillian G. Hamilton, "The Voices of the Exegesis," in *5th Doctoral Education in Design Conference*, ed. Lorrain Justice and Ken Friedman (Hong Kong: Hong Kong Polytechnic University School of Design; Swinburne University of Technology Faculty of Design, 2011); Malgorzata A. Zboinska, "Architectural Research in Hybrid Mode: Combining Diverse Methods within Design-Based Architectural Research Inquiry," *ARENA Journal of Architectural Research* 6, no. 1 (2022), https://doi.org/10.5334/ajar.291.
[363] Donald A. Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983), 18-19.

2 research, which is collaborative and interdisciplinary and focuses on practical problem-solving and innovation and is often conducted outside traditional academic structures.[364]

Practice Doctorates

The interpretation argument for practice doctorates claims that a pass score means the candidate can reflect on their reflection-in-action and contribute to practice. The use argument claims that a pass score is grounds for the university to decide to award the candidate a Philosophical Doctorate (Ph.D.) degree. The consequence argument is that practice doctorates educate practitioners who can do expert practice in the profession.

Specifying the Interpretation and Use Argument for Practice Doctorates

Practice doctoral candidates are typically mid-career industry professionals. Practice doctorates require candidates to produce art and design works and reflect on their creative practice.[365] Candidates typically submit an essay of 5,000 to 50,000 words that contextualizes, documents, articulates, or comments on their creative work[366] along with an exhibition, recital, or performance.[367] A committee or board of 2-4 assessors typically examines these doctorates, with 1-2 being external or independent and who may be academics or practitioners

[364] Halina Dunin-Woyseth, "Some Notes on Mode 1 and Mode 2- Adversaries or Dialogue Partners?," in *The Routledge Companion to Research in the Arts*, ed. Michael Biggs and Henrik Karlsson (London: Routledge, 2011); Michael Gibbons et al., *New Production of Knowledge: Dynamics of Science and Research in Contemporary Societies* (London: Sage, 1994).

[365] Richard Blythe and Marcelo Stamm, "Doctoral Training for Practitioners: Adaptr (Architecture, Design and Art Practice Research) a European Commission Marie Curie Initial Training Network," in *Practice Based Design Research*, ed. Laurene Vaughan (New York Bloomsbury, 2017), 53; Candy, *The Creative Reflective Practitioner: Research through Making and Practice*, 237-38.

[366] Donna Lee Brien, Jen Webb, and Sandra Burr, "Examining Doctoral Writing in the Creative Arts," in *Doctoral Writing in the Creative and Performing Arts*, ed. Louise Ravelli, Brian Paltridge, and Sue Starfield (Oxfordshire: Libri, 2014), 101-02; Anne-Marie Forbes, "Doctoral Research through Music Performance: The Role of the Exegesis," ibid., 268-69; Frayling et al., *Practice-Based Doctorates in the Creative and Performing Arts and Design*, 24; Robin Nelson, "Par Phds: A Guideline/Clew to a Successful Outcome for All (Candidates, Examiners, Administrators, Regulators)," in *Practice as Research in the Arts: Principles, Protocols, Pedagogies, Resistances*, ed. Robin Nelson (New York: Palgrave Macmillan, 2013), 101; "Doctoral Studies in the Field of Music - Current Studies and Latest Developments.," ND, accessed 14 May, 2021; Diane Zeeuw, *The Development and Evolution of the Creative Arts Practice-Led Ph.D. At the University of Melbourne, Victorian College of the Arts* (2015), 28.

[367] Linda Candy and Ernest Edmonds, "The Role of the Artefact and Frameworks for Practice-Based Research," in *The Routledge Companion to Research in the Arts*, ed. Michael Biggs and Henrik Karlsson (London: Routledge, 2011), 133-34; Pia Ednie-Brown, "When Words Won't Do: Resisting the Impoverishment of Knowledge " in *Practice Based Design Research*, ed. Laurene Vaughan (New York Bloomsbury, 2017), 131-32; Sandra Gattenhof, "Looking out of the Void: Scaffolds to Assist Drama Higher Research Degree Students on the Path to Artist–Scholar," *NJ: Drama Australia Journal* 39, no. 2 (2015): 104, https://doi.org/10.1080/14452294.2015.1083143; Timothy E. Jones, "The Phd in Art & Design," in *Elia Cómhar Conference Dublin, October* (2002), 6-7.

from industry.[368] Resubmission may not be possible for ephemeral practice works since they are tied to a specific time and space and since the findings reside in the practice itself.[369]

To evaluate the quality of practice doctorates, examiners should consider factors such as the candidate's ability to conduct original and competent research, use critical analysis of source material, demonstrate a thorough understanding of techniques, and present well-written work.[370] Gray and Malins identify four examination criteria for practice doctorates:

> Rigor, for example thoroughness, depth, critical approach, use of method; Revelation, for example new contribution, dissemination, public output; Relevance, for example value of contribution to the discipline, society, industry, education, and so on; Return, for example feedback - economic, physical, psychological.[371]

Practice doctorates aim to explore a specific topic within art and design practice.[372] A contextual review defines the study's scope and helps the candidate situate their art and design practice.[373] The focus is on creative and reflective activities that facilitate a deeper understanding of the candidate's practice.

Practice doctoral candidates require the ability to acquire, manage, analyse, synthesise, and communicate knowledge.[374] According to Evans, case studies of design practice can produce qualitative and quantitative data for validation studies, as well as play a role in data translation.[375] Niedderer argues that practice makes tacit knowledge available for research.[376] Schön argues reflective practice is useful for studies that seek to bridge the gap between theory and practice.[377]

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[368] Su Baker, Brad Buckley, and Giselle Kett, *Creative Arts Phd: Future-Proofing the Creative Arts in Higher Education: Scoping for Quality in Creative Arts Doctoral Programs*, Australian Council of University Art and Design Schools, University of Sydney. Sydney College of the Arts Graduate School, University of Melbourne. Faculty of VCA and Music, Australian Learning and Teaching Council (ALTC) (2009), 47-49; Blythe and Stamm, "Doctoral Training for Practitioners: Adaptr (Architecture, Design and Art Practice Research) a European Commission Marie Curie Initial Training Network," 54; Bruce Christianson, Martin Elliot, and Ben Massey, *The Role of Publications and Other Artefacts in Submissions for the Uk Phd* (Lichfield, Staffordshire: UK Council for Graduate Education, 2015), 19; Frayling et al., *Practice-Based Doctorates in the Creative and Performing Arts and Design*, 25; Maggi Phillips, Cheryl F. Stock, and Kim Vincs, "Dancing Doctorates Down-Under? Defining and Assessing 'Doctorateness' When Embodiment Enters the Thesis," in *Dance Dialogues: Conversations across Cultures, Artforms and Practices. Refereed Proceedings of the World Dance Alliance Global Summit, Brisbane, Australia, 13–18 July 2008*, ed. Cheryl F. Stock (Canberra, ACT: Ausdance Inc. & Queensland University of Technology, 2009), 9; Tomasi and Vanmaele, "Doctoral Studies in the Field of Music - Current Studies and Latest Developments.," 9; Leon van Schaik, "The Evolution of the Invitational Program in Design Practice Research," in *Architecture & Design - by Practice, by Invitation Design: Practice Research at Rmit*, ed. Leon van Schaik and Anna Johnson (Melbourne: onepointsixone, 2011), 18-19.

[369] John Freeman, *Blood, Sweat & Theory* (Oxfordshire: Libri, 2010), 132; Nelson, "Par Phds: A Guideline/Clew to a Successful Outcome for All (Candidates, Examiners, Administrators, Regulators)," 111-12.

[370] Tara Brabazon, Tiffany Lydall-Knight, and Natalie Hills, *The Creative Phd: Challenges, Opportunities, Reflections* (United Kingdom: Emerald Publishing, 2020), 128-29.

[371] Carole Gray and Julian Malins, *Visualizing Research: A Guide to the Research Process in Art and Design* (Aldershot: Ashgate, 2004), 168-69.

[372] Hilary Collins, *Creative Research: The Theory and Practice of Research for the Creative Industries*, Second edition. ed. (New York: Fairchild Books, 2017), 82.

[373] Candy, *Practice Based Research: A Guide*, 3; Mark Evans, "Researcher Practice: Embedding Creative Practice within Doctoral Research in Industrial Design," *Journal of Research Practice* 6, no. 2 (2010): 13, http://jrp.icaap.org/index.php/jrp/article/view/200/197; Gray and Malins, *Visualizing Research: A Guide to the Research Process in Art and Design*, 104.

[374] Gray and Malins, *Visualizing Research: A Guide to the Research Process in Art and Design*, 17.

[375] Evans, "Researcher Practice: Embedding Creative Practice within Doctoral Research in Industrial Design," 6-13.

[376] Kristina Niedderer and Seymour Roworth-Stokes, "The Role and Use of Creative Practice in Research and Its Contribution to Knowledge," in *Iasdr International Conference 2007* (Hong Kong Polytechnic University, Hong Kong: 2007), 2.

[377] Schön, *The Reflective Practitioner: How Professionals Think in Action*, 18-19.

The distinctive method of investigation used in practice doctorates is practice itself. According to Gray and Malins, the creative work developed and made by the candidate during the study serves purposes such as "gathering and/or generating data, evaluation, analysis, synthesis, presentation, communication of research findings."[378] Gray and Malins explain, the ability to embody research concepts, provide evidence or illustrate research findings in a transparent and transferrable way, differentiates practice research from routine practice.[379]

Practice doctorates contribute to art and design practice by the candidate reflecting on their practice and describing how it led to their personal learning and individual development.[380] According to Verschuren, practice-oriented research focuses on creating practical solutions and new artefacts that can improve or change the existing reality, so we should evaluate them in terms of implementary validity.[381]

Practice doctorates enable candidates to see connections beyond disciplinary boundaries,[382] adapt multiple methods and perspectives through bricolage,[383] and develop transdisciplinary skills that lead to effective communication and collaboration across fields.[384] Hockey found that the essay component enhances candidates' analytical and academic thinking abilities,[385] resulting in personal transformation and increased confidence.[386]

Practice doctorates equip candidates with the ability to develop intelligent practice,[387] recognize relevant features, and identify harmony or disharmony in a particular context.[388] Schön claims that through reflecting on practice "we can learn to observe, reflect on, and describe our knowing-in-action, and we can test such descriptions—for example, by writing out instructions for performance and observing what happens when people try to follow them."[389] Furthermore, Schön claims the ability to reflect on reflecting-in-action provides opportunities for surprise and triggers of new ways of seeing things while exposing underlying values, assumptions, and models of phenomena.[390]

Practice doctorates facilitate reflective practice by providing a framework for practitioners to engage in investigations that enhance their understanding of their practice. Practitioners do practice doctorates to surface their intuitions, access interiorized knowledge,

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[378] Gray and Malins, *Visualizing Research: A Guide to the Research Process in Art and Design*, 103.
[379] Ibid., 103.
[380] Collins, *Creative Research: The Theory and Practice of Research for the Creative Industries*, 37.
[381] P. J. M. Verschuren, *Why a Methodology for Practice-Oriented Research Is a Necessary Heresy* (Nijmegen, The Netherlands: Radboud Universiteit Nijmegen, 2009), 16.
[382] Rolf Hughes, "The Poetics of Practice-Based Research Writing," *The Journal of Architecture* 11, no. 3 (2006): 292, https://doi.org/10.1080/13602360600930906.
[383] Joyce Yee, "The Researcherly Designer/the Designerly Researcher," in *Practice Based Design Research*, ed. Laurene Vaughan (New York Bloomsbury, 2017), 161.
[384] Barbara Hawkins, "Transdisciplinary Approaches to Doctoral Arts Practice Research: Benefits and Challenges of Transdisciplinary Research," *International Journal of the Arts in Society* 7 (2013): 3.
[385] John Hockey, "Practice-Based Research Degree Students in Art and Design: Identity and Adaptation," *International Journal of Art & Design Education* 22, no. 1 (2003): 89.
[386] John Hockey and Jacquelyn Allen-Collinson, "Identity Change: Doctoral Students in Art and Design," *Arts and Humanities in Higher Education* 4, no. 1 (2005): 89, https://doi.org/10.1177/1474022205048759; John Hockey, "United Kingdom Art and Design Practice-Based Phds: Evidence from Students and Their Supervisors," *Studies in Art Education* 48, no. 2 (2007): 167, https://doi.org/10.1080/00393541.2007.11650097.
[387] Nelson, "Conceptual Frameworks for Par and Related Pedagogy: From 'Hard Facts' to 'Liquid Knowing'," 60-61.
[388] Hughes, "The Poetics of Practice-Based Research Writing," 290.
[389] Donald A. Schön, "The Theory of Inquiry: Dewey's Legacy to Education," *Curriculum Inquiry* 22, no. 2 (1992): 124, https://doi.org/10.2307/1180029.
[390] Ibid., 131.

clarify their motivations, improve their ability to communicate with clients and broader creative communities, recount their design approaches, target projects that suit them, and disseminate new techniques.[391]

Practice doctorates align with higher education's missions to support students' individual development and serve communities beyond the university.[392] They cultivate students' capacity for personal and professional growth and aim to make a difference in organizations outside of academia. Practice doctorates share similarities with professional doctorates since they focus on developing the capacity to contribute to practice and prepare candidates to work within a professional context.[393]

Evaluating the Interpretation and Use Argument for Practice Doctorates

Non-academics should not examine doctoral research since they may lack the training or experience to evaluate academic work, and their judgments may be biased. For example, Kant claimed that "only scholars can pass judgement on scholars."[394]

Practice doctorates place too much emphasis on practical application, which may not be appropriate for all research inquiries. This approach may also undervalue other types of research or research skills.

A full doctoral study programme may not be required, since, arguably, professional master's programs offer sufficient opportunities for professional self-reflection and expertise development. Education in reflective practice is not equivalent to education in doctorateness. While practice doctorates may provide an epistemology of practice, they lack the epistemology of justification.[395]

Practice doctorates present a narrow perspective on the role of universities.[396] At the doctoral level, the goals should promote autonomous critical inquiry and advancing knowledge for its intrinsic worth. A contribution to professional practice does not require autonomy. Arguably, Mode 2 research represents market utilitarianism that prioritizes conformity over independent research.

Discussion

This study reports the findings and insights of a systematic review of what is known in the literature about research education and the doctorate in art and design. I argue this study is a valuable resource for future research, given that I used the PRISMA guidelines to generate the bibliography of studies included in Appendix C. No comparable systematic literature review

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[391] Schön, *The Reflective Practitioner: How Professionals Think in Action*, 309; Schön, "The Theory of Inquiry: Dewey's Legacy to Education," 124-25; Stephen Scrivener and Peter Chapman, "The Practical Implications of Applying a Theory of Practice Based Research: A Case Study," *Working Papers in Art and Design* 3 (2004): 9; Leon van Schaik, "Design Practice Research: The Method," in *Reflections 13*, ed. Adam Jakimowicz, Sarah Martens, and Johan Verbeke (Ghent, Belgium: 2010), 128; Spatz, *What a Body Can Do: Technique as Knowledge, Practice as Research*, 233.

[392] Bourner and Simpson, "Practitioner-Centred Research and the Ph.D," 140-41.

[393] Alan Thornton, *Artist, Researcher, Teacher: A Study of Professional Identity in Art and Education* (Bristol: Intellect, 2013), 98.

[394] Immanuel Kant, "The Conflict of the Philosophy Faculty with the Theology Faculty: From the Conflict of the Faculties (1789/1992)," in *The Idea of the University: A Reader, Volume 1*, ed. Michael Adrian Peters and Ronald Barnett (New York, USA: Peter Lang Verlag, 2018), 4.

[395] Dixon, *Dewey and Design: A Pragmatist Perspective for Design Research*, 76.

[396] Robin Usher, "A Diversity of Doctorates: Fitness for the Knowledge Economy?," *Higher Education Research & Development* 21, no. 2 (2002): 150-52, https://doi.org/10.1080/07294360220144060.

has been published, so this study investigates a significant gap in the literature. However, the bibliography may be biased because I used relevance, acceptability, and sufficiency to judge quality, and this may have introduced unwarranted subjectivity. The sample size may be insufficient, as it does not include relevant disciplines such as engineering, management, and information systems, as well as relevant source types such as theses and dissertations, and, arguably, art and design works or practices.

I claim that the study characteristics presented in Table 2 and Table 3 provide a meaningful overview of the literature, capturing the extent, range, and nature of what is known about research education and the doctorate in art and design. However, there could be some bias in how I coded the studies' characteristics and research keyphrases. For example, some authors used several research keyphrases interchangeably in the same study, leading to overlap between some research keyphrases. And bibliographic data alone captures neither evidence of the author's internal reasoning nor external social and political context. For example, the changes to higher education systems in the 1990s played a significant role in understanding why practice-based research emerged when and where it did.

In addition, I argue that since all doctoral education is assessed, then validity theory is a useful conceptual framework to compare arts, design, and practice doctorates, despite their differences. However, there may be other useful ways to compare doctoral education, such as comparing pedagogy or curriculum. Critics may object that I have misapplied validity theory by using its conceptual framework rather than its statistical machinery. Or that there may be other more appropriate validation frameworks that I could have used.

Moreover, I claim that validity theory's conceptual framework captures relevant features that show meaningful insights. However, the way I used the conceptual framework to synthesize the literature may have been biased. For example, I identified the validity evidence through keyword searching within the sample and I only analyzed in-depth those studies with high keyword frequencies or keyword coverage, which could have caused me to miss some perspectives. An alternative approach would have been to evaluate every study within the sample using the same degree of critical analysis that I applied in Chapter 2. However, this would require more resources and time than allowed in a master's dissertation programme.

Finally, I claim that my analysis has contributed to the understanding of doctorateness by identifying evidence about scoring, generalization, extrapolation, and implications of doctoral education assessment in art and design. Integrating these four inference categories provides a more comprehensive understanding than previous work on doctorateness, either as art and design artefacts or practices,[397] or the synergy of the generalizable component of research,[398] or as a graduate attribute or ability.[399] However, by synthesizing the interpretation and use arguments from different research keyphrase codes, I may have marginalized important distinctions between various positions. Furthermore, critics may object that valid assessment does not guarantee a ground-breaking, novel/unique, and non-trivial contribution to knowledge.

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[397] Halina Dunin-Woyseth and Frederik Nilsson, "Emerging Epistemic Communities and Cultures of Evidence: On the Practice of Assessment of Research in the Creative Fields," in *Perspectives on Research - Assessment in Architecture, Music and the Arts: Discussing Doctorateness*, ed. Fredrik Nilsson, Halina Dunin-Woyseth, and Nel Janssens (New York: Routledge, 2017), 19.
[398] Trafford and Leshem, *Stepping Stones*, 38.
[399] Denicolo et al., *Delivering Inspiring Doctoral Assessment*, 142.

Conclusion

I began this study by stating that the literature on doctoral education in art and design is fragmented and contested. This study has attempted to synthesize this literature and provide a new understanding of the issues. The quantitative synthesis shows the extent, range, and nature of the literature. The qualitative synthesis provides insights into the assessment arguments of art and design doctorates. I argue that the idea of the doctorate in art and design cannot be found in artifacts, practices, or research keyphrases, but rather it is an argument that bridges claims about the scoring, generalization, extrapolation, and implications of doctoral assessment.

The value of this perspective is that it uses practical argumentation to explain the reasoning within interpretations and uses of doctoral assessment. The issues discussed in this chapter provide insights into the nature of arts, design, and practice doctorates. I conclude that arts doctorates and practice doctorates do not effectively distinguish research education from preparation for expert professional practice. One issue with arts and practice doctorates is the lack of distinction between the philosophical doctorate and the professional doctorate. Arguably, this undermines both the philosophical doctorate's contribution to knowledge and the professional doctorate's contribution to practice. These findings help us understand some of the potential gains and losses of diversifying doctoral education in art and design, and contribute to our understanding of the idea of the doctorate in art and design.

Chapter 4: Discussion

The Idea of the Doctorate in Art and Design

The doctorate focusses on knowledge advancement and education of the autonomous scholar. However, it may incorporate individual development and service to society. Doctoral education has seen significant changes in recent years, with universities offering a wider range of doctorates. While this diversity aims to provide students with different options, it raises fundamental issues regarding the purpose of universities. Universities should know the potential gains and losses of this diversification.[400] The power to legitimate and award degrees, particularly doctoral degrees, defines the idea of the university.[401]

In Chapter 2, I reviewed a book about doctorateness in practice-based research in art and design. The book speculates doctorateness is a property of the candidate's artistic works or design practices. Trafford and Leshem model doctorateness as the synergy of the generalizable components of doctoral research.[402] Denicolo et al. extrapolate doctorateness as an ability demonstrated by doctoral graduates in the real world.[403] This dissertation uses validity theory as a conceptual framework to integrate these discussions into a more comprehensive understanding. I argue that the idea of the doctorate is an argument that links inferences and assumptions about scoring, generalization, extrapolation, and implications of doctoral assessment.

In Chapter 3, I systematically reviewed the literature about research education and the doctorate in art and design. The quantitative synthesis shows the extent, range, and nature of the studies included in the review. The qualitative synthesis found that arts, design, and practice doctorates serve different purposes. Typically, arts doctorates aim to foster individual development, practice doctorates emphasize contribution to the economy and social value, and design doctorates focus on knowledge advancement. Using validity theory's conceptual framework expands our understanding of doctorateness from scoring, generalization, and extrapolation to integrate the implications of doctoral assessment's use, purpose, and consequences.

The debate about doctorates in art and design also relates to judgments about the doctorate's value as research education or expertise training.[404] In his discussion of the idea of the university, Hans-Georg Gadamer distinguishes between the concepts of *Bildung* and *Fachmann*.[405] In research education, Bildung is the capacity for independent, purposive thought.[406] Fachmann refers to specialized knowledge and practical expertise in a particular field or profession. Gadamer argues that research is not simply a training ground for professionals who will apply science in their work, but a way to achieve Bildung.

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[400] Usher, "A Diversity of Doctorates: Fitness for the Knowledge Economy?."
[401] Susan Jane Rowley, "The Idea of the Doctorate: Differing Perspectives Derived from a Case Study That Highlights the Perceptions of Mature Doctoral Candidates" (Ph.D. University of Surrey, 2003), 109.
[402] Trafford and Leshem, *Stepping Stones*, 38.
[403] Denicolo et al., *Delivering Inspiring Doctoral Assessment*, 142.
[404] Hans-Georg Gadamer, "The Idea of the University, Yesterday, Today, Tomorrow: From Hans-Georg Gadamer on Education, Poetry, and History Applied Hermeneutics (1992)," in *The Idea of the University: A Reader, Volume 1*, ed. Michael Adrian Peters and Ronald Barnett (New York, USA: Peter Lang Verlag, 2018), 124.
[405] Ibid., 124.
[406] Gjesdal, "Georg Friedrich Philipp Von Hardenberg [Novalis]," Section 5.

Here, Gadamer's discussion of Bildung reflects Humboldt's idea that research, teaching, and learning are mutually beneficial—student participation in a research environment can be an active mode of learning.[407] This perspective underpins that argument that independent inquiry and the unity of research, teaching and study puts universities in the best position to advance knowledge in tandem with educating the next generation of researchers as stewards of their disciplines.[408]

Autonomy is a crucial value in doctoral education.[409] It underpins academic freedom and aligns with the argument that a philosophical doctorate should provide a metanarrative of research that allows others to reach decisions independently and free from manipulation. [410] The value of autonomy also yields duties to help others by creating inner capacities to be successfully autonomous. [411]

Amy Gutmann argues that *Lehrfreiheit* or academic freedom protects universities against democratic tyranny to allow scholars to follow their autonomous judgement if they observe scholarly standards of inquiry.[412] This means that academic freedom is more demanding than more general freedoms. Academic freedom supports new and unorthodox ideas by judging them on their scholarly merits. Gutmann explains that the value of autonomy generates normative reasons for researchers to observe scholarly standards of inquiry and to avoid being drawn away from working on serious problems to investigate unserious but financially profitable ones or away from problems that afflict people who cannot afford to hire consultants. [413]

Limitations

The study has several limitations. First, the systematic literature review investigated art and design doctorates but did not explicitly target studies about doctoral education in engineering, management, or information systems. Second, I did not include completed doctoral theses or dissertations. Third, critics may argue that the argument-based approach to validation is an inappropriate assessment model for doctoral research in art and design because doctoral examinations are not tests. Fourth, the argument-based approach is an internalist form of rational reconstruction, so it assumes that it can uncover the internal reasoning of the author while ignoring their social context.

I may have biased the study in several ways. First, I used relevance, acceptability, and sufficiency to judge the sources' quality. Although I used a set of critical questions to judge quality, the judgements were based on my interpretation of the sources, which could have introduced bias. Second, I may also have introduced bias when I coded the studies' characteristics, since there is some overlap between some research keyphrases, because some authors used several research keyphrases interchangeably in the same study. Third, another source of bias was using keyword searching to identify the studies relevant to the

[407] Clark, *Places of Inquiry,* 219.
[408] Ibid., 240.
[409] Rowley, "The Idea of the Doctorate: Differing Perspectives Derived from a Case Study That Highlights the Perceptions of Mature Doctoral Candidates," 109.
[410] Friedman, "Unflattening by Nick Sousanis." Section 6.5.2.3
[411] Joseph Raz, *The Morality of Freedom* (Oxford: Oxford University Press, 1988), 377-78.
[412] Amy Gutmann, *Democratic Education* (Princeton University Press, 1999), 175-76.
[413] Ibid., 179.

interpretation and use inference categories. I analysed only those studies with high frequencies or coverage of keywords so there may be points of view I missed. However, a significant source of bias was synthesising the different research keyphrase codes into three interpretation and use arguments, this disregards distinctions between different positions.

Future Research

The literature on doctoral education in art and design is complex and has grown to include several thousand items. This dissertation contains a bibliography of the studies included in the review. I hope this bibliography will be used in future research to critically evaluate what we know about the idea of the doctorate in art and design and to initiate new inquiries.

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Appendix A. Systematic Review Search Protocols

ACM n=214

1. String n=21

Title:(Action OR Architectural OR Architecture OR Art OR Artistic OR Arts OR Constructive OR Creative OR Design OR Digital OR Fashion OR HCI OR Industrial OR Interaction OR Music OR Performance OR Product OR Service OR Studio OR Writing) AND Title:(Research OR Practice) AND Title:(Doctoral OR Doctorate OR PhD OR Ph.D)

2. Keyphrase n=193

193 Results for: [Abstract: "artistic research"] OR [Abstract: "arts based research"] OR [Abstract: "constructive design research"] OR [Abstract: "creative practice research"] OR [Abstract: "design oriented research"] OR [Abstract: "practice as research"] OR [Abstract: "practice based research"] OR [Abstract: "practice led research"] OR [Abstract: "research through design"] OR [Abstract: "studio based research"]

EBSCO n=1078

1. String n=981

(TI (Action OR Architectural OR Architecture OR Art OR Artistic OR Arts OR Constructive OR Creative OR Design OR Digital OR Fashion OR HCI OR Industrial OR Interaction OR Music OR Performance OR Product OR Service OR Studio OR Writing) AND TI (Research OR Practice) AND TI (Doctoral OR Doctorate OR PhD OR Ph.D)) OR (AB (Action OR Architectural OR Architecture OR Art OR Artistic OR Arts OR Constructive OR Creative OR Design OR Digital OR Fashion OR HCI OR Industrial OR Interaction OR Music OR Performance OR Product OR Service OR Studio OR Writing) AND AB (Research OR Practice) AND AB (Doctoral OR Doctorate OR PhD OR Ph.D))

2. Keyphrase n=97

(“Action research” OR “Architectural research” OR “Art and design research” OR “Art research” OR “Artistic research” OR “Arts based research” OR “Constructive design research” OR “Creative practice research” OR “Design based research” OR “Design oriented research” OR “Design research” OR “Practice as research” OR “Practice based research” OR “Practice led research” OR “Research through design” OR “Studio based research”) AND SU (Doctoral OR Doctorate OR PhD OR Ph.D)

Sage n=367

1. String n=35

Title:(Action OR Architectural OR Architecture OR Art OR Artistic OR Arts OR Constructive OR Creative OR Design OR Digital OR Fashion OR HCI OR Industrial OR Interaction OR Music OR Performance OR Product OR Service OR Studio OR Writing) AND Title:(Research OR Practice) AND Title:(Doctoral OR Doctorate OR PhD OR Ph.D)

2. Keyphrase n=332

[All "artistic and research"] OR [All "arts and based and research"] OR [All "constructive and design and research"] OR [All "creative and practice and research"] OR [All "practice and as and research"] OR [All "practice and based and research"] OR [All "practice and led and

research"] OR [All "research and through and design"] OR [All "studio and based and research"]

Scopus n=215

1. String n=206

TITLE-ABS ((action OR architectural OR architecture OR art OR artistic OR arts OR constructive OR creative OR design OR digital OR fashion OR hci OR industrial OR interaction OR music OR performance OR product OR service OR studio OR writing) AND (research OR practice) AND (doctoral OR doctorate OR phd OR ph.d)) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SUBJAREA , "ARTS"))

2. Keyphrase n=9

TITLE-ABS-KEY (“artistic AND research” OR “arts AND based AND research” OR “constructive AND design AND research” OR “creative AND practice AND research” OR “practice AND as AND research” OR “practice AND based AND research” OR “practice AND led AND research” OR “research AND through AND design” OR “studio AND based AND research”)

Taylor & Francis n= 357

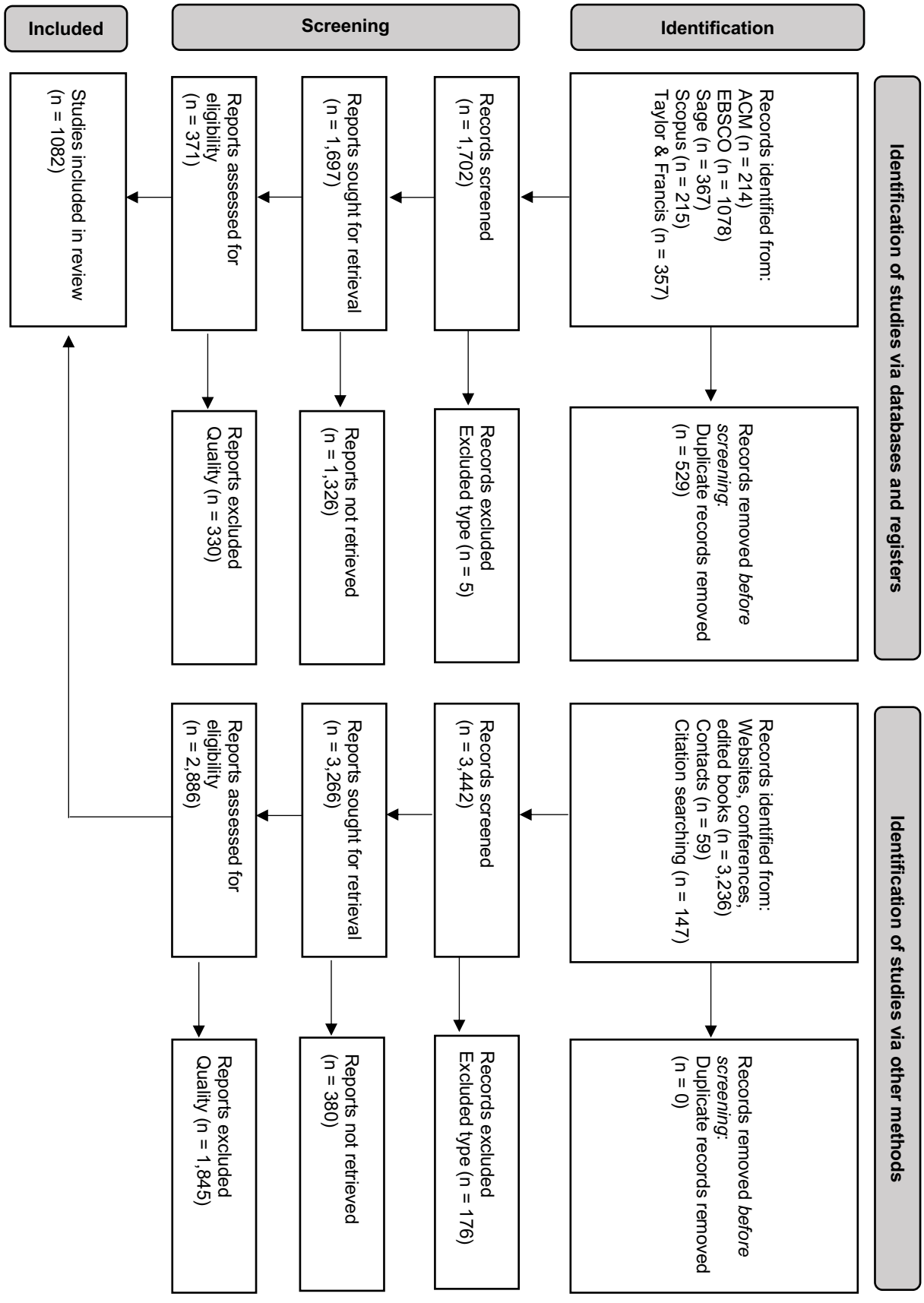
1. String n=113

[[Publication Title: action] OR [Publication Title: architectural] OR [Publication Title: architecture] OR [Publication Title: art] OR [Publication Title: artistic] OR [Publication Title: arts] OR [Publication Title: constructive] OR [Publication Title: creative] OR [Publication Title: design] OR [Publication Title: digital] OR [Publication Title: fashion] OR [Publication Title: hci] OR [Publication Title: industrial] OR [Publication Title: interaction] OR [Publication Title: music] OR [Publication Title: performance] OR [Publication Title: product] OR [Publication Title: service] OR [Publication Title: studio] OR [Publication Title: writing]] AND [[Publication Title: research] OR [Publication Title: practice]] AND [[Publication Title: doctoral] OR [Publication Title: doctorate] OR [Publication Title: phd] OR [Publication Title: ph.d]]
[[Abstract: action] OR [Abstract: architectural] OR [Abstract: architecture] OR [Abstract: art] OR [Abstract: artistic] OR [Abstract: arts] OR [Abstract: constructive] OR [Abstract: creative] OR [Abstract: design] OR [Abstract: digital] OR [Abstract: fashion] OR [Abstract: hci] OR [Abstract: industrial] OR [Abstract: interaction] OR [Abstract: music] OR [Abstract: performance] OR [Abstract: product] OR [Abstract: service] OR [Abstract: studio] OR [Abstract: writing]] AND [[Abstract: research] OR [Abstract: practice]] AND [[Keywords: doctoral] OR [Keywords: doctorate] OR [Keywords: phd] OR [Keywords: ph.d]] AND [All Subjects: Humanities]

2. Keyphrase n=244

[Publication Title: "artistic research"] OR [Publication Title: "arts based research"] OR [Publication Title: "constructive design research"] OR [Publication Title: "creative practice research"] OR [Publication Title: "design oriented research"] OR [Publication Title: "practice as research"] OR [Publication Title: "practice based research"] OR [Publication Title: "practice led research"] OR [Publication Title: "research through design"] OR [Publication Title: "studio based research"]

Appendix B. PRISMA Publication Inclusion Framework



Appendix C. Studies Included in the Review

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Appendix D. Qualitative Data Analysis Protocols

Scoring Search Keywords
Artefacts OR Assessment OR Criteria OR Defense OR Defence OR Disputation OR Dissertation OR Examination OR Exegesis OR Exhibition OR Performance OR Portfolio OR Thesis OR “Viva voce”

Generalization Search Keywords
"gap analysis" OR "literature review" OR "contextual review" OR "practice review" OR "research question" OR "conceptual framework" OR "theoretical framework" OR "data collection" OR "data analysis" OR "research method" OR "research methodology" OR "theory development" OR "theory construction" OR "theory building" OR "theorising" OR "theorizing" OR "contribution to knowledge"

Extrapolation Search Keywords
Ability OR Aptitude OR Attribute OR Capacity OR Characteristic OR Cognition OR Competence OR Comprehension OR Disposition OR Expertise OR Intelligence OR Mastery OR Reasoning OR Skill OR Trait

Implications Search Keywords
Aim OR Consequence OR Culmination OR Goal OR Outcome OR Objective OR Purpose OR Result OR Value

Appendix E. Research Keyphrase Example Quotations

A/r/tography

A/r/tography is "an understanding of arts-based research as enacted living inquiry… an approach to research that is attentive to the sensual, tactile, and unsaid aspects of artist/researcher/teachers' lives… to inquire in the world through a process of art making and writing. It is a process of double imaging that includes the creation of art and words that are not separate or illustrative of each other but instead, are interconnected and woven through each other to create additional meanings."[414]

Action Research (1)

"Our research method proceeds from directly observable behavior in particular cases and it aims at producing generalizable, empirically disconfirmable propositions… it must take the form of action research that aims at generalizable understandings of organizational phenomena through the attempt, in collaboration with practitioners, to produce the rare events associated with productive organizational learning."[415]

Action Research (2)

"Action Research: systematic investigation through practical action calculated to generate or test new information, ideas, forms or procedures and to produce communicable knowledge."[416]

Applied Research (1)

"Applied research is directed towards problems that are discovered in a general class of products or situations. The goal is not necessarily to discover first principles of explanation but to discover some principles or even rules-of-thumb that account for a class of phenomena… The common trait of applied research in design is the attempt to gather from many individual cases a hypothesis or several hypotheses that may explain how the design of a class of products takes place, the kind of reasoning that is effective in design for that class, and so forth. It is systematic in its procedures and certainly more rigorous than case studies. In addition, because applied research lies between clinical research and basic research, those engaged in applied research are often conscious of the application of more fundamental principles to investigate a class of products or activities."[417]

Applied Research (2)

"Applied Research: systematic enquiry directed towards the acquisition, conversion or extension of knowledge for use in particular applications."[418]

Architectural Design Research

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[414] Springgay, Irwin, and Kind, "A/R/Tography as Living Inquiry through Art and Text," 899.
[415] Argyris and Schön, *Organizational Learning Ii: Theory, Method, and Practice*, xxi-xxii.
[416] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 14.
[417] Buchanan, "Design Research and the New Learning," 18.
[418] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 14.

"Architectural design research can be described as the processes and outcomes of enquiries 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 generalised research activities of thinking, writing, testing, verifying, debating, disseminating, performing, validating and so on."[419]

Architectural Research

"Architectural research is original investigation undertaken in order to generate knowledge, insights and understanding based on competencies, methods and tools proper to the discipline of architecture."[420]

Art practice as Research

"Art practice as research is a creative and critical process whereby imaginative leaps are made into what we don't know as this can lead to crucial insights that can change what we do know."[421]

Artist-led Research

Artist-led research is when artists "function as cultural animators carrying out collaborative practice/ research in community contexts and 'borrow' social science methodologies like ethnography and action research."[422]

Artistic Research

"Artistic research concerns and affects the foundations of our perception, our understanding, and our relationship to the world and other people. I would call this the realism of artistic research… Artistic research is 'material thinking': the articulation of non-propositional knowledge and experience, embodied in art works and creative processes. This is the non-conceptualism of artistic research… Artistic research is not about theory, but about thought. It is not primarily directed at 'knowing that …' or 'knowing how …'. It is directed more at a not-knowing, or a not-yet-knowing. It creates room for that which is unthought, that which is unexpected – the idea that all things could be different. This is the contingency of artistic research."[423]

Arts-Based Research

"Arts-Based Research (ABR) – The multisystemic application of interactive analytical, synthetic, critical-activist, or improvisatory creative cognitive processes and artistic practices toward theory-building. Best at addressing questions that can neither be measured with exactitude nor generalized as universally applicable or meaningful in all contexts. Stems directly from a researcher's artistic practice or creative worldview."[424]

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[419] Fraser, *Design Research in Architecture: An Overview*, 1-2.
[420] EAAE, *Eaae_Charter Architectural Research*, 1.
[421] Sullivan, "The Artist as Researcher New Roles for New Realities," 95.
[422] Mason, "Problems of Interdisciplinarity: Evidence-Based and/or Artist-Led Research?," 279.
[423] Borgdorff, "Where Are We Today? The State of the Art in Artistic Research," 74.
[424] Rolling, *Arts-Based Research Primer*, 8.

Arts-informed Research
Arts-informed research is "a mode and form of qualitative research that is influenced by, but not based in, the arts."[425]

Arts-based Research Practices
"Arts-based research practices are a set of methodological tools used by qualitative researchers across the disciplines during all phases of social research, including data collection, analysis, interpretation, and representation. These emerging tools adapt the tenets of the creative arts in order to address social research questions in holistic and engaged ways in which theory and practice are intertwined. Arts-based methods draw on literary writing, music, performance, dance, visual art, film, and other mediums. Representational forms include but are not limited to short narratives, novels, experimental writing forms, poems, collages, paintings, drawings, performance scripts, theater performances, dances, documentaries, and songs. This genre of methods also comprises new theoretical and epistemological groundings that are expanding the qualitative paradigm."[426]

Basic Research
Basic research is "directed towards fundamental problems in understanding the principles—and sometimes the first principles—which govern and explain phenomena. This is a rare form of research in the design community, but some does exist as systematic speculation on the nature of design or as empirical investigation, where the hypothesis is particularly significant and far-reaching in its implications. In general, this type of research is associated with design theory, which provides a foundation for all other activities in design."[427]

Clinical Research
"Clinical research is… directed toward an individual case… focuses on the problem for action that the designer faces. To solve a particular, individual design problem, it is essential to gather whatever information or understanding may be relevant in its solution… The common trait of case studies is that they assemble information or data that may give insight into problems that reach beyond the individual case."[428]

Constructive Design Research (1)
"Constructive design research… refers to design research in which construction – be it product, system, space, or media – takes center place and becomes the key means in constructing knowledge"[429]

Constructive Design Research (2)
"Constructive design research is used as an all-inclusive label for a method of doing research through the process of making."[430]

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[425] Cole and Knowles, "Arts-Informed Research," 59.
[426] Leavy, *Method Meets Art: Arts-Based Research Practice*, 2-3.
[427] Buchanan, "Design Research and the New Learning," 19.
[428] Ibid., 17-18.
[429] Koskinen et al., *Design Research through Practice: From the Lab, Field, and Showroom*, 5.
[430] Bang et al., "The Role of Hypothesis in Constructive Design Research," 9.

Creative Arts Research

"Creative arts research: the subjective and situated approach of artistic research that draws not only on established knowledge, but tacit and intuitive processes; the experiential and emergent nature of its methodologies that result in a degree of unpredictability in terms of outcomes and finally, the intrinsically interdisciplinary dimension of this mode of research that is derived from its material and social relationality… [additional features include:] attention focusing and the notion of embodied, empathetic or what I call 'attached' looking as opposed to the scientific mode of distanced observation; processes that do not involve naming of phenomena, but an expansion of visual, verbal and other forms of language, thereby allowing new objects of thought to emerge through cycles of making and reflection; a recognition of the generative potential of the ambiguity and indeterminacy of the aesthetic object and the necessity for ongoing decoding, analysis and translation and, finally, the acknowledgement that instruments and objects of research are not passive, but emerge as co-producers of the research - in the case of human subjects, this results in collaborative and, in the case of audiences, participatory approaches that may not be predetermined at the outset of the research."[431]

Creative Practice Research

"Creative practice research is primarily concerned with the close observation of venturous practice, the optimization of such practice, and its implementation and effectiveness in transdisciplinary engagements and in proposing future modes of practice. Creative practice research uses designing and art-making as the primary method of investigation."[432]

Creative Research

"Creative research… enables us to think differently about our human situation, and, by displaying in a tangible but nonreductive form its inevitable complexity, to demonstrate the great role works of art can play in the ethical project of becoming (collectively and individually) oneself in a particular place."[433]

Creative Research Methodology

"A creative research methodology is characterised by the use, within the research process, of practice conventions, artistic actions, creation and performance. Experimentations in arts practice are integral to the research, just as active involvement of the artist is an essential component of the research strategy, which we refer to as a reflexive approach."[434]

Creative Writing as Research

"Creative writing, as a research field, incorporates the practice of writing creatively and critical responses to that practice. The varieties and styles of creative writing are relatively straightforward. Though varied, vast and most often determined by individual as well as

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[431] Barrett, "Introduction: Extending the Field: Invention, Application and Innovation in Creative Arts Enquiry," 3.
[432] Blythe, "A Validation Model Proposal Based on the Use of Existing Disciplinary Mechanisms as Dashboard Indicators for Validating Research Outputs of Creative or Artistic Works," 16.
[433] Carter, *Material Thinking: The Theory and Practice of Creative Research*, xii.
[434] Adams et al., "This Is Not an Article: A Reflection on Creative Research Dialogues (This Is Not a Seminar)," 1336.

cultural interpretation, this practice, or collection of practices, focuses primarily on the production of new, creative work."[435]

Design as Research

"The concept of design as research - either *applied research,* where the resulting knowledge is used for a particular application, or *action research,* where the action is calculated to generate and validate new knowledge or understanding, or even (but very rarely) *fundamental research* - is so well established that it doesn't need elaborating."[436] Emphasis in the original

Design-based Research (1)

Design-based research is "a process that integrates design and scientific methods to allow researchers to generate useful educational interventions and effective theory for solving individual and collective problems of education."[437]

Design-based Research (2)

"Design-based research can best be positioned as research aimed at answering a particular type of research problem: the *design problem*."[438] Emphasis in the original

Design Inquiry

"The third strategy lies midway between Dialectic and Design Science. Instead of seeking to understand design and the products of design by reference to something else – the context of a holistic system or the basic elements that underlie the complexity of experience – the third strategy seeks an explanation in the experience of designers and those who use products, without recourse to the theoretical abstractions of Dialectic or Design Science. On the one hand, it may emphasise the inventive and creative power of the designer and his or her ability to effect social change through argument and communication, whether in words or in products. On the other, it may emphasise the discipline of designing, based on analysis of the essential elements of products and the creative synthesis of these elements in the various branches of design, with appropriate regard for how products are produced and distributed as well as for how products evolve in human use within a community. This is the strategy of Design Inquiry, unfolding in two closely related but distinct lines of investigation."[439]

Design Methodology

"Design methodology, then, is the study of the principles, practices and procedures of design in a rather broad and general sense. Its central concern is with how designing both is and might be conducted. This concern therefore includes the study of how designers work and think, the establishment of appropriate structures for the design process, the development and

[435] Harper, "Creative Writing Research," 161.
[436] Frayling, *Research in Art and Design*, 4.
[437] Matthew W. Easterday, Daniel Rees Lewis, and Elizabeth M. Gerber, "Design-Based Research Process: Problems, Phases, and Applications," *Proceedings of International Conference of the Learning Sciences, ICLS* 1 (2014): 321.
[438] Andriessen, "Combining Design-Based Research and Action Research to Test Management Solutions," 2.
[439] Buchanan, "Strategies of Design Research: Productive Science and Rhetorical Inquiry," 58.

application of new design methods, techniques and procedures, and reflection on the nature and extent of design knowledge and its application to design problems."[440]

Design-oriented Research

"Design-oriented research—where research is the area and design the means—[is] a conduct which seeks to produce new knowledge by involving design activities in the research process. Here, design is used to drive and propel research… the knowledge that comes from studying the designed artifact in use or from the process of bringing the product into being should be seen as the main contribution—the 'result'—while the artifact that has been developed becomes more of a means than an end."[441]

Design Practice Research

"This research into design practice is conducted through RMIT's design practice research PhD programme, a programme that invites practitioners with a peer-recognised body of work to engage in reflections on the nature of the mastery that they have established, its trajectories and the social structures that sustain it; and then to speculate on possible futures for practice arising from a deeper understanding of its processes."[442]

Design Research (1)

"Design research is systematic enquiry whose goal is knowledge of, or in, the embodiment of configuration, composition, structure, purpose, value and meaning in man-made things and systems."[443]

Design Research (2)

"There are several ways to think about design research: first, as the discovery of fundamental knowledge from which the discipline articulates general principles and theories of action; second, as knowledge gained about application in design practice; and third, as knowledge that guides designers' decisions in executing work for a specific context or group of users. The second type of research involves systematic inquiry into the application of design theories on the effects of design. The third type of research only goes far enough to suggest which of several possible directions the designer should take in addressing practical problems. Its intent is not to influence the practice of others but to clarify the most effective course of action on a particular project."[444]

Design Research (3)

"The field of design research would therefore fall into three main categories, based on people, process and products:

- design epistemology – study of designerly ways of knowing
- design praxiology – study of the practices and processes of design

[440] Cross, *Developments in Design Methodology*, vii-viii.
[441] Fallman, "Why Research-Oriented Design Isn't Design-Oriented Research," 2-3.
[442] van Schaik, "Differentiation in Vital Practice: An Analysis Using Rmit University of Technology and Design Interfaces with Architects," 108.
[443] Archer, "A View of the Nature of Design Research," 31.
[444] Davis, "What Is a 'Research Question' in Design?," 132.

- design phenomenology – study of the form and configuration of artefacts"[445]

Design Science

"The term Design Science is to be understood as a system of logically related knowledge, which should contain and organize the complete knowledge about and for designing."[446]

Design Science Research

"Design science research is a research paradigm in which a designer answers questions relevant to human problems via the creation of innovative artifacts, thereby contributing new knowledge to the body of scientific evidence. The designed artifacts are both useful and fundamental in understanding that problem."[447]

Engaged Scholarship

"*Engaged scholarship* is defined as a participative form of research for obtaining the different perspectives of key stakeholders (researchers, users, clients, sponsors, and practitioners) in studying complex problems. By involving others and leveraging their different kinds of knowledge, engaged scholarship can produce knowledge that is more penetrating and insightful than when scholars or practitioners work on the problems alone."[448] Emphasis in the original

Embodied Research

Embodied research claims "that practice can itself be a research methodology, leading to the discovery of new knowledge in the form of new technique."[449]

Experimental Design Research

Experimental design research "intends to explore, describe, and/or explain various phenomena, which exist or are supposed to exist in the studied local world, based on tested facts and theories."[450]

Fundamental Research

"Fundamental Research: systematic enquiry directed towards the acquisition of new knowledge, without any particular useful application in view."[451]

Option Research

"Option Research: systematic enquiry directed towards the acquisition of information calculated to provide grounds for decision or action."[452]

Performance as Research

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[445] Cross, *Designerly Ways of Knowing*, 101.
[446] Hubka and Eder, *Design Science: Introduction to the Needs, Scope and Organization of Engineering Design Knowledge*, 73.
[447] Hevner and Chatterjee, *Design Research in Information Systems: Theory and Practice*, 5.
[448] Van der Ven, *Engaged Scholarship: A Guide for Organizational and Social Research*, 9.
[449] Spatz, *What a Body Can Do: Technique as Knowledge, Practice as Research*, 233.
[450] Horváth, "Theory Building in Experimental Design Research," 211.
[451] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 14.
[452] Ibid.

"Performance as research (PAR)… claim[s] that creative production can constitute intellectual inquiry."[453]

Performance Practice as Research

"Performance practice as research – defined as the uses of practical creativity as reflexive enquiry into significant research concerns (usually conducted by "artist/scholars" in universities)."[454]

Performative Research

"Performative research represents a move which holds that practice is the principal research activity — rather than only the practice of performance — and sees the material outcomes of practice as all-important representations of research findings in their own right … Expressed in non-numeric data, but in forms of symbolic data other than words in discursive text. These include material forms of practice, of still and moving images, of music and sound, of live action and digital code. Multi-method led by practice."[455]

Practice as Research

"'Practice as research' (PaR) indicates the uses of practical creative processes as research methods (and methodologies) in their own right, usually but not exclusively in, or in association with, universities and other HE institutions."[456]

Practice-based Research

"Practice-based Research is an original investigation undertaken in order to gain new knowledge partly by means of practice and the outcomes of that practice. Claims of originality and contribution to knowledge may be demonstrated through creative outcomes which may include artefacts such as images, music, designs, models, digital media or other outcomes such as performances and exhibitions." [457]

Practice-led Research

"Practice-led Research is concerned with the nature of practice and leads to new knowledge that has operational significance for that practice… The primary focus of the research is to advance knowledge about practice, or to advance knowledge within practice. Such research includes practice as an integral part of its method and often falls within the general area of action research."[458]

Practice Research

"Practice research involves curiosity about practice. It is about identifying good and promising ways in which to help people; and it is about challenging troubling practice through the critical examination of practice and the development of new ideas in the light of experience. It recognises that this is best done by practitioners in partnership with researchers, where the latter have as much, if not more, to learn from practitioners as practitioners have to

[453] Riley and Hunter, "Introduction," xv.
[454] Kershaw, "Performance Practice as Research: Perspectives from a Small Island," 4.
[455] Haseman, "A Manifesto for Performative Research," 103.
[456] Kershaw et al., "Practice as Research: Transdisciplinary Innovation in Action," 64.
[457] Candy, *Practice Based Research: A Guide*, 3.
[458] Ibid.

learn from researchers. It is an inclusive approach to professional knowledge that is concerned with understanding the complexity of practice alongside the commitment to empower, and to realise social justice, through practice."[459]

Practitioner Research

"Practitioner research, with its focus on personal practice, involves reflecting on and documenting one's own creative process and interpreting any questions and insights arising from it. Reflection through research in creative practice is a strategy for interrogating existing practice and through that process, generating new knowledge. Practice based practitioner research of this kind is of necessity speculative and has its own protocols and new norms. The practitioner as researcher develops and adopts new frames of reference, designs and creates new forms and produces outcomes that are transformative and frequently challenging."[460]

Programmatic Design Research

In its most basic form, the programmatic design research structure consists of two elements:

- Program: a set of basic beliefs, design ideals, intentions, etc.
- Experiments: a set of design experiments expressing the program.

… We begin to understand what kind of design the program makes possible and what falls outside it – and we come to a point where we either stay with this worldview or decide that it is now exhausted (from a learning point of view, with respect to research, artistic expression, or whatever reason we had for once starting to work with it), and it therefore is time to end it."[461]

Project-grounded Research

"The reasons for calling our research method project-grounded research becomes self evident here. This method is a kind of hybrid between action research and grounded theory research, but at the same time it reaches beyond those methods, in the sense that our researchers in design are valued both for their academic and professional expertise, which is not the case even in the most engaged action research situations… once the research problem has been adequately set and the research questions formulated, the student is expected to find a real design team and project where the reflection can be stimulated and nourished. Only in the field of a project, we believe, will the student be able to refine the construction of the initial problematique and to reformulate the main research questions adequately… However, although the importance of the design project needs to be recognized in project-grounded research, it should never become the central purpose of the research project, otherwise we fall back into R&D. Therefore, the design project and its output find their place in the annex of the dissertation, since practice is only a support for research (a means, not an end), the main product of which should remain design knowledge."[462]

Research (1)

[459] The Salisbury Forum Group, "The Salisbury Statement," 5.
[460] Candy, *The Creative Reflective Practitioner: Research through Making and Practice*, 237.
[461] Redström, *Making Design Theory*, 96.
[462] Findeli, "A Quest for Credibility: Doctoral Education and Research at the University of Montreal " 111.

Research: "methodical search for knowledge"[463]

Research (2)

"Research is systematic enquiry whose goal is communicable knowledge:

- systematic because it is pursued according to some plan;
- an enquiry because it seeks to find answers to questions;
- goal-directed because the objects of the enquiry are posed by the task description;
- knowledge-directed because the findings of the enquiry must go beyond providing mere information; and
- communicable because the findings must be intelligible to, and located within some framework of understanding for an appropriate audience."[464]

Research about Design

"Research about design, corresponds to an expected improvement in the design practice and, consequently, in the level of the user's satisfaction. This kind of investigation, according to the scientific standards, is normally performed by several subjects, besides Design. Actually, the fact of being published is, again, the proof of its rigor and acceptance by the scientific community. The problem found in this kind of research is its relative lack of relevance for design. "Design", here, means the design practice and the teaching or research in design. Research about design (which is, about its objects, its processes, its actors and participants, its meaning and its importance for society, industry, culture, etc.) performed by researchers of other areas (like anthropologists, archaeologists, historians, psychologists and many others), has, as main goal, to contribute for the advance of its own subject and not of design in particular. More precisely, these researchers aren't orientated to find out how they can certify that the produced knowledge, in their research, is relevant for Design, even if it is how it is expected sometimes. In fact, designers are the ones in the best position to decide if such knowledge is relevant and, if it is the case, how it could be implemented in the respective practices." [465]

Research by Design

"Research by Design: A special research mode where the explorative, generative and innovative aspects of design are engaged and aligned in a systematic research inquiry. The definition distinguishes Design practices in research from other practices. It implies that the design practices by themselves have an inherent element of investigation, innovation and knowledge generation, as opposed to e.g. nursing practices. But it also indicates that these practices need to be complemented with a special dimension of reflection to qualify as research. Addresses mostly internal aims emerging from within design practice."[466]

Research for Art and Design

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[463] Bunge, *Philosophical Dictionary*, 251.
[464] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 14.
[465] João Félix, "A Systematic Review on International Design Research, in Order to Ensure That the Findings Can Compare Design Capabilities in the Portuguese Reality," 79.
[466] Sevaldson, "Discussions & Movements in Design Research: A Systems Approach to Practice Research in Design," 11.

"Research for art and design: the gathering of reference materials rather than research proper. Research where the end product is an artefact – where the thinking is, so to speak, embodied in the artefact, where the goal is not primarily communicable knowledge in the sense of verbal communication, but in the sense of visual or iconic or imagistic communication."[467]

Research for Design (1)
"*Research FOR Design*: Research that serves design and is subservient to design."[468]

Research for Design (2)
"Research for design is common to any research project in any subject. It is an original and significant contribution for knowledge, and in our case, for design knowledge. This kind of research is relevant for the practice of design, given that its purpose is to certify that several parameters, on which the design process accomplishment depends (technological, ergonomic, aesthetic, psychological, etc.) are treated adequately, which is, that the design project be responsible and properly informed."[469]

Research into Art and Design
"Research into art and design… Historical Research… Aesthetic or Perceptual Research… Research into a variety of theoretical perspectives on art and design – social, economic, political, ethical, cultural, iconographic, technical, material, structural."[470]

Research into Design
"Research INTO Design: Inquiry that looks at design from a distant perspective."[471]

Research through Art and Design
"Research through art and design… Materials research… Development work… Action research – where a research diary tells, in a step-by-step way, of a practical experiment in the studios, and the resulting report aims to contextualise it."[472]

Research through Design (1)
"Research through design is an approach to research that leverages the design process of repeated problem reframing as a method of scholarly inquiry."[473]

Research through Design (2)
"Research through design, brings some useful consequences for the teaching of design. The previous observations give us two important criteria that the research must follow: it must be rigorous, this is, it should regulate itself by the usual scientific standards and it must be relevant, which is, contribute for the improvement of the design practice. The research

[467] Frayling, *Research in Art and Design*, 5.
[468] Sevaldson, "Discussions & Movements in Design Research: A Systems Approach to Practice Research in Design," 11.
[469] João Félix, "A Systematic Review on International Design Research, in Order to Ensure That the Findings Can Compare Design Capabilities in the Portuguese Reality," 78.
[470] Frayling, *Research in Art and Design*, 5.
[471] Sevaldson, "Discussions & Movements in Design Research: A Systems Approach to Practice Research in Design," 12-13.
[472] Frayling, *Research in Art and Design*, 5.
[473] Forlizzi, Stolterman, and Zimmerman, "From Design Research to Theory: Evidence of a Maturing Field," 2894.

through design must be understood as having properties, not only from the research for design, as from the research about design." [474]

Research through Practice

"Research THROUGH practice, where the practice serves a research purpose… might also include modes where practice serves to generate knowledge for an external agenda." [475]

Science of Design

"Science of design, a body of intellectually tough, analytic, partly formalizable, partly empirical, teachable doctrine about the design process."[476]

Strategic Research

"Strategic Research: systematic enquiry calculated to fill gaps in fundamental research and/or to narrow the gap between fundamental research and possible useful applications."[477]

[474] João Félix, "A Systematic Review on International Design Research, in Order to Ensure That the Findings Can Compare Design Capabilities in the Portuguese Reality," 79.
[475] Sevaldson, "Discussions & Movements in Design Research: A Systems Approach to Practice Research in Design," 11.
[476] Simon, *The Sciences of the Artificial*, 113.
[477] Archer, *Designerly Activity and Higher Degrees: Seminar Papers from a Staff Development Short Course*, 14.