Designing a New Design PhD?

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The higher education sector in the UK is currently undergoing rapid change, and design education is no exception. Higher fee levels, limited grants and self-funding PhD study is becoming more common. Furthermore, there is increased demand for non-traditional modes of study such as part-time provision and flexible learning – especially relevant to designer-practitioners. A greater number of mature students are also entering higher education, many of whom will have significant industry experience. But the design student dynamic isn't the only change we are seeing – the remit of design academics is changing too. There is now an increased emphasis on the economic and social benefits that academia can contribute, and the 'impact agenda' requires research councils (and therefore academic researchers) to show that their work has a wider societal impact in order to sustain funding. Furthermore, design is an ever expanding and changing interdiscipline, and so the make up and shape of the Design PhD is frequently in question.
But what do all these changes mean for doctoral design education? Is the traditional PhD model still fit for purpose, or are we changing this beyond recognition to accommodate design? Do we need a new Design PhD? In this paper, we examine approaches in both mainstream design research training (adaptations of the traditional model) and more novel PhD programmes, which could form the grounding for curriculum design experts to further question and develop the notion of the new Design PhD.

Keywords: design education, doctoral education, Design PhD, research, curriculum, agile, hybrid academics, industry

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Introduction: *The changing nature of UK Higher Education: dynamics, drivers and impact*

The Higher Education sector in the UK is currently undergoing rapid change. With the introduction of higher fee levels and limited grants, it is becoming more common for students to pay for their own education. This is particularly true for the arts, humanities and social sciences, and in 2012 only 31% of the total number of funded studentships were in these areas, making the self-funding model of PhD study in this field far more common (Higher Education Commission, 2012). Students, aware of either this new funding context, or the weight of paying for their own education, may therefore be more discerning about what they see as value for their money. Furthermore, there is increased demand for non-traditional modes of study such as part-time provision for those working in industry, and flexible learning (Universities UK, 2012). A greater number of mature students are also entering higher education (Universities UK), many of whom will have significant industry experience before re-entering education. These trends mean that the Higher Education landscape is changing, with the expertise of the academy battling with the notion of student as "consumer", mature students with more life and career experience, and the idea of inter-disciplinary education beyond the academy.

But the student dynamic isn't the only change we are seeing – the remit of academics is changing too. Perhaps as a consequence of the global recession and the sustainability agenda, there is now an increased emphasis on the economic and social benefits that academia can contribute. Postgraduate skills are recognised as *"major drivers of innovation and growth"* (Smith, Smith, Bradshaw, Burnett, Docherty, Purcell & Worthington, 2010) and have been described as *"critical to a high skills, high performance economy."* (Leitch, 2006). This thinking is reflected in what is now referred to as the 'impact agenda', which requires research councils (and therefore academic researchers) to show that their work has a wider societal impact in order to sustain funding. A critical part of this is collaboration with industry and the wider public and private sector. Such activities have in the past been referred to as knowledge transfer, and more recently, knowledge exchange. In the Universities UK report (Universities UK, 2012), it was stated that between 2000–01 and 2005–06 there was very little change in the level of industrial income that institutions were able to attract, but, between 2005–

06 and 2008–09 industrial income rose by around 22%. There was a moderate reduction in 2009–10, likely due to the global recession, but 2010–11 saw a return to growth. (Universities UK). Collaboration between academia and industry is important, but not easy, given the differences in culture and agenda, and in some cases, the inherent desire to compete instead of to collaborate (Murphy, Derksen, Horn, Desbarats &Gray, 2010).

This desire for academia-industry collaboration is now reflected in government policy and calls by the UK Research Councils, which encourage knowledge exchange, impact and cross-disciplinary research as well as funding doctoral training centres to develop multi-skilled postgraduate researchers. Although STEM subjects have traditionally been the focus of knowledge transfer activities, there is a growing recognition that academia can also positively influence the creative economy and that arts and humanities subjects can develop impactful research with wider benefit. (Crossick, 2006).

But what do all these changes mean for design education, and in particular, the Design PhD? The authors have observed, participated in, and are now actively provoking an emergent discussion in design on the concept of the 'hybrid academic', which may be, in part, a reaction to the influences outlined above. In contrast to the traditional 'lone scholar' model of academia, these new academics embody the collaborative space between sectors and disciplines. The authors contend that it is now the case that a successful academic career requires multiple skills, including the ability to move between fields of study, understand the priorities of the private sector and work with non-academic collaborators. This raises questions of whether we should be educating for this new career path, and if so, how this can be achieved. There are individual, sporadic interventions and activities that encourage us to be more agile, but we would like to explore a more holistic and structured approach in the hope to stimulate discussion and assist others who are similarly inspired. In other words, is there a call for a new Design PhD? If so, what is this called, what form would it take, and who is it for?

In this paper, we examine approaches in both mainstream design research training (adaptations of the traditional model) and more novel PhD programmes, which could form the grounding for curriculum design experts to further question and develop the notion of the new Design PhD.

In exploring (proposing) an alternative Design PhD model, it is first necessary to define what could be considered a traditional PhD trajectory. Drawing upon our experiences of Lancaster University's Highwire Doctoral Training Centre and its Creative Exchange project, we will then suggest what the Design PhD looks like, and use this to outline the fundamental principles of a new Design PhD. At the end of the paper we outline key observations and a call for action to the doctoral design research community to critique our proposals and develop this model further.

The Traditional PhD

Although there are arguably subtle differences from one institution to another, and most definitely differences in approaches across disciplines, there are common features which are generally expected when considering a design PhD. Broadly speaking, a traditional PhD in the UK is geared towards writing an 80-100k word PhD thesis which includes a literature review, research aims and objectives, research questions, a methodology, methods and findings. Although research designs differ considerably across disciplines, there will usually be some kind of written thesis at the end.
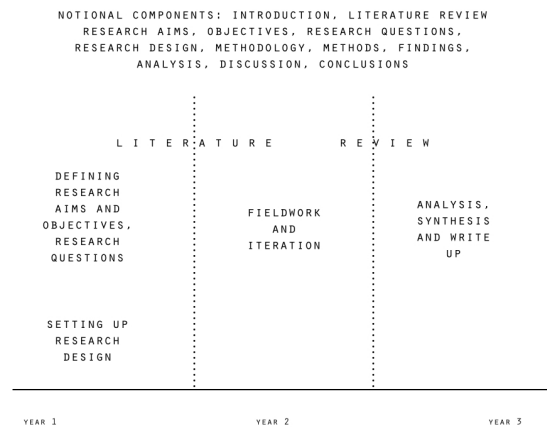
NOTIONAL COMPONENTS: INTRODUCTION, LITERATURE REVIEW
RESEARCH AIMS, OBJECTIVES, RESEARCH QUESTIONS,
RESEARCH DESIGN, METHODOLOGY, METHODS, FINDINGS,
ANALYSIS, DISCUSSION, CONCLUSIONS

LITERATURE   REVIEW

DEFINING
RESEARCH
AIMS AND   FIELDWORK   ANALYSIS,
OBJECTIVES,   AND   SYNTHESIS
RESEARCH   ITERATION   AND WRITE
QUESTIONS   UP

SETTING UP
RESEARCH
DESIGN

YEAR 1   YEAR 2   YEAR 3

Figure 1: The Traditional PhD

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But is there such a thing as a traditional PhD? The very suggestion that there is a traditional PhD model implies that there is a traditional way of doing doctoral research. We would question whether this has ever been the case, but argue that this certainly doesn't stand true today. And so, there are inherent assumptions made when considering the 'traditional' or 'standard' route PhD as a single entity. If one were to gather a group of successful candidates together, it would be unlikely that you would find two who had exactly the same experience of their studies. There are many variables which can affect the course of a postgraduate degree; from the supervisors' working methods, to the nature of the data collection and methodology, to the working style of the individual. This is even more the case when you look across disciplines, which may have very different standards of what constitutes the research process.

As we are moving towards more interdisciplinary research and collaborations with industry, the thesis-based model itself may no longer be fit for purpose. For example in art and design, we increasingly find the need to incorporate practice-based research into the mix, which may mean that as well as a written element to the thesis, there is a tangible object produced which embodies the researcher's practice. So, a doctoral thesis submission could comprise, for example, a written thesis of 60,000 words, and a physical object which is equivalent to 20-40,000 words. But this may only be appropriate when the submitted object is an expression and explanation of the research, and part of a research through design approach (attributed to Frayling, cited in Jonas, 2007, p190; Frankel and Racine, 2010), and not the work itself, which is not always the case.

It is often stated that the common thread uniting PhD studies is that they are a training course to becoming a researcher. However the nature of research is itself changing in response to the pressures outlined in the introduction, the complex nature of the world in which we live, and the wicked problems that we face. There are many different types of research and researcher, therefore by necessity we should have different types of training. As we move towards a more experience-based approach to education, and careers which require skills in multiple areas, we have to be less prescriptive in the research training we offer. A HEC report in 2012 quoted a research-active academic who opined that PhDs *"go too deeply into too narrow an area – and don't have the breadth that I would like to*

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see…" (Higher Education Commission, 2012, p73)*,* and notes that the traditional PhD model may no longer be optimal for an academic career.

So what are the current alternatives (in reality these are adaptations) to this "traditional" model? When we set out to write this paper, we were proposing the design PhD as an alternative to the traditional model in design. However on reflection, we acknowledge the design PhD model as an "adaptation" of the traditional model in design. This could make it useful for other disciplines to consider to what extent their own current models are adaptations of the traditional structure outlined in Figure 1 above.

What is a Design PhD?

We would like to make it clear that at this point, we aren't trying to dismiss the "traditional" PhD. Nor have we arrived at a neat new model of the Design PhD. Rather, we would like to start a conversation which asks "What is a Design PhD and what does it look like?, by offering up real insights from our experiences of teaching inter-disciplinary PhDs and project based consultancy models of doctoral research, as well as our interaction with industry. We would like to suggest key principles for development of an alternative PhD model which nurtures the idea (development?) of what we call "the agile academic"; i.e. an academic that transcends the ivory tower; crosses the boundaries between industry and academia, engages in practice, research and teaching, and is motivated to do excellent, innovative research which satisfies not only the REF criteria we are bound by, but also real-world problems and contexts. An agile academic would be just as likely to publish in Design Week as they would in Design Issues. In order to be able to do this, they require a different kind of education; a different kind of PhD. One that values practice-based research and making as well as the academic pursuit of knowledge, values mindful reflection as well as immersive collaboration, and has a wider frame of value than the impact agenda and citations. At Lancaster University, we use several approaches.

ImaginationLancaster is Lancaster University's creative, open and exploratory design-led research lab that conducts applied and theoretical research into people, products, places and their interactions. Imagination's teaching approach is informed by, and interfaces with their research projects. Academics teach across the MRes in Digital Innovation, the MA in Design Management, and the BSc in Marketing and Design. Courses are

currently being developed in Design Interactions and joint UG programmes with Engineering and Computing. Because Imagination positions itself as a research lab, and not a "department of design", this implicitly drives a different approach to how it "teaches" research, in the sense that practice and industry interaction with live projects are a fundamental part of doctoral research. Current doctoral training provisions include Highwire[1], Y[2] and our annual Design PhD Conference. This paper will draw on the former two programmes to convey our position in Design Research training, and to contextualise our notional "agile" model.

Our models

1. Highwire

In this Doctoral Training Centre, students are offered a 1-year taught MRes in Digital Innovation, and then a 3-year funded PhD programme. One author of this paper teaches on the MRes and supervises PhD students on this programme. All students complete a module entitled "Comparative Research Methods", and in keeping with the interdisciplinary nature of the programme, learn about research approaches of design, management, computing and also debate the edges and intersections of these "disciplines" and research approaches. Students come from a variety of backgrounds – some are just out of Masters or UG degrees, and others are more mature students who have built a substantial career. We have digital artists, practitioners, designers, computing enthusiasts and makers to name but a few. This has helped us consider the question: how do we educate such a diverse mix of interdisciplinary students on the practice of research? The team have focused on the unique nature of design research; that every design research project is different, and therefore requires a different research design each time. So as well as planning and doing design research, students are also designing the research itself. It may be useful at this point to note that our experience of teaching on this programme has shown that when students are working across disciplines, research approaches become

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[1] Highwire is an EPSRC-funded doctoral training centre based at Lancaster University. Students undertake an MRes in Digital Innovation, and then start a 3-year PhD study which straddles the disciplines of Design, Management and Computing.
[2] The Creative Exchange is an AHRC-funded research project which brings together companies and academic thinkers to explore the potential of the digital public space. 7 PhD students are currently funded under Lancaster University, with a further 8 at Newcastle University, and 6 at the Royal College of Art.

more complex, supervisors become difficult to identify, and the challenges of teaching a diverse and mature cohort are compounded.

2. Creative Exchange

The other model of Doctoral research at Imagination is through the Creative Exchange research project. This multi-institutional project (led by Lancaster University, in partnership with Newcastle University and the Royal College of Art) is an AHRC-funded 'Knowledge Exchange Hub', and the core principle is that PhD candidates will work on projects that are co-designed with creative industries, and arts and humanities academic partners, forming the data sets for their PhD empirical work The over-arching topic of all research carried out in this project is the Digital Public Space, and therefore all students are exploring aspects of this broad topic in their theses. Six core themes (Personalisation, Experience, Participation, Connectivity, Narrative and Identity) are also fundamental to this project – and students were recruited based on their interest in these themes. Also of note is the interdisciplinary nature of the cohort (with representatives from fine art, cultural and media studies, computer science and design), many of whom also have significant industry experience before joining the programme. Several issues have emerged from this way of working. For example, how do students incorporate/ weave project-based experience while operating in a traditional PhD context? If a student is expected to produce an 80-100,000 word thesis, where do the project-based outputs fit? How can one interweave a literature review with making, or consultancy with live projects within their research approach? We have observed students who form research problems based on a "hunch" from industry experience, rather than from the literature – however, they are likely to then locate this within the literature, so that a more rounded contribution can be made. Some students are also using action research and grounded theory methodologies, where the research questions or hypotheses are developed in tandem with fieldwork.

We have briefly outlined two models of Design PhD currently being offered at Lancaster University, delivered by ImaginationLancaster, but what are the other available PhD models?

North American Design PhD

Carnegie Mellon University recently held a symposium about what constitutes the North American Design PhD. They have always placed heavy

emphasis on the design PhD as practice-based design research – by which they mean "academic research that proceeds by way of the processes involved in the professional practice of designing" (Carnegie Mellon University, 2013:1). They want to take this further and take the program away from its humanities based roots, and more towards a programme that "conducts research into designing through designing" (ibid), which they believe is "more likely to be more effective for designing. (ibid)" At the symposium, they debated current issues in the field such as artifact vs text, instances where practice isn't research, how the Design PhD is examined and practitioners as students. Although they don't offer a direct alternative to the current model, CMU are very much active in questioning the constitution of the Design PhD, and aren't afraid to critique what's embedded.

Orpheus

In response to the critique that traditional PhDs mean narrow skillsets, professional doctorates and new route PhDs were created which arguably informed the development of Doctoral Training Centres and Roberts funding for transferable skills training. (Higher Education Commission, 2012). Further to this, to help accommodate a broader skillset which takes account of both academic and non academic contexts, the Orpheus Network has developed a new model of PhD education which is which is being used across Europe. The network calls for a new attitude to the PhD whereby students take more responsibility for the project itself. "They will not necessarily do all the work themselves (previously such an idea was anathema), but they will learn to be managers as well as scholars" (Mulvany & Lackovic, 2012).

EngD

The EngD (Engineering Doctorate) is something of a hybrid doctorate in engineering, where the PhD candidate is based in industry while working on their PhD. According to the Association of Engineering Doctorates, the EngD *"provides a more vocationally-oriented doctorate in engineering than the traditional PhD and is better suited to the needs of industry."* (AED, n.d.). First established in 1992, there are around 19 Industrial Doctorate Centres in the UK delivering these programmes (ibid.). This programme is different from that of a traditional PhD in the sense that the candidate is based within a company and the research itself is shaped by the sponsoring company, rather than emerging from literature or investigative empirical fieldwork.

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Both programmes however, share the basic criteria for the candidate to make a "distinct contribution to knowledge" (AED, n.d.).

Sponsors of the EngDoc, on the Association of Engineering Doctorates have reported a range of gains from the programme, stating that they "get the opportunity to build a relationship with the university where we can interact with a number of academics, engendering discussion on a range of topics and opportunities while bringing academic rigour to the research process." (AED,n.d.).

The Design Doctorate

Pelle Ehn, of Malmo University, discusses a graduate programme in interaction design as an example of a 'design doctorate' as opposed to a traditional PhD. They describe aspects of this course which differentiate it, which include variations in the content of the thesis, and in action based nature of the research. The interdisciplinary nature of the programme is highlighted, both in terms of the backgrounds of the students, and the production-oriented, studio based environment in which research work is carried out. That this design based programme is practice based but broad in scope gives interesting comparisons to the programmes described above.

We have summarised the traditional PhD, ImaginationLancaster's experiences, and new models that are being developed as a response to, and as a development of the traditional PhD. We will now summarise our findings and propose further areas for development.

Findings

How can these different approaches to and experiences of doctoral research training described above help us imagine Design PhDs of the future? Considering the call for collaboration with industry and contributions beyond the academy, what are the issues that we have to be aware of when proposing a new PhD structure for what we are terming the "agile academic"[3]. What would a new PhD look like to educate someone to become one of these agile academics? We now outline 5 core observations from our experiences, which could be helpful to others in imagining the future of the Design PhD.

#1 Embedding students in design methodology: a commonality-based approach which respects differences

From our experience of teaching comparative research methods to interdisciplinary doctoral design students, one important concept to bring to students is that of research methodology – e.g. the approach to defining the research and the methods selected. While more scientific disciplines may have more dogmatic approaches to doing research (indeed, some fields of computing may also share this approach), design can be much more complex in terms of the research design itself. While we would not want students to always adopt the same approach, we would expect all students to understand that their research will implicitly have a methodological approach, which embodies their epistemological viewpoint and methods which are geared towards gathering data to answer their research questions (or indeed to form them in more grounded approaches). Design research is an ideal context for embedding both the practical and academic aspects of methodology, because design practice itself has parallels with the more academic philosophical approaches. It just requires alignment of practice and theory. An MRes at the beginning of a PhD programme is an ideal way of doing this. Murphy, co-author of this paper, developed a series of lectures geared towards doing exactly this; locating concepts from practice-based projects and skills in industry with the academic philosophical standpoints of research. Murphy also frequently highlights the need for an academic text book about design research methodology to contextualise the practice-

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[3] e.g. an academic that transcends the ivory tower; crosses the boundaries between industry and academia, engages in practice, research and teaching, and is motivated to do excellent, innovative research which satisfies not only the REF criteria we are bound by, but also real-world problems and contexts.

based methods that practicing designers learn in industry, within the academic discourse around research methodology.

Interestingly, this paper all emerged from a discussion around research methodology. In a meeting attended by the two authors, the contrast was noted between the scientific disciplines (where one of the authors' studies originated) and design and social science in the consideration of the philosophical position of the research and how meaning is attributed to data. In design and social science this analytical process is almost a given, whereas in more traditional STEM disciplines it is seldom considered at all. Most scientific disciplines accept deductive research as the starting position of any research undertaking and therefore design experiments to answer research questions, and do not consider inductive and abductive approaches. In contrast, some social sciences and design approaches are largely about designing research approaches which are more generative and allow space for a more grounded approach – and even a contribution to discourse on research methodology itself. In addition, because we have students with a practice-based background, there must be recognition of how this real life industry context can be reflected in the PhD. It should be noted that we are not trying to achieve consensus or homogenisation but are very keen to respect the different approaches to research – whether that be according to discipline or context (e.g. academic/ industry), in order to enhance the field of design research.

#2 Being aware of the expert practitioner/ novice researcher conflict

While mature students may be experts in their field, they will ultimately be novice researchers. Because they may be leaders in their field of practice, this can be a difficult reality to grasp, and it takes time for students to understand the complexity of doing design research and the need for training – despite their expertise. Lawson (2006) found that novice designers tend to attach themselves to solutions early. In addition, good design research requires a combination of analysis and synthesis, but according to Lawson, it is more about synthesis. Dorst (2001), proposed that more experienced designers can co evolve problem and solution, which might suggest that these more experienced designers may find it more natural to start to solve the problem as they frame it, instead of opening up to initial wide and broad opportunities. This is consistent with Author X's teaching experience.

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#3: Project management vs research: Roles that have to be managed.

A key observation the authors have seen in the Creative Exchange PhD student cohort is the necessity to learn skills beyond those which might be traditionally associated with a PhD. In order to collaborate in an agile manner, particularly with those from outside academia, (e.g. practitioners who are running businesses), it is necessary for doctoral students to have skills in project management and collaborative working. These are valuable transferable skills not just to future entrepreneurial endeavours, but also to collaborative research practice now highly sought after for developing funded grant proposals and working in large multi-researcher, often multi-institution projects. It is also becoming more important to be able to communicate research findings to a wider audience, both to work with industry partners and to enable public engagement with research, in order to demonstrate impact and justify public funding.

As part of the Creative Exchange PhD journey, academic mentors encourage the development of these skills, as they are part and parcel of any future academic career – and indeed the new "agile" academics that we would like to nurture will need to adopt more of an entrepreneurial scavenging approach, whereby practice based projects can contribute to research. Therefore, rather than actively pursuing a particular research agenda, agile academics, (being widely networked and collaborative) will craft the common narrative through a range of diverse projects and collaborations to help them establish and build a research profile. It is this skill of "scavenging" that we actively seek to encourage by using these live projects to form the basis of the students' PhD.

It is sometimes assumed that these skills are something which require a natural ability, and that some individuals are simply 'better' at them. In the experience of the authors this is not the case; these skills are learnt by experience and can be taught. However, the emphasis on this training must not detract from the core function of a PhD which is to train in research techniques.

#4: The clash between satisfying traditional PhD model and satisfying emerging model at the same time. We are still bound by what's expected

The authors acknowledge that rather than "tinkering "with the current model, we may first need to outline an alternative. We do not currently have a well- defined new model, but in developing one, would we need to experiment ? This is risky and could impact on those currently in this middle ground/transition. Therefore we need to find new ways without sacrificing their education. There also needs to be awareness that the existing models and structures have survived for a reason, and although it is important to be experimental with new models in order to move forward, there is a danger of abandoning successful aspects of the models along with those which are no longer appropriate, which is counterproductive.

#5: Practitioners' desires to study for a PhD

One author of this paper, up until three years ago, was a full-time practitioner in industry. With these connections still active in her academic career, she has come across numerous requests from various practitioners wanting to do a PhD while continuing to run their own practice. There are many reasons for this – for example, some designers and architects want to present some rigour to the research they do for clients – and therefore feel that a research degree may give the research they do some credibility. Would a PhD be the correct path? If practitioners in industry gained a PhD, would this mean they would be less likely to collaborate with academics? This paper calls for further debate regarding the type of research qualification that's appropriate for such a requirement. If it were a PhD, and therefore this would be mean practitioners studying at Universities, this could mean more live industry networking opportunities for current students.

What could be the legacy/outcomes?

In developing a new PhD which is interdisciplinary, takes account of practice as well as academic pursuit of knowledge, and is available to practitioners still running their businesses, what could the legacy be?

#1: Nurturing the hybrid academic

We believe that a hybrid academic is emerging. Someone who is not just inquisitive enough to do research, or able to write, but someone who is entrepreneurial; who is connected with industry and involved with live

projects and uses these projects opportunistically to craft that into a PhD. They are not just people who are seeking to be "academics" in the traditional ivory tower sense – but a collaborator with industry and academia in the future.
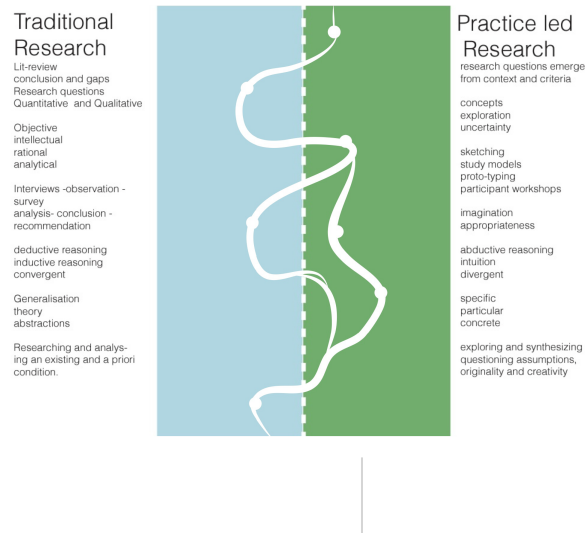
#2 A walled garden, not an ivory tower
We have all too often heard the argument that academia is full of academics who regard themselves as "lone scholars", who prefer to work alone in isolation rather than collaborate "on the ground". It is our desire to dispel this myth of the ivory tower, where the academic is king – and instead, adopt a more co-creative approach where academics operate within communities of agile researchers. We would like to continue to educate for that model of academia, and not the ivory tower model, where citations and written publication is king.

#3 Education that embraces technology
 We should also pay attention to movement towards interdisciplinary education, and technology enabled education. Again, we are not trying to prescribe a middle course the same for everyone, but rather enable people to carve their own path based on their own particular context. We can't be driven completely driven by these trends – they do not dictate, but they allow us to use our skills and experience to be the authority on a particular type of education. Others may develop their own path based on their own expertise. We are respecting institutional and local expertise.

How do we move forward?
Finally, we end this paper with a call to action. We propose that designerly approaches can help to re-imagine the future of doctoral design education. We call for designers, project managers, curriculum designers, and education experts to get together and ask these awkward questions. We would like to see more mashups/hacking of the current model, to help us imagine new ways which take into account the issues that we have mentioned in this paper. Design approaches can help. And thus we now seek to collaborate with people who want to use design approaches (e.g. prototyping, scenario exploration, service design, futurecasting, iterative improvement) to keep this debate going. This begs the question, if we are able to develop concepts and prototypes of new Design PhD models, how do we engender experimentation in doctoral programmes and what does this look like?

Traditional Research
Lit-review
conclusion and gaps
Research questions
Quantitative and Qualitative

Objective
intellectual
rational
analytical

Interviews -observation -
survey
analysis- conclusion -
recommendation

deductive reasoning
inductive reasoning
convergent

Generalisation
theory
abstractions

Researching and analys-
ing an existing and a priori
condition.

Practice led Research
research questions emerge
from context and criteria

concepts
exploration
uncertainty

sketching
study models
proto-typing
participant workshops

imagination
appropriateness

abductive reasoning
intuition
divergent

specific
particular
concrete

exploring and synthesizing
questioning assumptions,
originality and creativity

Figure 2: Traditional Vs Practice led research: we advocate an approach that allows for interaction between the two. Image courtesy of Hannah Stewart

We propose the need for experimental space to do this with doctoral training – who would be willing to engage in such an activity? Who will step up? Is there space for this in academic training? Is this a periphery thing or is it central to academic training?

We have outlined our experiences, questioned the traditional PhD, and now we are calling on designers and curriculum experts to join the debate and propose new ways. We acknowledge that it's all very well to pick holes but we need something to work from to move forward. We need to develop principles and best practices. Our next step is to engage with others to co-develop a design brief to stimulate this debate, rather than develop a specification. We invite the academic and industry community to contribute.

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the students of Highwire and the Creative Exchange for their enthusiasm and participation.

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