What Got Us Here, Won't Get Us There

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Faint Traces of Social Impact in Design Ph.D.

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Abstract: There is growing pressure to produce projects and graduates who can monitor, evaluate and plan for a positive social impact. This paper presents preliminary results and the methodology of a research project involving doctorate programmes in six universities in Europe and the United States, to understand the competencies of design researchers and their value outside of academia. We conclude that graduates from doctoral programmes in design have proven potential outside of academia but there is a gap between their competencies and the perception of their value by employers. These results also suggest that the generalist nature of doctoral programmes in design allows for broad social impact in diverse fields and sectors, which gives design research a unique position to work on improving well-being and tackling complex social and environmental challenges.

Keywords: Social Impact, career path, doctoral studies, competencies

1. Introduction

The ongoing economic, social, and environmental transformations prompt universities to restructure and adapt their doctoral programmes to address emerging societal issues. They also require the rethinking of necessary competencies for doctoral graduates in the contemporary labour environment. Outside of academia, the role of design researchers and the potential of design research capabilities are often unclear. At the same time, design itself is an influential research area which is becoming increasingly pivotal for businesses, individuals, governmental, and non-governmental organisations. (Powell, 2020)

This research is conducted as part of DocS4Design (D4D), an Erasmus+ project that originated in the idea to exchange experiences regarding the guidance of doctorate candidates in the design field. The six universities taking part in this project are Aalto University, TU Delft, Politecnico Milano, Imperial College London, Carnegie Mellon University and IIT Institute of Design. Since 2018, academics from these design schools regularly shared and discussed their approaches and results. In 2020, DoCS4Design started as a three-year project in which the six schools work together to collect and

disseminate best practices for a PhD in design curriculum. The results communicated in this paper are part of this ongoing three-year project.

This paper presents the preliminary results of research about graduates from the six doctoral programmes involved. This paper reports the results and discussion of a survey conducted to PhD graduates and describes the future research that will be conducted as part of this project. The aims of this research project are to map the career paths of design researchers and their interests before and after a doctoral programme in design, to understand how their competencies are developed, and to describe the social impacts of the profession outside of academia. We also want to understand, from the perspective of the graduates, which competencies developed in their doctoral programme have been useful in their professional life and which other competencies could be useful for future design researchers.

Doctoral research and education in design are increasingly tackling bigger societal problems in the public and private sectors and within other organisations capable of social innovation, such as NGOs, think tanks, research institutes, social enterprises, citizen action groups, and community organisations. However, the design community lacks the resources, processes, and activities to support and situate doctoral design activity that demonstrably addresses stakeholder needs. (Hnatkova et al., 2022) Furthermore, the value of design research is not often understood by organisations that could benefit from it and in some cases, there is no clear consensus on what design research means. (Davis, 2008) It is important to understand the social impact of design research in today's world and evaluate the implications of applying it in diverse contexts.

There is growing pressure on universities offering doctorates in design to produce research projects and graduates who can monitor, evaluate, and plan for positive social impact as part of social and sustainability commitments. This pressure is felt across cultures and disciplines; for example, when talking about a university's social impact, Ibarra et. al. state that, "the university, because of its nature, must be an institution with a higher level of social responsibility."(Uribe et al., 2020) This is explicitly outlined for example, in Aalto University's strategy 2023-2026: "Aalto University's purpose is to shape a sustainable future"(2023) and in Carnegie Mellon University's 2025 vision: "…developing solutions to problems of societal significance"(n.d.). Similar examples exist in each of the universities considered in this research project.

As the number of graduates from doctoral programmes in design grows, there is a need to clearly communicate the competencies of design researchers outside of academia, their potential to support a transition to a more socially and environmentally sustainable future, and to improve doctoral programmes to prepare graduates better for today's challenges. In order to do this, it is key to develop methods and gather data to understand the social impact of doctoral-level design research. As part of the larger project outlined above, we address three research questions: A) How can design researchers better communicate their value outside of academia? B) What competencies do design researchers have (or could they have) to support transitioning towards a more socially and environmentally sustainable future? C) How can we improve doctoral programmes to prepare future graduates more adequately for today's challenges? This paper touches upon all three, but it mainly focuses on question B). We begin with a discussion of social impact, competencies and doctoral education in design, and continue to present the preliminary results of a research project regarding career paths of design researchers before and after they graduated from a doctoral programme in design.

2. Literature Review

2.1 What is Social Impact?

Definitions of social impact are diverse, but in broad terms they refer to change in values, feelings or behaviours, in the short or long term, because of an intervention. For example, Vanclay defines social impact as “intended and unintended social consequences, both positive and negative, of planned interventions (policies, programmes, plans, projects) and any social change processes invoked by those interventions.” (Vanclay, 2003) In this research project, we analyse social impact in the context of the practice of design research outside of academia, as seen through the lens of the career paths of the graduates of the six universities involved.

2.2 What Are Competencies?

Competencies can be defined as “knowledge, skills, abilities, and behaviours that contribute to individual and organisational performance. Knowledge is information developed or learned through experience, study or investigation. Skill is the result of repeatedly applying knowledge or ability. Ability is an innate potential to perform mental and physical actions or tasks. Behaviour is the observable reaction of an individual to a certain situation.” (*What Are Competencies?*, 2017) A doctorate in design can be seen as two different things: a) it can be an extension of a Master’s degree where “design techniques may be part of the research doing (research through design), or design may be the object of study (research on design) or b) it can educate “transdisciplinary researchers” who are generalists but have research competencies (Stappers & van Boeijen, 2022). We can argue that the purpose of a doctorate degree in design is to develop competencies related to design research and practice. In design, “acquiring or achieving competency is more than simply amassing heuristics, patterns, or catalogues of techniques. Competency is the translation of knowledge, aggregation of skills, and integration of practice. This is an important distinction, as many of the competencies required to be effective in design are tacit in nature” (Weil & Mayfield, 2020).

2.3 What are PhDs or Doctorates in Design?

Because of the diversity of the postgraduate programmes represented in the D4D project, we use the term doctorate throughout this text to refer both to doctorate and PhD. In this project, we define a design researcher as anyone who has completed a doctorate in design. We understand that graduates from doctorate programmes in design are very diverse and there is an important intersection with other disciplines such as, but not limited to, psychology, engineering, arts or social sciences, as we have confirmed in the results presented in this paper. It is also important to note that each of the institutions in the D4D network have specific criteria for enrolling doctoral researchers and they do not represent all types of design research found around the world. (Map and glossary, 2022)

According to Hnatkova et. al, employment of doctoral graduates in Europe is healthy, with a high employment rate and a short transition from studies to employment. They note that among the social sciences and humanities, the majority of graduates work in academia, while those who work in other fields are generally formally overqualified for their job positions. They stress that contemporary doctoral studies are no longer a licence to teach, but a licence to conduct research (Hnatkova et al., 2022).

3. Background

As mentioned, this paper is part of the ongoing D4D research project. We started by trying to understand the competencies of design researchers and how they are applied by our graduates. We first reviewed literature about doctoral competencies in various fields and then focused on doctoral education in design. We examined two streams of literature and organised the skill sets based on the classification of Baggott & McGuire (2021) as "soft skills" and "hard skills". On the one hand, existing literature considers critical thinking, resilience, communication, and collaboration as soft skills gained from doctoral education. On the other hand, writing grant applications, analysing and synthesising data, publishing and presenting the research work are considered hard skills obtained during doctoral education. Although there are differences in these categorizations across the literature (i.e. McGuire & Baggott, 2021; Barandika et al., 2020; Denicolo & Reeves, 2013; Mowbray & Halse, 2010)), only a few skills, such as critical thinking and communication, have been noted as soft skills in several articles.

The literature review suggests that there may be a gap between doctoral education and societal demands. For instance, Mowbray & Halse (2010) write, "Government, business and industry leaders complain that Ph.D. graduates lack the skills required for the labor markets of contemporary economies and have challenged the relevance of the Ph.D."; they mention that academia does not have the capacity to absorb the increasing number of doctorate graduates. After reviewing literature focusing specifically on design education, we also identified a similar gap. Lyon ("Teaching and Supervision," 2019) conducted interviews with doctoral-level design researchers. The interviews uncovered that universities are trying to establish a balance between industry needs and providing good quality teaching. However, attempting to meet industry needs, to some extent, may impact teaching and learning methods negatively. Lyon remarks that whilst industry can demonstrate the economic and social validity of design, it can also mean striking a difficult educational balance between supporting creativity, personal development, skills training, and business understanding. According to Mosely et al., (2021), a crucial problem in design education is that the definition of design is highly disputed, resulting in a lack of clarity evident in curriculum documents. This holds substantial implications for pedagogical implementation.

4. Methodology

The project began with the Map & Glossary, a joint publication of the six schools. This report describes doctoral studies in design, clarifies the language used by the six institutions, explains the differences and similarities between the programmes' structures, and illustrates the diversity of content, methods and approaches to design research. (Stappers & van Boeijen, 2022)

Aalto University's contribution included researching career trajectories of graduates who completed a doctoral program in design to identify trends and to map the competencies that the graduates believe are important for their professional work. This research was divided in two parts, the first consisting of a survey of graduates, the preliminary results of which are presented in this paper. The second part of the research is case studies with graduates from each of the participating universities made after in-depth interviews using graphic journals. The methodology for the case studies will be explained in this paper.

Participating in D4D has enabled us to reach a network of graduates of doctoral programmes in design and to gather detailed insights on their career paths. Survey respondents were contacted through the official alumni mailing lists of each university and the case study interviews were conducted by research representatives of each university to ensure diverse participation. The case study interviewees were selected based on the following criteria.: a) they graduated within the past 10 years, b) they aimed to have impact (social impact) outside of academia in their doctoral project and c) they continued to work in design research or leadership positions.

Based on previous research experience on social impact, we have found that dividing the data into a horizontal and vertical research axis has proven useful to assess social impact. The qualitative survey data provides a wider perspective and is more representative of the graduates, while the case studies help to build a narrative, interpret the quantitative data from the survey, and undertake speculative futures exercises. The objective of this research is to support doctoral programmes to prepare their students to understand and analyse the social impact of their work. The surveys and case studies complement each other and provide a more accurate assessment of different aspects of social impact.

4.1 The Survey

The anonymous survey consisted of 36 questions and took about 30 minutes for participants to answer. It was divided in four parts: A - Career path, B – Impact, C - Social design and D - Future of design research. The first two parts of the survey consisted mostly of quantitative questions, and these are analysed in this paper.

We obtained 40 responses to the survey from four of the participating universities. The percentage of the responses by university are the following: 60% Politecnico di Milano, 18% TU Delft, 12% Aalto University, 10% Illinois Institute of Technology. The percentages by university are representative considering the population of PhD graduates from each university. The response rate was 7.6% of people contacted. Because of the anonymous nature of the survey, we are unable to know how representative it is in terms of demographics (age, gender, etc.).

4.2 The Case Studies

The case studies were conducted using structured and facilitated interviews with graphic materials to guide the conversation and gather data. They were facilitated by the university representatives in each of the schools using the same materials. The interviews for the case studies were divided in four parts:

1. Persona: where we describe the career path of the interviewee, their education, motivations and work positions that led them to a doctoral programme in design, and the positions that they have held after their graduation from their doctoral programme.
2. Doctoral programme: where we dive into the concept of their doctoral research project, what influenced their topic and methods, and how they grew professionally because of their doctoral programme.
3. Social impact: where we open up the concept of social impact and discuss whether the interviewee intentionally assessed the social impact of their doctoral research project. The interviewee was asked to describe the social impact of their project, to point towards the sectors and actors that were impacted and to describe the methods, if any, that they used for assessment.

4. Future of design research: where the interviewer and the interviewee went through an exercise of speculative futures, to create personas for potential future design researchers, including competencies, job descriptions and other hard and soft skills. This guided reflection aimed to dig into imaginary futures of the design research profession itself.

We have so far conducted 4 case study interviews, two from Aalto University, one from TU Delft and one from Politecnico di Milano. The description of the case studies is included because conducting these was important to the design of the surveys and once the research is completed, these two methods will complement each other.

5. Preliminary Results and Discussion

This is a preliminary analysis of the results of the survey of graduates from doctoral design programmes from the past ten years. We have so far mapped the career paths of the respondents in terms of location, focus area and sector. We have also compiled some of the results about the competencies that the respondents believe are necessary for a successful design researcher.

Most graduates find work in their country of origin. The four universities represented in figure one are in Italy, the Netherlands, Finland and the USA. All but one of the Italian, Dutch, Finnish and American students enrolled in a doctoral programme outside of their home country. As much as internationalisation has become an important part of developing a research career, as we can see from Aalto University requiring work abroad as a requirement for tenure, or Imperial College London developing international partner collaborations for their doctoral programme, most of the design researchers return to their country of origin to work once their doctorate is complete.

The results confirm our assumption that doctoral design graduates are very mobile internationally. 50% have held at least one employment or education position outside their country of nationality, bringing knowledge and information across borders. They come from different cultures, educational backgrounds and make a career in different roles, many of which are not directly in design or academia (figure 3). This proves there are many ways of utilising the competencies gained in the doctoral programme and therefore, social impact is broad.

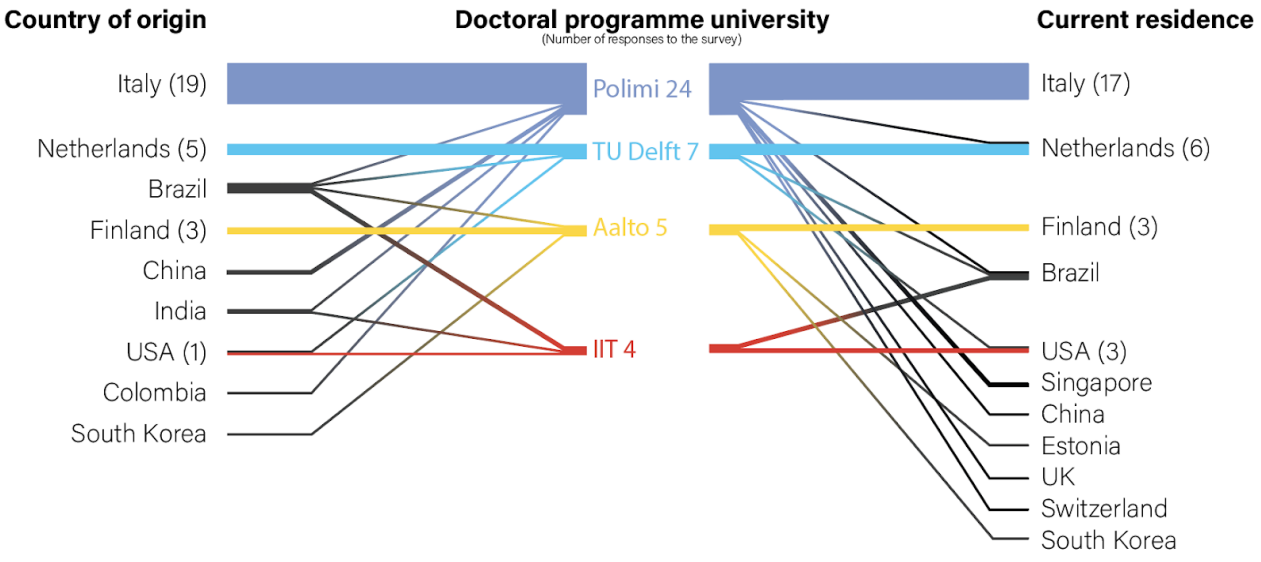

Figure 1. Which countries are the respondents from and where do they currently reside? Politecnico di Milano (Polimi), Delft University of Technology (TU Delft), Aalto University (Aalto) Illinois Institute of Technology (IIT)

It is noticeable that the majority of the respondents have remained or migrated back to their country of nationality (figure 1). This suggests, together with the responses in figure 4, that language, communication and cultural competencies are key in the career path of the respondents.

Respondents who did not have a design background before their doctoral programme most commonly came from the fields of engineering, media and communications and arts. These fields were not prevalent in their doctoral projects, nor in their employment after graduation. This suggests that a doctoral degree in design allows for a generalist approach and a change in career focus and area of study. Other focus areas such as education, technology and healthcare are prevalent in the respondents' jobs. (Figure 2)

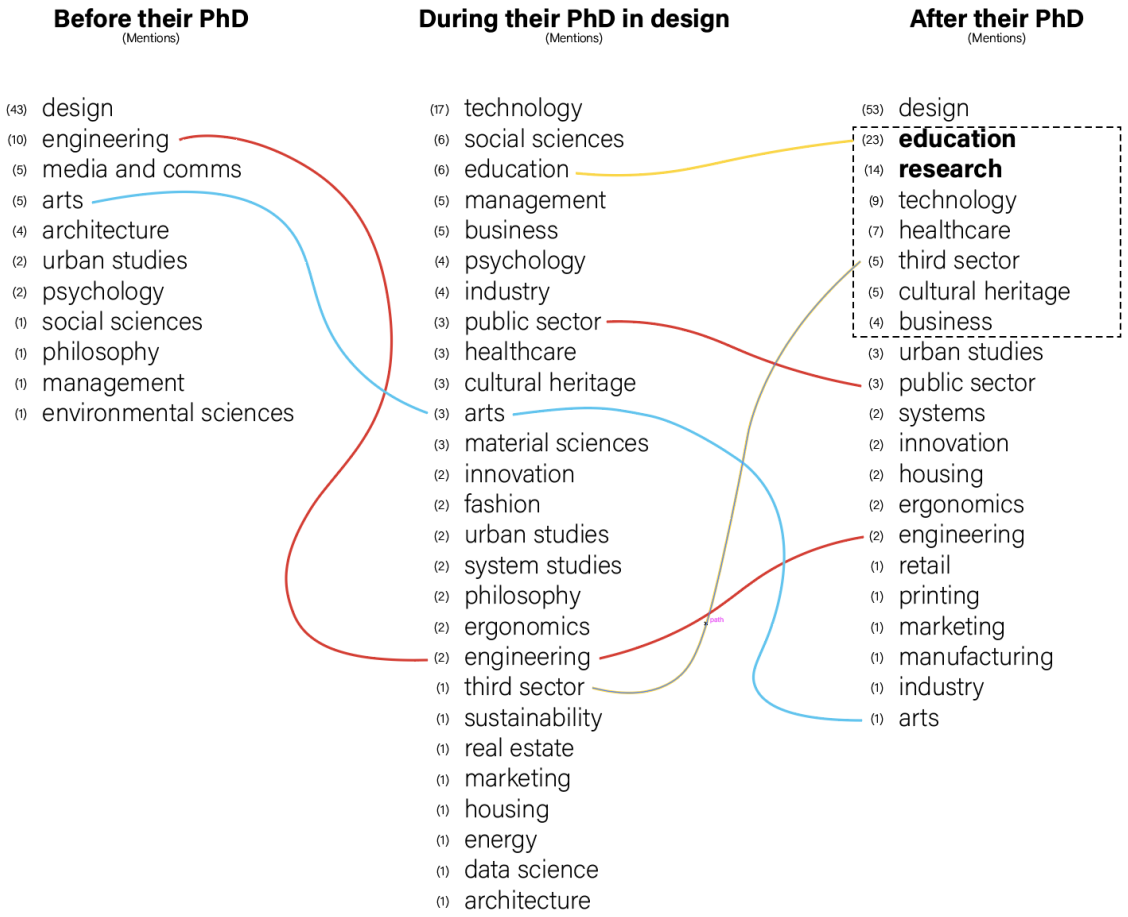

Figure 2: What have been the focus areas of the respondents before, during and after their doctorate in design? During the survey, the respondents added their field of their undergraduate education, their doctoral topic and their work positions after their doctoral studies. The numbers in parentheses refer to the number of times each concept was mentioned in the descriptions.

Furthermore, figure 2 represents the trajectory of a student from general fields of study to more specific doctoral research topics, which is to be expected. Interestingly, design does not appear in the middle column (During their PhD in design) as it is regarded as a lens to engage with other fields during the studies. All the respondents gave more than one field of study related to their doctoral research. This shows the adaptability of design and its potential to be useful in a wide range of fields. The third column (After their PhD) is different, as it represents employment options, rather than areas of academic study. When "research" is mentioned, it might indicate that the respondents are hired as design researchers, which is not yet very common. Further analysis of the results could indicate which fields of employment are hiring design researchers and what the profile of those employments is. Education and research are highlighted, as those refer specifically to work in universities. Design, which was mentioned the most in the third column, encompasses all the

mentions of design, most of which include a second descriptive word, for example: UX design, industrial design or graphic design.

Although most (84.6%) of the graduates have worked in academia (professors, lecturers or researchers) at some point of their career, 42.1% of the total jobs recorded were outside of academia (figure 3). In terms of currently held roles, the percentage of respondents who work in academia increased to 69%. This means that some graduates return to academia after some time of working away from academia after their doctoral degree. Although it is unclear, some of the responses from the case studies hint that this may be due to two reasons: firstly, because working in academia may be more comfortable than the private sector for senior professionals, and secondly, that the population of doctoral graduates in universities has increased. This also suggests that design researchers may prefer to work in academia: When talking about the labour market for European PhD holders, Hnatkova et. al. say that doing research is especially important for their *job satisfaction* and that "Between 35% to 55% of PhD holders are at least formally *overqualified* for their current jobs." (2022). However, it may also indicate that employers outside of academia are unaware of or uninterested in the competencies graduates from a doctorate in design. When it comes to social impact, some of the case studies have mentioned a mismatch between their personal values and that of employers. We will be able to gain a better understanding of the differences of working for social impact inside and outside of academia when the case studies have been fully analysed.

Third sector plays an important role in the career paths of respondents when compared to general EU statistics on research (Hnatkova et al., 2022). 10,7% of all employment recorded in the survey is with the third sector, more than twice as much as in the public sector (figure 3) In the case of Aalto University, an analysis of the titles and keywords of doctoral theses, reveals that the number of design researchers including the third sector in their research projects has increased in the past 10 years.

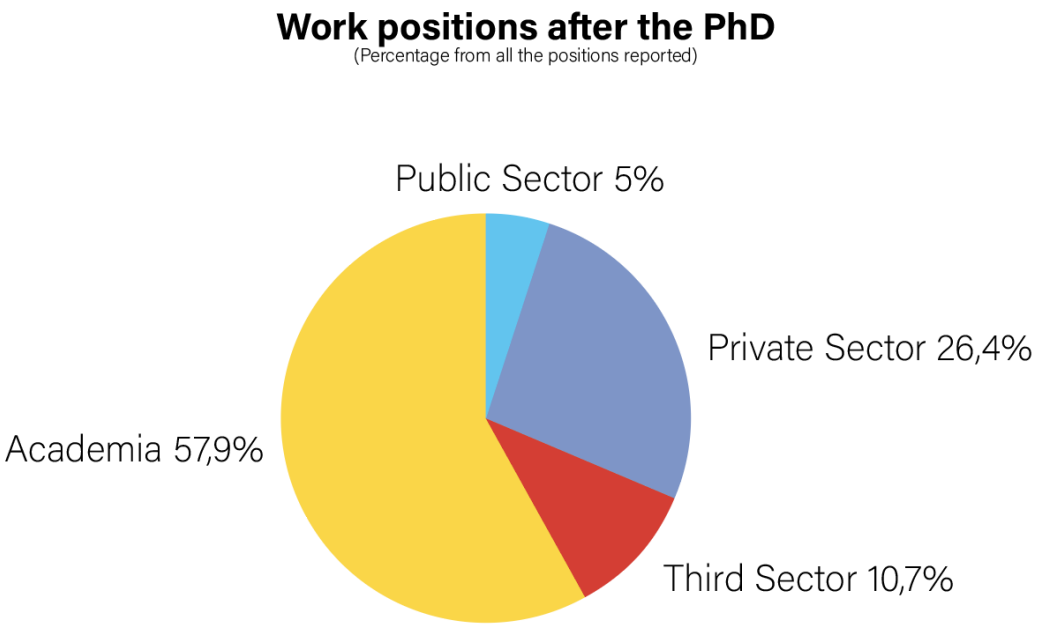

Figure 3: What sectors have the respondents worked in after they graduated from a doctoral programme in design? The respondents were allowed to report several job positions. This chart represents the sectors mentioned across all the work positions reported.

As for the competencies required to increase social impact outside of academia (figure 4), communication and project management skills are the most frequently mentioned. This suggests that survey respondents find a gap in current doctoral design studies when it comes to capacity building for communication and management. Similarly, skills related to statistics and data analysis as well as the capacity to work across disciplines appear to be necessary competencies to increase the social impact of design research. For future research, it would be valuable to discern between the different competencies needed in each sector.

Figure 4: Summary of responses to the question: Based on your experience, are there competencies and/or knowledge that doctoral students in design need in order for their research to be more impactful beyond academia?

6. Conclusion

This article presents the results of ongoing research about the social impact of doctoral research in design in the D4D network institutions. As mentioned earlier, the data analysis is currently in progress. Hence, the completion of the research with the case studies will play a key role in the interpretation of the survey data and in responding to the literature review. Limitations of this study include the representativeness of the sample, as volunteer bias might have occurred and, as the survey was anonymous, we are not able to determine whether there are gender or age biases in the sample. Furthermore, participants are graduates of the six universities in the D4D network, which represents a small sample of the wider design research environment.

The preliminary results confirm the accuracy and relevance of the motivation behind this research: graduates of doctoral programmes in design have potential outside of academia but as we can see from the results of the survey, there is a gap between the required competencies of work positions outside of academia by graduates and the perception of their value by employers. Graduates appear to be increasingly interested in non-profit work positions as these align more to their values than other positions. According to graduates, specific skills, such as communication and project management skills, have significant roles in the quality and reach of social impact outside of

academia. It is therefore worth considering how they might be supported within doctoral programmes.

These results also suggest that the generalist nature of doctoral programmes in design allows for broad social impact in diverse fields, which gives design research a unique position to work on improving well-being and tackling complex social and environmental challenges.

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