DESIGNING BETWEEN DISCIPLINES

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Abstract

In some areas of life, research disciplines do not cross boundaries even though the day-to-day practices in these areas necessitate a disciplinary crossing. My architectural work within midwifery challenges this norm: as design research is 'grafted' into an established scientific field. I am an architect and antenatal teacher researching the design of birth spaces using women's experiences of birth. My work aims to move established research methodologies (midwifery and medical) towards ones that address architecture and design in these related fields.

With evidence from across the relevant disciplines, this article will consider these challenges in crossing boundaries:

- How the creative potential of architectural research can be combined with seemingly 'fixed' aspects of national health research governance and policy;
- Designing architectural research that is peer and ethically reviewed by a different discipline;
- Creating methodology and methods true to architectural concerns which are perceived as valid in more 'scientific' disciplines;
- The use of data common to disciplines (in this case a woman's story of her birth experience) but collected and analysed differently to re-orientate the research towards spatial concerns;
- The non-textual recording of results, to then present these to architects and non-design peers to aid their understanding of the spatial in their overlapping practice of birth space design.

Hospital birth spaces in the UK are often repetitive, standardised rooms where strict regulations are applied. Architectural research can positively impact the practice of healthcare design by educating architects on how women actually use these spaces: something not previously considered. The concluding discussion will use my experience as an architect and researcher, commenting on how this type of approach can challenge professionals from other disciplines to think about the impact of design in their own practice.

Designing Between Disciplines

'Designing between disciplines' might seem like a rich starting point to conduct research. I am an architectural PhD researcher stepping into the territory of other research disciplines and I have discovered complex challenges which emerge from this position. Going beyond my disciplinary boundary into the realm of another – from architecture into midwifery and back – has not been easy. I have fourteen years' experience in architectural practice as a fully qualified (UK) architect and five years' experience of antenatal teaching to women who are preparing to give birth. I am also a mother and my children were born in a number of different settings. This unique background gives me a particular approach to research through my PhD entitled 'Creating birth spaces from women's experiences of birth.' I will show that it is not the norm for an architect to conduct research in maternity services.

In this article, I summarise some of the main practical and theoretical challenges when working between disciplines. I discuss my methodological approach which draws attention to the user's knowledge of space rather than the expert's professional knowledge. In discussing whether this research is multi-, inter- or trans-disciplinary, I focus on the transdisciplinary approach which became the necessary solution to given constraints. I explain why this happened and discuss whether this is the most appropriate way of working. The practical constraints arising from this research, development permissions, and ethics applications are also discussed. I start with a chart summarising the study (table 1) and then introduce some notable background factors that apply to it.

Research Norms and Quality Control

In the UK, architectural research shows greater variety in methodological approach than research in the fields of medicine and midwifery. This 'co-production' of data, projects, and qualitative methods are commonplace in architecture, but in a sense, architecture is now moving beyond these ideas. The role of the architecture professional and client have been critiqued through this move towards social architecture and research data generated by participants(Jones & Card, 2011). Medical research, on the other hand, is wary of qualitative methods and concepts such as 'co-production'; it retains a strong sense of professional boundary and the

Table 1: Subject and scope of the research thesis study

Research subject	Associated academic disciplines	Associated interest groups	Ethics committee
Creating birth spaces from women's experiences of birth: how does the design of these spaces facilitate or inhibit the progress of labour and birth?	Midwifery Obstetrics (Medicine) Architecture	Childbearing women	UK government Health Research Authority for national approval. National Health Service Trust approval in each locality for local permission. No specific architectural ethics required.
Research scope	**Methods**	**Locality**	**Participants**
The literature review showed an emphasis on professional knowledge in this area and less regard for the knowledge of lay people. This led to designing a study that valued lay knowledge since this has not been fully considered in architectural research and a transdisciplinarity approach.	To collect qualitative data from lay people who have experience of using birth spaces since this in-depth data is currently lacking. Qualitative interviews with participants drawing were used to capture this in an in-depth way.	The study took place in the cities of Leeds and Bradford in the north of England. The focus on a particular region was partly caused by the restrictions of the NHS system for research ethics approval and the limited resources available for a PhD.	20-30 women who gave birth after January 2014 were interviewed. They were mostly self-selecting and responded to flyers and posters distributed through the social media sites of postnatal and maternity groups. It was much more difficult to recruit through the health services but there were a few participants through this approach.

superiority of quantifiable scientific knowledge. This can be demonstrated in how research quality control is managed through the different disciplines. The UK National Health Service (NHS) and British Government regulate healthcare research through an organisation called the Health Research Authority (HRA http://www.hra.nhs.uk/) which produces a code of conduct for research governance. Architecture, on the other hand, does not have an equivalent national ethics body. This large-scale regulation in the medical field grew from the history of bio medics, fueled from national scandals that led to legislation such as the Data Protection Act 1988 and the Human Tissue Act 2004. These Acts of Parliament protect those taking part in research. It is worth noting how recently they have come into legislation. This epistemological approach reveals an ontological world where the lay users are objectified: where 'patients' are objectively studied

and research is 'done' to participants rather than with them. This differs significantly from my doctoral research approach and recent shifts in social science research. A key difference in the transdisciplinary approach I have taken is a sense of role-reversal so that the knowledge is created by participants, rather than about participants. This links with Formas' idea that to conduct this type of research, the researcher needs "the capacity to consider the know-how of professionals and lay people on equal terms"(Adrian Forty et al., 2006 p. 42).

In the twenty-first century, lay knowledge has become easily accessible and valued more than in the past. More knowledge has become user-generated and shared online on YouTube, blogs and forums. David Gauntlett (2013, p. 6) argues that society is moving away from "a 'sit back and be told' culture towards more of a 'making and doing' culture." This shift challenges both the idea

of professional expertise and values participant production of knowledge(Hessels & van Lente, 2008). Research theorists have identified and named this shift: Hessels and Van Lente propose a move from a 'Mode 1' approach to research to a 'Mode 2' approach (2008, p. 741). They define 'Mode 1' as scientific approaches to knowledge production with the following attributes: an academic context, disciplinary, homogeneity, autonomy and traditional quality control (peer review). From my observations, this is the current mode of healthcare research and will be discussed later. Hessels and Van Lente define 'Mode 2' as having the attributes of: a context based in its application, transdisciplinary working, heterogeneity, reflexivity/social accountability and novel quality control (2008, p. 741). My PhD adheres to this Mode 2.

Professionalism

Architecture and midwifery are highly-regulated professions and my research draws from both disciplines. These well-established and well-known professions are two of the first to develop their professional bodies (Royal College of Midwives and Royal Institute of British Architects) in the UK from institutions created in the nineteenth century. To practice in either profession requires annual registration and continuous training. Although the professions began as self-regulating bodies concerned with standards and education, they are now also governed by legislation. The UK government's decision in the 1990s to view architectural professional practice as a client service in an economic system, resulted in the Architect Act of 1997(Button & Fleming, 1992, p. 96). This removed restrictions on architectural practice, allowing it to be carried out by those who were not registered as architects. Almost the opposite has happened in midwifery practice in the UK with restrictions added to practice: recent European legislation has effectively made independent midwifery practice illegal in the UK. The 2011 European Directive ("European Directive 2011/24/EU," 2011) made professional indemnity insurance and registration mandatory for all health professionals. This has led to the demise of independent practice since this insurance is difficult to obtain outside of the National Health Service and it is likely that some innovative and unique midwifery skills will be lost as a result. Practice within a particular profession is now fixed by external bodies.

Collaboration between architecture and midwifery now sounds surprising given these fixed professional boundaries in practice. It is certainly a 'conversation stopper' when I explain my research to architectural colleagues and midwives alike. I argue that my research is not actual collaboration since the boundaries do not allow for such freedom. Abbott argues that the study of professions should be done through systems of relation between professions and their interdependence (1988, p. 2). This is true of some professions more than others: collaboration between engineering and architecture, or medicine and midwifery is easier to imagine than other combinations of those disciplines. Herein lies a challenge: each discipline has jurisdiction over its own area of expertise and controls the production and application of knowledge within this field. Closely linked professions accept boundaries that overlap and sometimes blur. This would seem acceptable between architecture and engineering especially outside of the UK (Button & Fleming, 1992). but is different for an architect seeking the collection of data through healthcare ethics processes. In my experience, I have been greeted by health professionals with a mixture of surprise and suspicion.

Earlier, the shift in research approach from Mode 1 to Mode 2 was introduced. I am collecting data from users of (birth) spaces through semi-structured interviews where the participant creates a drawing of their experience within these spaces. This is similar to Guillemin's approach, where "knowledge is produced through practices, interactions and experiences" and that there is a "process of meaning making through the act of drawing"(Guillemin, 2004, p. 272). This approach values the knowledge of the primary users in these spaces. It is qualitative and looks for the richness of the inner experience for each participant and may greatly vary between participants. This challenges the idea that knowledge lies solely in the expertise and training of the professional. There is very little research into the design of birth spaces within the realm of architecture (perhaps as this seems to be the remit of the midwifery profession?) and birth spaces tend to be created by midwives and obstetricians. When a woman arrives in labour, the room has usually been set up by a midwife, for whom it is also their workspace.

Professionalism implies a power relationship with a 'client.' Architecture and midwifery, on the other hand, are considered to provide a client service. Other academic disciplines, say human

geography and history, do not need to consider the needs of the client. Professionalism came to strength as a twentieth-century concept. It proposes that professionals have expert knowledge that they apply to the needs of the client (Evetts, 2003). These needs are assessed through briefings with the client: through visits by an architect, or by diagnosis of signs and symptoms by a doctor. This truth was implicit in my application for ethical approval from the UK NHS. The ethics application form implies 'ownership' of the people who use the health service as 'patients.' It may seem surprising in social science research that I needed written permission from the National Health Service to access participants for interviews. Several permissions, in fact, from each local NHS 'Trust' who also give a set of conditions on my research. The same ethics application process applies across all healthcare research proposals. It is not adaptable to account for the healthy women who use maternity care to experience a healthy life-event.

Status of Qualitative Reearch in Evidence-Based Medicine

Midwifery deals with healthy pregnancy and birth. Obstetrics is the associated branch of medicine which shares research norms midwifery. These norms are based on the scientific approach described earlier as 'Mode 1'. In architecture, qualitative methods and methods of co-production of data with participants are regularly used in research and practice. The following notes taken from a nursing textbook published in 2014 show that qualitative research has a lower value in healthcare research: "although qualitative research is systematic in its method, it uses a subjective approach...Quantitative methods are systematic, and the methodology controlled"(LoBiondo-Wood & Haber, 2014, p. 8).

Prusova suggests that "the purpose of evidence-based medicine is to apply the best scientific evidence to clinical decision-making" (Prusova, Churcher, Tyler, & Lokugamage, 2014, p. 706). The 'Green Top Guidelines' produced by the Royal College of Obstetricians and Gynaecologists is based on a graded system for research devised by Balshem et al. (2011). There is a hierarchy of quality with Grade A research defined as meta-analysis, systematic review or a good quality randomised control trial (RCT). The ethical difficulty of setting up a RCT in a maternity setting (when considering the needs of the unborn child) is not taken into account in this grade system. I am not aware of any

RCTs in architectural research. The grades also have a systematic bias against qualitative research, classed as low quality and a Grade D. My research would be graded as D. This narrow definition of quality can play a part in what an ethics committee will accept in the first place. An emphasis on professional expertise over user knowledge is evident in language used to describe high quality obstetric research: "the standard of evidence which underpins the advice that doctors access for the diagnosis and management of their patients [my emphasis]" (Prusova et al., 2014, p. 706). Green and Britten questioned this view of evidence in the British Medical Journal. They propose that there are valuable aspects of healthcare that cannot be researched using experimentation. They challenge medical students to view qualitative research as being highly appropriate for particular aspects of care such as the strategies an asthma suffering might use to cope with day-to-day life (Green & Britten, 1998, p. 1230). These types of experiences are difficult to recreate in a randomised control trail.

Studying the mechanisms of medical research, and similarly midwifery research, reveals the nature of the medical discourse behind this approach. Discourse and its relation to power and knowledge was developed by Foucault (Foucault, 1977). Nead defines medical discourse as "the special language of medicine, the form of knowledge it produces and professional institutions and social spaces it occupies" (Nead, 1988, p. 4 cited in Rose, 2011, p. 190). Medical knowledge dominates UK maternity services and it lays claim to absolute truth in this area. Consequently, a medical approach also dominates hospital architectural design. Discourse produces subjects and particular relationships between subjects(Rose, 2011, p. 190). My research takes place in a hierarchy of doctors, midwives and patients, with the doctor at the top and the patient at the bottom. This is a closed system of relationships with which it is difficult for an architect to engage. In reality, I am reversing the order of this hierarchy with the knowledge of women users at the top, followed by midwives and then doctors. It may be surprising that I am not working with hospital architects and this may suggest I have abandoned the discourse of my own profession. This abandonment, however, is based on the ideas discussed earlier of a 'Mode 2' approach to research. I have made an active choice to not follow the power system in which a hospital architect would be guided by the medical "field of

knowledge" when designing a birth space. Instead, it is important to consider the experiences of those using those spaces for birth.

The dominant medical discourse has exercised great control over the setting up of my research in its role as the social institution of the NHS. As the only gateway to access participants, the ethics process has forced me to act and think in certain 'permitted' ways. Rose comments on this, "human subjects are produced through discourses. Our sense of self is made through the operation of discourse. So too are objects, relations, places, scenes: discourse produces the world as it understands it [my emphasis]" (Rose, 2011, p. 192). The NHS ethics application imposes tight regulation on any research project. The proposal needs a fully-detailed written protocol document. Completion of the ethics application includes filling out a detailed table itemising each 'procedure' that a participant can expect to receive and the amount of time it will take. This includes defining the process of consent-taking as a procedure and apportioning a time on it. In completing my application, it was necessary to write it not in the language of an architect, but to try to understand the world of medical discourse and demonstrate an approach that would be accepted as valid.

We can consider the role of health professionals as gatekeepers in more detail: if I was researching the experience of staff in maternity care, I would not need written permission as this is only required to access their patients. I have an NHS 'Local Collaborator' who monitors my progress, clinical lead maternity staff have to approve my work and I report to the local Research and Development department on a regular basis. I am not an autonomous researcher in this context. I must conduct my research in a particular way, including how I approach data analysis; and all this needs to be approved before data collection could be started. If during my data collection I decided that I needed to amend my proposed methods, I need to submit these amendments to the research ethics committee which first gave me permission to proceed. Waiting for an occupational health screen certificate from the NHS delayed the issuing of an honorary research contract, which in turn delayed data collection. This is a good example of a dominant discourse exerting disciplinary control and limits the crossing of disciplinary boundaries. The process is also frustrating for researchers within medicine. When the current national system for ethical approval was created, a group of researchers

wrote in the British Medical Journal, recording their frustration at the lengthy process of gaining approval for a randomised control trial. They comment on the bureaucracy in saying that "our randomised control trial is likely to generate a paper considerably shorter than the application form required for its ethical approval" (Wald, 2004, p. 284)

Interestingly though, the recruitment process that NHS recommended me to use has been far less successful than a more ethnological approach where I 'spread the word' to local women through social media and mother-to-mother networks to which I belong. It is common in NHS research for health professionals to identify and recruit participants and this was recommended as the ideal. However, the women who have taken part also participate in groups which support each other by sharing knowledge about birth and mothering, and so share a commonality in that they already recognise the value of lay knowledge. So in that sense they have invested in the epistemological approach of the research even if they are not consciously aware of it. It may be that recruitment through health professionals changes the way a potential participant sees the research as part of a hierarchy of professional knowledge and therefore more difficult to take part in. As I left one interview, a participant commented that she was glad I was a mother rather than a medic and she couldn't have done that interview with a male architect. Perhaps this points to why this knowledge has not been captured before as it is readily shared in particular groups and contexts but not others and the groups that control what research is done are not part of this context. This is not just true of birth experience and explains why there are particular topics that require an element of ethnography to achieve the research aims and this is true across a range of disciplines.

Collaboration for Birth Space Design

Having considered the difficulties of this discipline combination, we can consider how to make it happen better by considering a precedent of this type of working and the point to which my approach has evolved. Globally, the Italian Bianca Lepori is one of the few architects concerned with birth space design. She has had more of her writing published in midwifery books than architectural ones, again this may reflect the fact that the disciplinary expertise for this topic is perceived to lie with midwifery. She echoes my experience that working outside your expected area of expertise can lead to your work being dismissed or

seen as threatening, although for Lepori this hostility comes from the architectural profession (2008, p. 95). Lepori (2008, p. 95) reports it is a hostility towards focusing on an internal space considered to already be resolved as repetitive hospital layouts, which leads her to ask what real architecture is: "can architecture get away without posing fundamental questions based on philosophical, physiological and humanistic issues; without understanding how to shape and reshape spaces drawing inspiration from people and their creativity?" Her approach, similarly to mine, suggests it is appropriate and necessary for architectural research to draw from the knowledge of those who use spaces. This user knowledge can be viewed as 'space expertise' to be interpreted and developed by the architect. This is distinctly different to taking the stance that the architect (or even the midwife as the lead professional in this context) is the space expert imposing this knowledge on a client whose knowledge is assumed weaker without the benefit of professional training. In our similar approach to research practice, Lepori and I demonstrate a similar understanding of the remit of the architectural researcher. Her relationship with midwifery researchers is also of interest. She worked with Foureur and Hastie to redesign a maternity unit in New Zealand. Rather than viewing the relationship between professions as competitive, the midwifery researchers embraced the creative possibilities of collaboration(Lepori et al., 2008, p. 101): "We were thrilled to find an architect who understood at a deeply philosophical, theoretical and physiological

level how the physical birth space needed to be constructed in order to provide women with the greatest opportunity to give birth normally."

For me, this statement reveals something significant: that this architect is accepted in another field because professionals in that field feel she is expert enough in their practice. This is potentially a rich way of expanding the boundaries of architectural research. Individual researchers, in some respects become more specialised as they develop expertise and knowledge across a linked discipline, but architecture as a research discipline experiences an expansion of its boundaries as these blur with the practice of others.

Transdisciplinary Research

Increasing multidisciplinary work is much debated and considered important in academia and professional practice. Considering the challenges of professional boundaries so far discussed, there can be many barriers when proposing research between disciplines. There are a number of words to describe how disciplines work together (multidiscipline, interdiscipline, transdiscipline) which often are used as equivalents(Pirrie et al., 1998). Academic disciplines and distinct professions have existed much longer than these concepts that were coined late in the twentieth century (Choi & Pak, 2006, p. 352). Therefore research practice related to these approaches is also relatively new. There are traditional partnerships between disciplines
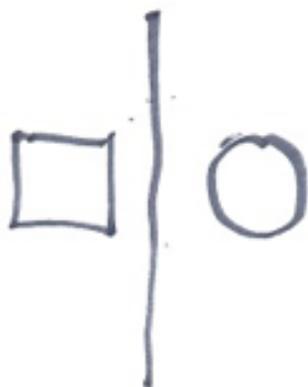
Two disciplines share a professioanal boundary
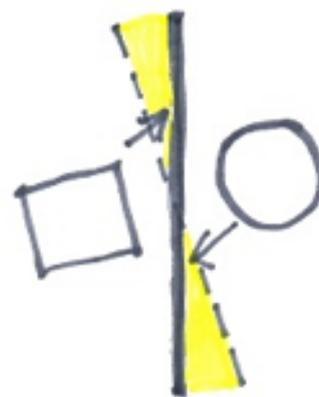
By working together the two disciplines can push the boundary to reveal a new way of working. The change is not static and it may swing back and forth depending on the direction of the push

Figure 1. Two closely associated disciplines (architecture and engineering; midwifery and obstetric medicine)

in the construction industry which are described as multidisciplinary. This type of working in the UK construction industry is sometimes described as divisive (Wood, 2000, p. 165) and has led to a focus in architectural education on improving the relationships between commonly-linked disciplines, in this case architects, engineers, quantity surveyors. Theorising the potential of collaboration between other more disparate disciplines such as midwifery and architecture is rare, if it exists at all.

My research methods employ both words and drawing to bring out the participant's knowledge of birth and the spaces they used. In writing this next section, I used a similar approach to record my experience of designing this research study. So the diagrams were created first and then words added to explain them. This is how participants worked during the interviews when they combined words and pictures to capture their knowledge. The sequence below tells the story behind how my research approach became transdisciplinary,through the push and pull of the limitations already discussed. I suggest closely-linked disciplines working together as proposed by Wood represent a 'safe' approach to research can only produce limited pushing of boundaries as Figure 1 (shown below).

My research is not this type of working between disciplines: architecture and midwifery do not share these close boundaries and as UK professions their practice is highly regulated by legislation and the

need to be on a professional register. My research, in fact, resembles more closely the scenario in Figure 2.

What is actually happening is not multidisciplinary or interdisciplinary research. As a PhD student, I am not working with midwifery researchers to complete my work: I am placing my research within the realm of midwifery concerns as shown in Figure 3.

This type of approach has previously been defined by Nicolescu as transdisciplinarity (Nicolescu, 2002). He describes it as a "transgression of disciplinary boundaries" (2002, p. 1)... "that which is at once between the disciplines, across the disciplines and beyond all disciplines (2002, p. 44) with a poetic description of transdisciplinary researchers as a "new breed of contemporary knights-errant, utterly irrepressible rekindlers of hope" (Nicolescu, 2002, p. 2) offering "a new vision of nature and reality" and striving not for "mastery of several disciplines but aims to open all disciplines to that which they share and to that which lies beyond them" (Nicolescu, 2002, p. 149). Nicolescu recognises the increased proliferation of disciplines in the modern world (consider the professional membership available for information technology or newer types of engineering which is a different type of professional body to older professions like architecture). Yet unity of knowledge is more difficult (Nicolescu, 2002, p. 6) and so professions interested in the same phenomenon, like the design of birth spaces and
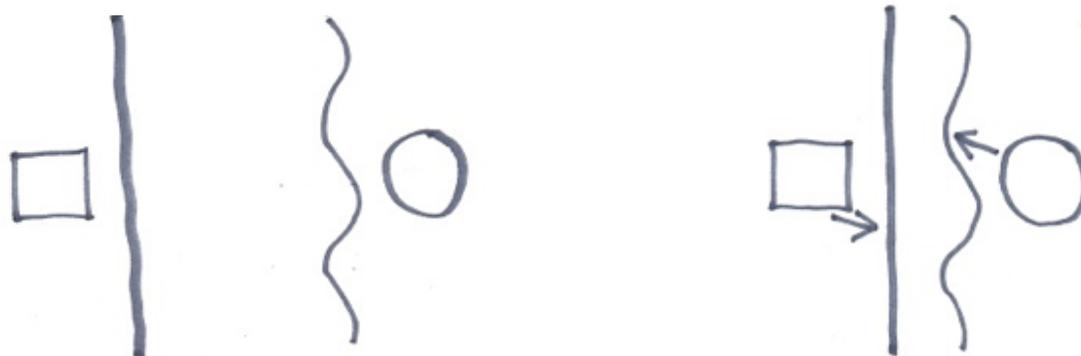

Two disciplines with distinct professioanl boundaries. These boundaries are defined in very different professional language and approaches to practice.

By working together the disciplines bring the boundaries closer but there is a lack of clarity about the boundary as the rules of one's own professioanl boundary obscures the other. There are limits to what can be achieved together by staying on your side.

Figure 2. Two disciplines with no close association in practice (architecture and midwifery)
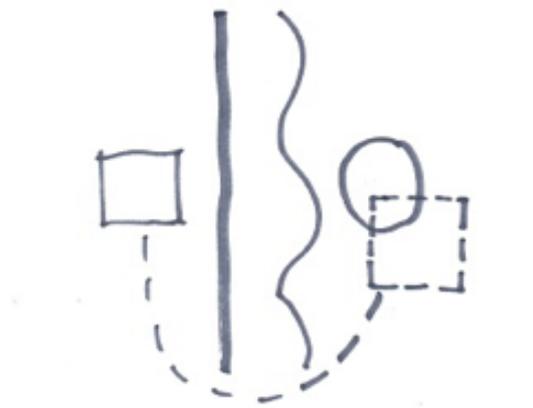
A researcher from one discipline finds a way around the boundary of their discipline and engages with the concerns of the other discipline
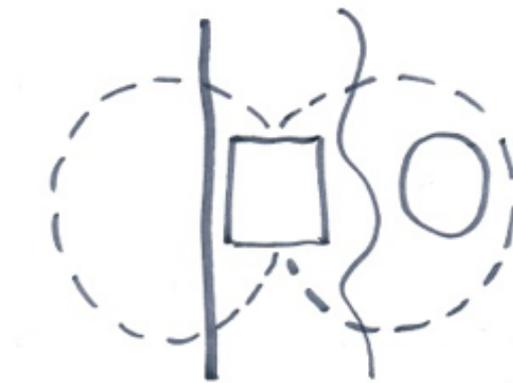
With new found knowledge this researcher is positioned as an expert between both boundaries in a new undefined space and drawing from both disciplines. The other discipline remains behind their boundary with the potential for them to also occupy this 'no man's land' in the future.

Figure 3. An alternative (the approach of my research)

the impact on women's experiences of birth, find it difficult to communicate this interest with each other.

Discussion

Although it may appear that I have mostly highlighted difficulties with designing between disciplines, it is not my intention to suggest that this type of working cannot be done. It reflects the fact that I am in the early stages of this approach and so are all the institutions and health professionals that I am in contact with. It is much like working in a 'no-man's land' that also happens to be a dense forest. It is hard work to cut back enough forest to create a path connecting the two sides but once done it is there for others to follow and adapt. It is especially difficult to do this in the context of doctoral research that has a timescale to it. Much time is spent negotiating the path through, when others may find their research does not require this.

What is architectural research in this context? For me this is two-fold: there is the practical understanding of architecture addressing social need; of design making things better in this particular context of childbirth. In the book 'What is architecture?', Ballantyne claims "architecture is part of the art of living, and it is most successful when it seems to give expression to the life that inhabits it...there is art in the arrangement of buildings and art also in the life that they enable and that they frame" (2013, p.

2). There is this power and challenge in architecture that it has the capacity to both reflect living and to "sabotage our habitual ways of doing things" (Ballantyne, 2013, p. 1) and to challenge us to find better ways of doing them. The methodology of my PhD is founded on this potential of architecture. In finding out our habitual way for using space for giving birth, can we challenge this and use design to make it better? This view can, in some sense, be said to be architecture 'improving' birth. This would be in keeping with everything we have considered about professionalism and expertise, but would be disappointing if this was the whole story.

Possibly a more exciting outcome for architectural research would be birth 'improving' architecture: that knowing birth through an architectural re-reading of women's experiences adds to the richness of architecture. Architecture has a language, a discourse, codes of conduct, common practice. How can new knowledge be created and where do we look for this? As a researcher, I may disagree with particular aspects of midwifery research and wonder why certain healthcare governance mechanisms apply to an architect. It is uncomfortable and frustrating at times to engage to this level with another discipline; needing to speak two languages at once, constantly translating architectural ideas into midwifery ones and vice versa, in order to be understood. I am stretched and forced to think differently. This all has benefits, like living in a different country where speaking

the language of another enables you to understand and see your language in ways you could not have imagined. This makes the language of architecture richer. After living in a foreign country for a length of time, it is common to start to think in that language. The discourse of medicine and midwifery is powerful and the potential for architectural innovation is great if an architect can engage fully with, and challenge the assumptions of, that discourse in its own terms and start to think in both languages. My experience of architectural research in the UK is that it is in a good position to work like this as it does not have the same heavy restrictions of research governance found in other disciplines. This is the powerful potential of transdisciplinary working and perhaps these types of outcomes would be lost in multidisciplinary research where each discipline can remain in a comfortable part of their own discipline.

All diagrams and associated text used in Figures 1-3: ©Sarah Joyce 2015

References

Abbott, A. (1988). The System of Professions: An Essay on the Division of Expert Labor. University of Chicago Press.

Adrian Forty, Halina Dunin-Woyseth, Thomas A Markus, Anne Whiston Spirn, Niels Albertsen, & Roderick Lawrence. (2006). Evaluation of Swedish architectural research 1995-2005. Formas.

Ballantyne, A. (2013). What is Architecture? Routledge. Retrieved from http://lib.myilibrary.com?id=542975

Balshem, H., Helfand, M., Schünemann, H. J.,

Oxman, A. D., Kunz, R., Brozek, J., … Guyatt, G. H. (2011). GRADE guidelines: 3. Rating the quality of evidence. Journal of Clinical Epidemiology, 64(4), 401–406. http://doi.org/10.1016/j.jclinepi.2010.07.015

Button, K., & Fleming, M. (1992). The effects of regulatory reform on the architectural profession in the United Kingdom. International Review of Law and Economics, 12(1), 95–116.

Choi, B. C. K., & Pak, A. W. P. (2006). Multidisciplinarity, interdisciplinarity and transdisciplinarity in health research, services, education and policy: 1. Definitions, objectives, and evidence of effectiveness. Clinical and Investigative Medicine. Médecine Clinique Et Experimentale, 29(6), 351–364.

European Directive 2011/24/EU. (2011, March 9). Retrieved from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:088:0045:0065:en:PDF

Evetts, J. (2003). The Sociological Analysis of Professionalism Occupational Change in the Modern World. International Sociology, 18(2), 395–415. http://doi.org/10.1177/0268580903018002005

Gauntlett, D. (2013). Making is Connecting. Oxford: Wiley. Retrieved from http://public.eblib.com/choice/publicfullrecord.aspx?p=1184117

Green, J., & Britten, N. (1998). Qualitative research and evidence based medicine. BMJ, 316(7139), 1230–1232. http://doi.org/10.1136/bmj.316.7139.1230

Guillemin, M. (2004). Understanding Illness: Using Drawings as a Research Method. Qualitative Health Research, 14(2), 272–289. http://doi.org/10.1177/1049732303260445

Hessels, L. K., & van Lente, H. (2008). Re-thinking new knowledge production: A literature review and a research agenda. Research Policy, 37(4), 740–760. http://doi.org/10.1016/j.respol.2008.01.008

Jones, P., & Card, K. (2011). Constructing "Social Architecture": The politics of representing practice. Architectural Theory Review, 16(3), 228–244.

Lepori, B., Foureur, M., & Hastie, C. (2008). Mindbodyspirit Architecture: Creating birth space. In Kathleen Fahy, Maralyn Foureur, & Carolyn Hastie (Eds.), Birth Territory and Midwifery Guardianship: Theory for Practice, Education and Research. London: Books for Midwives. Retrieved from https://opus.lib.uts.edu.au/handle/10453/12749

LoBiondo-Wood, G., & Haber, J. (2014). Nursing research: methods and critical appraisal for evidence-based practice.

Nicolescu, B. (2002). Manifesto of transdisciplinarity. Albany: State University of New York Press.

Pirrie, A., Wilson, V., Elsegood, J., Hall, J., Hamilton, S., Harden, R., … Scottish Council for Research in Education, E. (1998). Evaluating Multidisciplinary Education in Health Care. Scottish Council for Research in Education, 15 St. John Street, Edinburgh, EH8 8JR Scotland; Web site: http://www.scre.ac.uk (7.50 British pounds).

Prusova, K., Churcher, L., Tyler, A., & Lokugamage, A. U. (2014). Royal College of Obstetricians and Gynaecologists guidelines: How evidence-based are they? Journal of Obstetrics and Gynaecology, 34(8), 706–711. http://doi.org/10.3109/01443615.2014.920794

Rose, G. (2011). Visual Methodologies: An Introduction to Researching with Visual Materials (3rd ed.). London: Sage. Retrieved from http://www.uk.sagepub.com/books/Book235926

Wald, D. S. (2004). Bureaucracy of ethics applications. British Medical Journal, 329(7460), 282–284. http://doi.org/10.1136/bmj.329.7460.282

Wood, G. (2000). Interdisciplinary working in built environment education. In David Nicol & Simon Pilling (Eds.), Changing Architectural Education Towards a new professionalism. London: Spon Press.