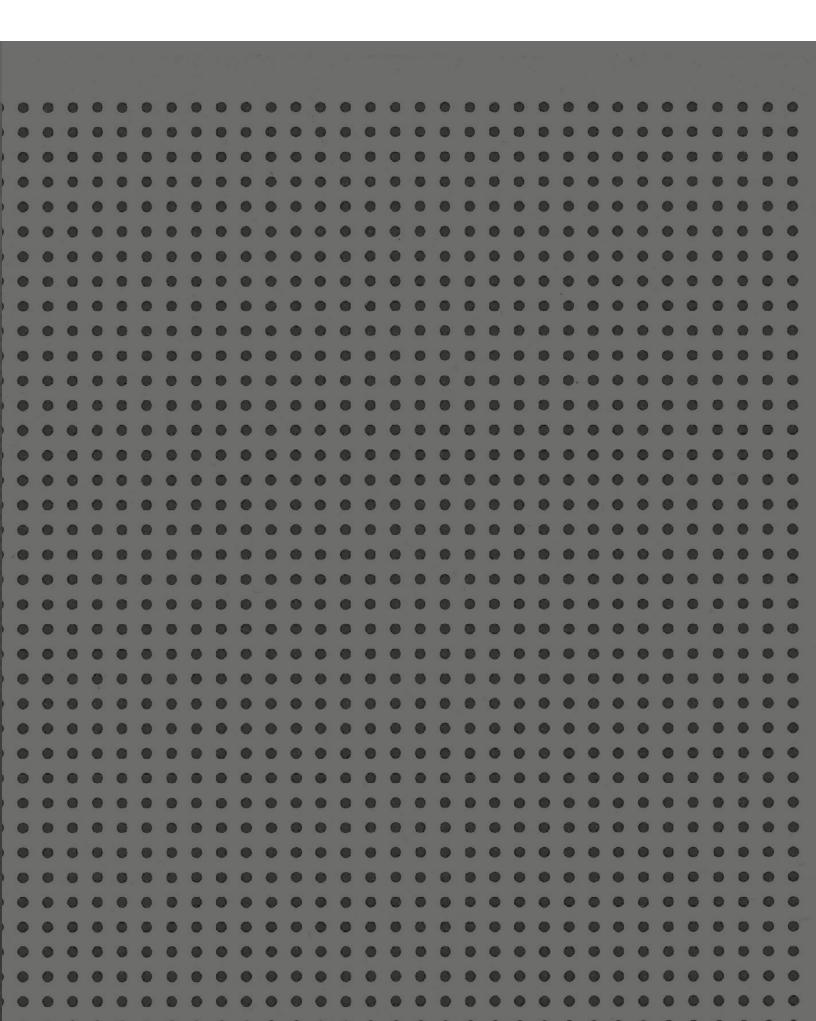
Changing the Conversation:

Re-framing Design Learning

Suzanne E. Martin

Submitted in fulfilment of the requirements of the Master of Research degree.

The School of Design Innovation Glasgow School of Art



DECLARATION

I hereby declare that this thesis is entirely my own work and that it has not been submitted for any other degree at Glasgow School of Art or any other institution.

Word Count*: 23,147

* Main Body Text excluding Front Matter, Figures, Tables, Fieldwork Visual Essays, End Matter and Appendices



Dated: 18th January 2021



Participatory Learning
Preferable Futures
Reflexive Practice
Learning Frameworks
Restorative Learning
Designing Learning

KEY WORDS

ABSTRACT

Changing the Conversation: Re-framing Design Learning

This thesis presents research into what participatory Design Learning looks like 'in the wild', in multidisciplinary settings, framed by a contextual review of design learning spaces and approaches - including the tools used to deliver, manage and grow learned knowledge. This then points toward a conceptual framework for creating resilient Design Learning cultures and the understanding needed to co-create them.

A practice-informed body of Action Research directs the discussions set out within this Thesis, and provides evidence of dialogue tools, processes and theory tested in both a private sector, and educational, setting.

This investigation of Design Learning has evolved, across a five-year process, as two Action Research cycles, four Case Studies and seven Things, conducted in Dublin, Ireland.

The first iterative cycle was undertaken when employed as a designer researcher within a private sector design consultancy. The second iterative cycle moved beyond this original context, to frame the validity and transferability of the framework, methods and tools, within a Design School context. The thesis documents a path through the investigation, and situates the work in the broader Design Learning context.

The dominant mode for building a coherent analysis from these interactions has been auto-ethnographic reflection, through a creative narrative process. This mode draws my working experiences - within

academia and the design sector - together with a range of research methods. Placing the inherently, interventionist design processes, into a larger critical ecology.

Constructive, and constructed dialogues built design communication between actors, across teams, and within studios, to shape a new typology of design learning. The series of Action Research case studies introduce a suite of tangible dialogue tools and design learning Things that leverage and strengthen pathways of communication to establish a design learning framework where actors, tools and dialogues can be aligned to connect disparate communities of learning, practice and knowledge.

In conclusion this thesis highlights the critical role that institutioning and infrastructuring play when considering the impact, value and role of dialogue tools in establishing resilient learning as a culture, as a way-of-working and being in the world, not simply as a part of the design process.

During the study, the participatory Design Learning approach developed became more important as the nature of the Design School, designing and design learning changed in the face of COVID-19 disruption and transformation throughout 2020 and 2021.

GLOSSARY

Action Research: an inquiry process that seeks transformative change through the simultaneous process of taking action and doing research, which are linked together by critical reflection.

Allocentric: concerned with the interests of others more than one's own.

Autoethnography: a qualitative research method that combines characteristics of ethnography and autobiography.

Boundary Object: entities that enhance the capacity of an idea, theory or practice to translate across culturally defined boundaries.

Change-Creation: the act of creating change.

Commoning: the activation of social cooperation to get things done and bring communities of practice together.

Design Approach: the overall mindset with which a research plan is to be conducted.

Design Education: the teaching of theory and application in the design of products, services, environments and systems.

Design Learning: the acquisition of knowledge or skills related to, or informed by, design through study, experience, or being taught.

Design Learning Framework (DLF): a fluid structure to support multidisciplinary and transdisiplinary, team-based design learning.

Design Learning Thing (DLT): non-generative tools, techniques and thinking that grows a restorative design learning approach.

Design Method: a method is a combination of tools, toolkits, and/or techniques that are strategically put together to address defined goals within a research plan.

Design School: educational institutions providing design education.

Design Studio: an environment, working practice and/or community of practice of designers.

Design Techniques: how the tools and toolkits are put into action.

Design Tools: the material components that are used in design activities.

Design Toolkits: a collection of tools that are used in combination to serve a specific purpose.

Discursive Design: the creation of objects/services/interactions whose primary



purpose is to communicate ideas. These are tools for thinking that raise awareness and understanding.

Evaluative Analysis: an action learning vehicle which transitions the research findings into an analytical activity. This route infrastructures the participatory learning knowledge generated within the research project in an expanded validation approach.

Infrastructuring: the process of embedding infrastructure into and inside of organisations and communities.

Institutioning: the process of altering, consolidating or challenging institutional frameworks and practices.

Learning Culture: A learning culture is a collection of organisational conventions, values, practices and processes. These conventions encourage those within the culture to develop knowledge and competencies.

Learning Space: a physical or virtual environment in which teaching and learning occurs.

Project-Place: the site of project activity professionalised 'radical' design learning.

Participatory Design: an approach to design attempting to actively involve all stakeholders (e.g. employees, partners, clients, customers, citizens, users) in the design process.

Reflective Review: critique of the research practice that defines a framework for institutioning by discussing the analysis in terms of: discursive design, sense-making, boundary objects, dialogue tools and reflective practice.

Reflective Practice: the ability to reflect upon one's actions so as to engage in a process of continuous learning.

Restorative design learning: a practice that seeks to provide a platform for all people affected by an action to have dialogue about how to make things right and restore the community of practice.

Sense-making: the process by which people give meaning to their collective experiences.

Stakeholder: members or participants who have an interest in an activity.

Tangible Dialogue Tool: something that helps mediate, carry and foster communications between people.

Things: designed objects, systems and environments and their material, social and cultural representations.

Workplace: a site of work and study.

Ways-of-working: modes and methodologies of creative practice.v

LISTOF FIGURES

p. 17	2. Evolved Double Diamond (first issued 2004), Design Council UK, 2019
p. 17	3. The Design Process, Sanders and Stappers, 2008,
p. 17	4. Analysis of practice, 'My position on Design School learning', 2016.
p. 18	5. Analysis of practice, 'My perspective on Design School learning', 2016.
p. 18	6. Analysis of practice, 'My interpretation of Design School learning', 2016
p. 37	7. The cyclical process of action research (Susman-and-Evered 1978)
p. 37	8. The cyclical process of action-ed design learning within my research project
p. 45	9. John Mathers quote
p. 46	10. John Mathers quote
p. 48	11. Toby Scott quote
p. 50	12. George Boyle quote
p. 52	13. Karen Hennessy quote
p. 109	14. Closing Conversation with John Thackara - visual essay
p. 130	15. Cycle 2 Impact Claims
p. 136	16. Cycle 1 Impact Claims
p. 151	17. Design Learning Ladder, adapted from the Design Ladder (Danish Design Centre, 2001)
p. 152	18. Re-framing design learning, within design learning
p. 162	19. Wellbeing Wheel, 2020, measuring the research experience
p. 163	20. Wellbeing Wheel 2016
p. 164	21. Wellbeing Wheel, Reflection Tool, 2016 - 2020
p. 165	22. The Hero's Journey, 2020
p. 166	23. Moments That Matter, experience mapping, 2020

24. Journey Map: Plausibility of Decisions, a frame for reviewing progress

p. 13

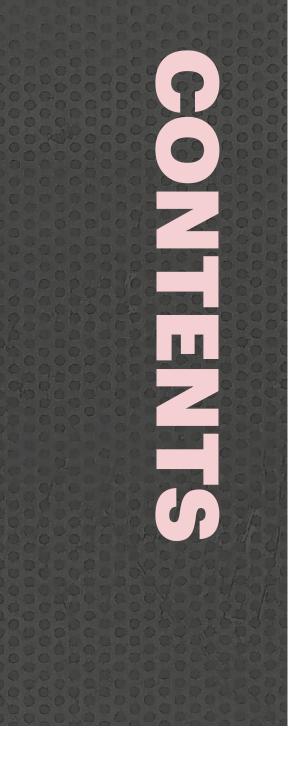
p. 168p. 169

1. Research Roadmap

25. A Learning Network Map

LISTOF TABLES

p. 19	 Aims, objectives and questions, MRes 2016 -2020/21
p. 33	2. Design Tools
p. 38	3. Key design methods used across the research study.
p. 54	4. Frame of Work
p. 59	5. Team Alignment Thing (I)
p. 63	6. Conversation Thing (II)
p. 67	7. System Mapping Thing (III)
p. 73	8. An Interview Thing (I)
p. 79	9. Dissemination Thing (II)
p. 85	10. A Self-Reflection Thing
p. 91	11. A Restorative Learning Thing
p. 132	12. Cycle 2 Impact Statements and validation
p. 140	13. Cycle 1 Impact Statements and validation
p. 142	14, Summary Learnings - opportunities, categoried with key words
p. 144	15. Learnings - opportunities, categoried with key words



FRONT MATTER

- I. Declaration
- II. Abstract
- III. Glossary
- IV. List of Figures
- V. List of Tables

p. 12 **RESEARCH ROADMAP**

1. THIS IS NOW An introduction

p.16	1.1	The Journey is the Destination
	1.2	The Challenge of Understanding
p. 20	1.3	Other Ways of Looking
	1.4	Following the Line
p. 21	1.5	Walking the Line
	1.6	Learning to Orienteer
	1.7	How to Read this Thesis

2. BETWEEN REVOLUTIONS & EVERYDAY LIFE A contextual review

p. 25	2.1	Understanding Change
p. 29	2.2	Creating Change

3. ENTANGLEMENT AND CIRCULARITY Methodology

р. 35	3.1	Methodological Rationale
	3.2	Pedagogical and Professional Practice Rationale
р. 36	3.3	Design Approach
р. 37	3.4	Action Research within Design Research
p. 42	3.5	Research Ethics
	3.6	Conclusion

4. PLAUSIBLE SPECULATIONS Fieldwork

p. 44	4.1	Creating Dialgoues
	4.2	Opening Conversations about learning
p. 55	4.3	Learning Topology Conversations
	4.4	Framing the Participatory Research Journey
	4.5	Cycles, Studies and Things
p. 57	4.6	Case Study 1
p. 70	4.7	Case Study 2
p. 82	4.8	Case Study 3
p. 88	4.9	Case Study 4
p. 108	4.10	Concluding Design Conversation
	4.11	Conclusion

5. MAGICAL PRAGMATISM Analysis and Discussion

p. 124	5.1	Positioning
	5.2	Summary of analytical approach
p. 125	5.3	Route (a) Positioning
	5.4	Patterns within the Learnings
p. 126	5.5	Headlines
p. 127	5.6	Creating Value
	5.7	Route (b) Positioning
p. 128	5.8	Fiieldwork Analysis Approach
	5.9	Patterns Within the Learnings
p. 129	5.10	Opportunity Identification and Stories for Change
	5.11	Chapter Conclusion
p. 130		Impact Claims, statements and tables of learnings, insights & opportunities from select Case Studies

6. SUSTAINABLE BASELINES

A conclusion

p. 149	6.1	Design Learning Framework
	6.2	Reflecting upon the Role of the Design Researcher
p. 150	6.3	Design Leadership as Knowledge Broker
	6.4	Design Learning Culture
	6.5	Design Learning Ladder
p. 151	6.6	Designing a Learning Trim Tab
	6.7	Close

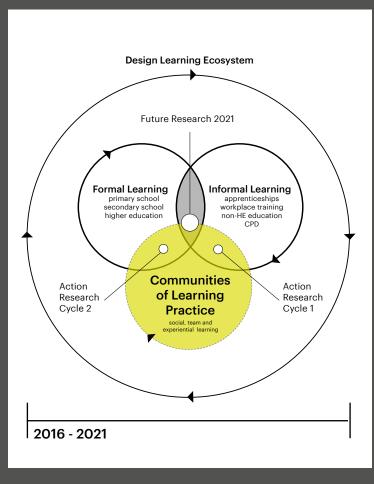
END MATTER

p. 154 References

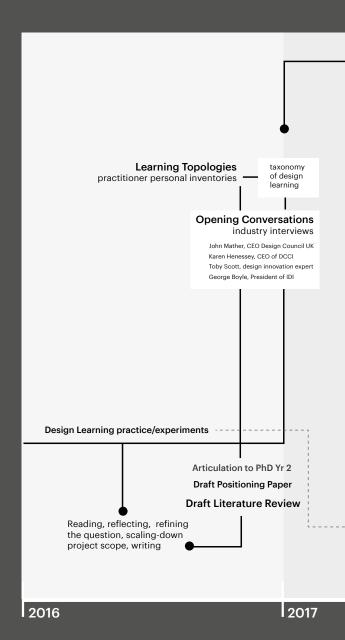
Appendices

- p. 160 A. Unearthing New
- p. 170
- B. Opening Conversations
 C. Learning Topology Conversations p. 176
- p. 180 D. Closing Conversation

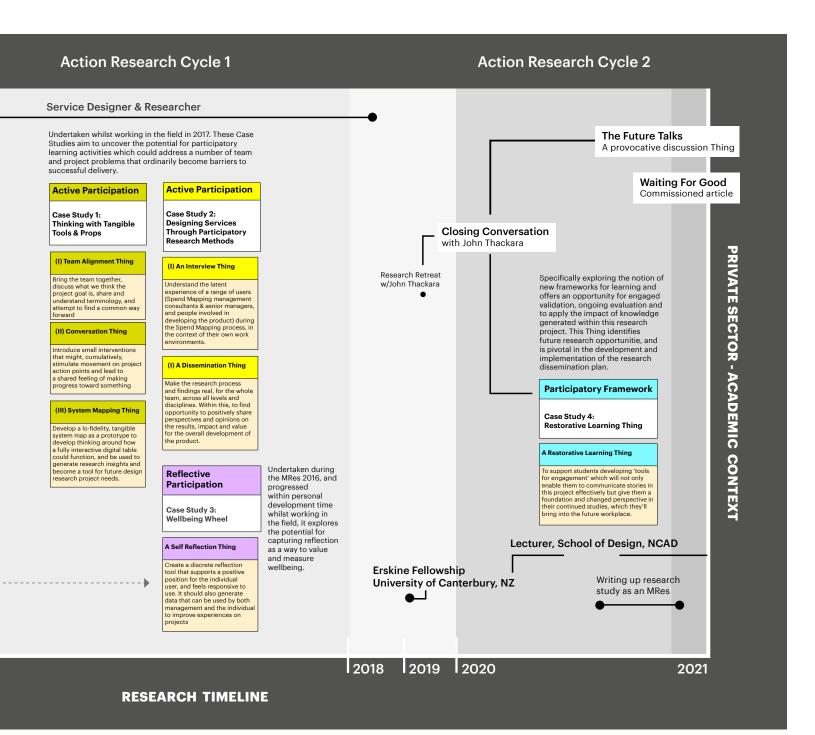
p.183 Acknowledgements



LOCATION OF RESEARCH



ARESEARCH JOURNEY the roadmap



1.

THIS IS NOW

an introduction

- 1.2 The Challenge of Understanding
- 1.3 Other Ways of Looking
- 1.4 Following the Line
- 1.5 Walking the Line
- 1.6 Learning to Orienteer
- 1.7 How to Read this Thesis

This chapter provides a brief description of the origins, context and scope of the research, along with the central questions it addresses. The aims and objectives of this study and my proposed contributions to knowledge are outlined, along with the rationale for undertaking this study, from a practice-informed standpoint. It closes with a guide to reading the thesis.

1.1 The Journey is the Destination

When I began this research project in January 2016 I did not intend to conclude it, with an MRes, five years after starting the programme. However, the intention I went in with was to build a body of design research rooted in real contexts within Ireland [where I practice and teach], that could become a professionally relevant research platform. Whilst I imagined I'd shape that within the structure of a PhD, I instead did it within my career and practice, starting and finishing inside an MRes structure.

As Table 1 shows (overleaf) I unintentionally created a new route for my own learning experience. If I didn't say that the journey was the destination, then you'd have every right to question my navigation skills.

It is reassuring to remind myself, and you, the reader, that design is a non-linear, iterative process. While some design advocates and thinkers regularly point to engineering design models of rigid, gated and sequential process-based paths, or the UK Design Council's conveniently neat 'Double Diamond' (Figure 2) as an accurate description of the design process, it is Sanders and Stappers (2008) messy representation of the design process (Figure 3) that perhaps, best, describes my approach to design research and practice, and most pertinently, this research project.

I am a reflective designer. My practice is rooted in using personal experience and perspective to understand the research positioning (Goldschmidt 1977), and this project does indeed study 'my people', design educators, and 'my culture', design learning, so it is a self-ethonographic

(Hayano, 1979) exercise. However, Reflexive Design assumes that neither the problem nor the possible solutions are given, but are actually created in the process of designing.

My professional practice, over the past decade as a design educator, researcher and practitioner, was built on creatively addressing problems in design learning within the Design School and private sector (Figures 4, 5 & 6).

Subsequently, this body of research presented as the MRes has been a problem-based investigation. The research has evolved, and responded to, changing personal, professional and social contexts. It has sought firstly to figure out what was, and could be, a desirable model of design learning. Secondly, it investigated how this learning framework might be applied within academic and professional contexts.

1.2 The Challenge of Understanding

The research challenge, for the duration of the project, has essentially remained a question of how design learning is designed, delivered and what it can be empowered to do. The context for that challenge, the supporting questions, aims and objectives have evolved over the years and cycles of research (Table 1).

The challenge of understanding design learning is a wicked problem (Buchanan, 1992), and within this research project, I addressed that through a range of approaches, but predominantly through the application of a Design Based Research (DBR) approach (Collins, 1992).

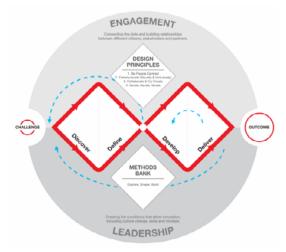


Figure 2. Evolved Double Diamond (first issued 2004, revised in 2019 to suit an innovation context), Design Council UK, 2019

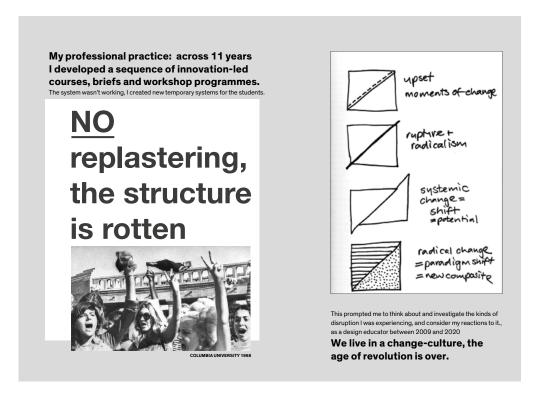


Figure 3. The Design Process, Sanders and Stappers, 2008

A design process is understood to have a messy and disruptive start, with the line rarely running straight from A to B.

Figure 4. 'My position on Design School Learning', analysis of practice activity, 2016.

As part of my MRes 2016 I reviewed how my professional experience was influencing my understanding of the [initial] challenge, and how I responded to the ecosystem of designing learning within the Design School.



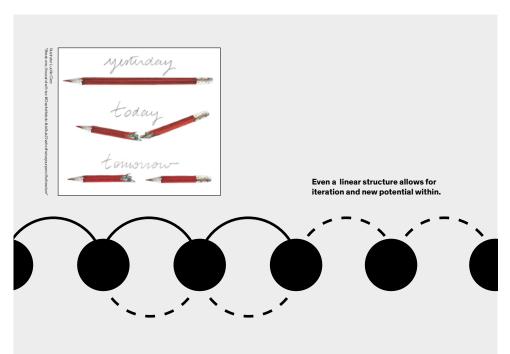


Figure 5. 'My perspective on Design School learning', an analysis of practice activity, 2016.

I placed this understanding of my position on design learning in the Design School, into an approach for developing a body of research within the MRes in 2016.

Visually describing a linear structure as a series of punctuations in time, and viewing this structure as a series of breaks in continuity whereupon iteration can be encouraged and potential realised, still captures my view of design learning in 2020/21, both in and out of the Design School.

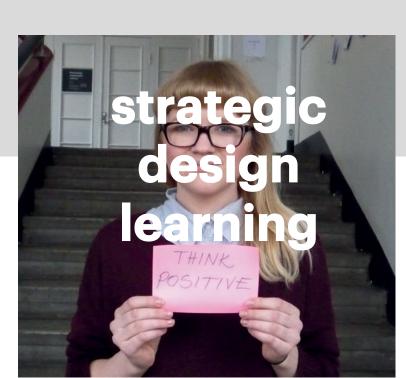


Figure 6. 'My interpretation of Design School learning', an analysis of practice activity, 2016.

Shown is an example of student activity from 'An Exercise in Uncertainty', Eesti, Tallinn, Estonia, 2014

20	QUESTION			and review the critical impact, interlinked value and role ng has within and outwith the design school?					
	SUB- QUESTIONS	How can the development of communication-led participatory design approaches, in design studios and education, create learning cultures?							
		2. What does cha	ange in des	ign learr	ning look like - has t	he Design School a	dapted to	these sh	nifts?
		3. Where might f	uture desig	ın learne	ers be supported an	d where is design l	earning sit	tuated?	
		4. Can stimulatir	ng uncertai	n learnin	g environments exi	st within organisati	ons and ir	stitution	is?
	AIMS				aches to team learning [and dialogue within tha		ook like in pr	actice,	
		(B) To probe what re	silience mean	s in terms	of design[ing] within ar o individual as well as s	n in-house design-led st	udio, as part	of a	
		(C) To review how pa	articipatory le	arning app	proaches relate to radica	al [design] pedagogy at	HE level		
					my professional teachin g within the context of a		oach toward		
OBJECTIVES Review what learning culture (HE and beyond) is, and how/why it is changing AIM A, B Review unders of 'learning cul private sector of studios - the total are used to end dialogues and knowledge shat in multidiscipliteams in the deworkplace				Iture' in dialogues look like design in a range of design to studios [which are part of multinational companies] to validate qualitative data and observations from my		Clarify what is meant by design dialogues, where they happen within the project, their function, output and structure AIM C, D	Propose a series of guiding principles and recommendations that create a structure for the use of participatory approaches in team learning and team dialogues AIM D		Create a prototype participatory dialogue toolkit with tangible tools and guides
			AIM A, B, C						
	SITE	Cycle 1	Cycle 1		Cycle 1	Cycle 1 + Cycle 2	Cycle 2		Cycle 2
	LOCATION	MULTINATIONAL CONSULTANCY	MULTINATIO CONSULTAN		MULTINATIONAL CONSULTANCY	DESIGN SCHOOL - LEARNER	DESIGN SC EDUCATOR		DESIGN SCHOOL - EDUCATOR
	0000	0000	000	00	00000	20000	Par	100	02020
	PROFESSION	IAL		Erskine F	Fellowship, School of F	Product Design, Cante	rbury Unive	ersity, NZ	
	PERSONAL			Left job, had a baby, bought a cottage in a forest in Ireland and moved					
	PROFESSION	IAL		Senior S	ervice Designer and D	esign Researcher, mu	ltinational c	onsultano	Cy .
16	QUESTION	What is the s	tory of cl	nange	ew Design Lear in design learni	ng, design edu		20	19101
	SUB- QUESTOINS	(A) what has made change happen over the years, how has that evolved and have the responses/reactions from HE Design moved with these shifts?		(B) Do stimulating [positively] uncertain learning environments - that prompt students and staff to behave, create and develop differently/better/more relevantly, to suit the world ahead - exist within the current HE offering in the UK & Europe		(C) Is there something other than the existing models of design learning, as delivered by the expected institutions - what does it look like, where is it happening, what form can it take, what prompts it?		(D) What might future design learners look like, do, need, and where might they be located and how does that all fit with learning models past-present-future?	
	(A) to frame an understanding of what is happening now, current examples of changed learning, with moments of 'rupture' that prompted them			(B) To critique new knowledge and different approaches to learning in the UK, in order to that is delivering an enhanced future of design learning		(C) To structure knowledge for an enhanced model of design learning		(D) To provide motivation for the project and create clarity about who this researc addresses (in terms of user and provider	
	OBJECTIVES	(A) Show that mon of change, across have been key in s new directions in o	history, haping	(B) Establish a key demographic of design learner, future students, that is either not being catered for within existing establishments or needs more focus		(C) Build context-led research that establishes what is happening in the field		(D) Curate a body of content that sets out the narrative of change, uncertainty and models of learning that exist outwith the conventions, legacy or expectations of the established HE institution	

and Brown, 1992).

I thought I knew what the problems were, but I did not know where the deeper investigation would lead. Within that arc, I applied reflexive processes to understand pivotal issues in the over arching problem story (described in Appendix A). It was through this process that I created the critical experiences which led the research toward its objectives, to my learning, and to the knowledge creation that supported thinking toward a Design Learning culture (Bochner, 2014). The MRes could be described as being at the intersection of autobiography and ethnography (Goodall, 2016), and this thesis distinctly uses design storytelling devices to communicate (Ellis, 2004) the Design Learning research narrative.

Design almost inevitably entails moments of not knowing, and uncertainty, which can only be overcome by an active transformation of the situation, or as Löwgren and Stolterman (2004, p. 9) put it "if the outcome can be predicted, it is by definition not a design process".

1.3 Other Ways of Looking

The problems in design learning are not new. Many addressed it before I even began to intervene in its processes and models as a new lecturer armed with a dog-eared copy of 'Hornsey 1968: The Art School Revolution' by Lisa Tickner and the idealism of youth.

This research project was conducted 'in the wild' whilst working on live projects with a range of clients in a multinational design studio, and whilst teaching students within an undergraduate degree programme at a Design School. That phrase, 'in the wild', has become synonymous with approaches that focus upon conducting research-based studies reporting on activities in 'situated' contexts. The wilderness of this research provided a range of complex, nuanced, and unpredictable settings which led my research journey.

Initial research in 2016 focused on 'change creation' (Table 1) drawing on precedents of radical intervention, and practices of making new from old. It drew on Beatrix Colomina's 'Radical Pedagogies' project (2015), charted stories of change in institutions such as the Architecture Association (London, UK) and other institutions that make change part of their DNA. The work of theorists such as Frank 'Bifo' Berardi who critique the value of new, and Gregory Sholette who questioned the validity of new, inspired perspective. The research turned to look at the [then] new kids on the block, Hyperisland, Kaos Pilots, Unschool, University of the Underground and D&AD's Shift programme to survey potential new practices.

In 2017 the research shifted direction when I took on a Service Design & Research role in a multinational design studio (within a multinational service consultancy). The research focused in on corporate learning cultures and practices, to understand how design learning supported technology, data and software engineering innovation. These explorations were framed by investigation into corporate design learning cultures at the likes of IDEO, Frog and IBM.

In 2020, I returned to a teaching role and positioned this research journey, and the insights generated, within a model of critical reflection. This analytical process was informed by the thinking of leading design educators and institutions platformed by the likes of Rodgers and Bremner, and new pedagogies identified by Mike Tovey (2015). I sought to evaluate the research I'd undertaken within contemporary debates and positions promoted by design critics such as Paola Antonelli and Alice Rawsthorne, alongside John Thackara's thinking on the ecosystems within which Design Learning should arguably, live.

Talk about changing the Design School learning model ranges from soft reform, to overthrowing the system. The chatter about design-led innovation in the private sector is a future portraved as being design-led. There is little discussion about realising the potential role of, or future for, design learning in the Design School or private sector design space. There are many papers and publications citing the virtues of applying Design Thinking to business and innovation, there are many still that espouse the value of design-led thinking for remodelling education, yet there are few that talk about the opportunity, and impact, of participatory design learning on workplace experience, wellbeing and ways-of-working. There are fewer still that talk about how design learning can be infrastructured and institutioned effectively to become a restorative experience for both private sector studios and Design Schools.

With the impact of Covid-19 on the how and where of working, and the move to a blended or fully distant learning model of design education, there is an even greater need to discuss this knowledge gap now.

1.4 Following the Line

The research project, presented as this thesis, builds from a set of principles, adapted from those outlined in Richert and Allen's article on 'Design as critical engagement in and for education' (2017):

- 1. Design is anticipatory in the sense that it aims to conceive possible futures and to create new, viable options of action (Zamenopoulos & Alexiou, 2007).
- **2.** Design raises the question of 'what might be' or 'could be' instead of only responding to what is (Zamenopoulos & Alexiou, 2007).
- **3.** Design focuses on the "ultimate particular" (Stolterman, 2008), in that it (a) aims to respond to a unique situation, and (b) thereby aims to develop a solution with specific functions and characteristics, which may not work or be relevant in another context or application.

- **4.** Design is a form of conversation with all actors involved in the 'thing' created artefacts, methods, tools, concepts, prototypes and products as well as the stakeholders (Antonelli, 2019 and Cross, 1999).
- 5. Ideas relevant to design are co-creations and co-owned they do not just exist in the designer's mind but are developed, tested and made tangible in conversation with all other actors involved (Cross, 1999).
- **6.** Design arises from a position of not-knowing, and uncertainty the situation and/or brief, as well as the change being created, are essentially uncertain, and as such 'the design' is identified and shaped by the process of the designing, in itself (Huybrechts, 2014 and Zamenopoulos & Alexiou, 2007).

1.5 Walking the Line

It's important, that you, the reader, note that I, the itinerant learner and practitioner, have, throughout this research journey, sought not to rely on unthinking or uncritical acts. There have been no vagaries of 'trial and error'. Rather, I have aimed to respond to personal, sectoral and social changes by acting as a design educator, and thinking for design research. Taking Frayling's framing of the modes of design research (1993) forward, this thesis has been a 'writing through design' process; it used the act of writing as a tool, as a performative activity, to understand key learnings, direction, and thinking within the research project. Taking cues from Sarah Richards (2017) this thesis is a piece of Content Design, the published writing is a design product in, and of, itself.

I am undoubtedly an iconoclast. A product of the Design School (studying at Glasgow School of Art) at the tail-end of the late 90's DIY scene, I am an active member of the generation of designers and doers who are still trying to change the broken system we find ourselves living and working in.

This thesis represents a designerly body of research (Cross, 1982) that probes, provokes and questions the system in and around Design Learning and the Design School. I work in that system. I do my best to tear down the tired pedagogical models that hold it in the past because I believe that the value of design learning is too great for it not to be proactively moved forward.

1.6 Learning to Orienteer – Devising a Research Compass

The aim of this research project was to prototype and support the development of a framework and set of tools (which I termed Design Learning Things) that facilitate design learning cultures through a participatory design approach. This focused on creating learning structures that were flexible, agile and able to meet the future needs of the changing design landscape.

In order to realise this ambition the following research objectives were to:

- **1.** Map the evolution of design learning within and without the design school, and establish best practices in design learning.
- **2.** Generate an initial draft framework based on findings from the contextual review.
- **3.** Extend the findings of the review by undertaking a series of iterative action research cycles within professional and educational contexts.
- **4.** Develop and test a range of tangible dialogue tools to assist with the development and implementation of the framework.
- **5.** Assess the framework and tools to determine if it meets the needs of learners within design studios within industry and education.

The project was intended, from the beginning, to be grounded in my practice as a design educator, researcher and practitioner, implemented using 'research through practice'. During an extended research journey, I leveraged this practice to create new knowledge in the form of dialogues that shaped a prototype conceptual framework for Design Learning (DL), and a set of Learning Things (LT) that scaffolded that process.

1.7 How to Read this Thesis

Reading Paola Antonelli's introduction essay for the seminal 2019 Broken Nature exhibition at Triennale Di Milano changed my reflective approach and presentation of this body of research. It inspired me to write and format this thesis in a way that was authentic to its intention, and its generation. The chapter titles are an explicit reference to key points in that essay. I am thinking as a design researcher, but write as a designer in order to create knowledge (Norman, 2020).

Chapter 2 BETWEEN REVOLUTIONS AND EVERYDAY LIFE contextual review

Expands upon the traditional Literature Review format providing an opportunity to discuss the contexts, tools and the design research relevant to the research project's shifting landscape. The chapter concludes by identifying knowledge gaps for further exploration.

Chapter 3 ENTANGLEMENT AND CIRCULARITY methodology

Outlines the arc of the research processes, frameworks, theories and methods employed to accomplish the aims and objectives. It further explores and defines my own role, alongside the role of the research tools and methods created during the study.

Chapter 4 PLAUSIBLE SPECULATIONS fieldwork

Presents the first 'In the Wild' Action Research Cycle, undertaken in a professional context within a multinational design studio. Research Case Studies are classified as Active Participatory Research, and Reflective Participatory Research. The conversations, tools, activities, methods and frames of work are described as 'Things' within those classifications. The chapter concludes with a formative presentation of the fieldwork, classified as Restorative Learning Research, undertaken as part of the second Action Research Cycle, within a Design School context.

Chapter 5 MAGICAL PRAGMATISM discussion and analysis

Describes the approach to discussing learnings, opportunities, categorisation and impact of the design research from the fieldwork undertaken. Action Research Cycle 1 (framed as a reflective review) and Action Research Cycle 2 (framed as evaluative analysis) actively position the knowledge and learnings within the design ecosystem as a form of expanded validation.

Chapter 6 SUSTAINABLE BASELINES conclusion

This final chapter draws the research project together to assess how it addressed the key questions, aims and objectives. The knowledge and learnings generated, position this study in relation to recommendations for institutioning and infrastructuring participatory approaches to design learning in team contexts, across the Design School and private sector. An overview of future research and recommendations, arising from the conclusions of the fieldwork and analysis, is outlined.

The thesis also contains a number of appendices. These are intended to provide additional depth and supporting materials that add further context to the research study:

Appendix A: UNEARTHING NEW

Frames my design research journey through a series of refractive prisms, with the intention of providing additional perspective around how my lived experience informed my MRes experience, and learnings as a researcher.

Appendix B: OPENING CONVERSATIONS

Two samples of transcripts from interviews conducted with industry experts at the start of the research study that helped inform my approach.

Appendix C: LEARNING TOPOLOGY CONVERSATIONS

A description, and sample responses, of a study undertaken to understand design practitioners personal learning inventories. This helped frame the manner of my research analysis.

Appendix D: CLOSING CONVERSATION

Transcript extract from my dialogue with design critic and author John Thackara that helped draw the research journey to a close.

BETWEEN REVOLUTIONS

a contextual review

AND EVERYDAY LIFE

2.1 Understanding Change - What learning is and where it happens

- 2.1.1 Design Learning
- 2.1.2 Design Learning's response to the changing world
- 2.1.3 Learning in Practice
- 2.1.4 Future Design Learning
- 2.1.5 Instrumentalised Design Learning
- 2.1.6 Energy and Transformation
- 2.1.7 Building New

2.2 Creating Change - How it Happens

- 2.2.1 Participatory Design
- 2.2.2 Situated Design and Mutual Learning
- 2.2.3 Dialogic and Discursive Design
- 2.2.4 Sense-Making
- 2.2.5 Institutioning & Infrastructuring
- 2.2.6 Design Tools
- 2.2.7 Observations about the tools
- 2.2.8 Learning tools to create change
- 2.3 Conclusion

This chapter introduces the literature, context and key concepts that steered the research study and underpinned the conceptual framing throughout.

Barnes and Melles (2007) state that "Design issues typically emerge from multifaceted social situations, making design research investigations ones of adequately contextualised application. Where this is the case the review of literature must navigate multiple research fields whilst also resolving relations between orthodox disciplinary and non-disciplinary sources of knowledge, including those emanating from design's strong vocational foundations. Managing multiple contextual frameworks to arrive at a creative fusion of methods and principles represents a significant practical and intellectual challenge."

This review chapter, inspired by Montuori's (2005) re-framing of the Literature Review as creative enquiry, seeks to meet this challenge by undertaking a form of creative dialogue with key assumptions from the 'community of inquiry' that I work within.

Invoking and surveying sources in the form of a contextual review, as described by Gray and Malins (2016), key elements are re-examined in the context of the ongoing design research activities. Relevant literature, design precedents and case studies are introduced, where appropriate.

Beginning with a review of design learning, and a discussion of the various processes and methods that are employed in this field, the chapter goes on to explore participatory design processes, methods and tools. It concludes by identifying the gaps in knowledge that this study aims to address. The primary research objective is to map the design learning 'change-story', in, and out-with, the Design School to understand what change might look like.

2.1 Understanding Change

- What learning is and where it happens

David Garwin in his, widely cited, paper 'Building a Learning Organisation' (Garwin, 2013) outlines that "Learning is the key to success - some would even say survival - in today's organisations. Knowledge should be continuously enriched through both internal and external learning. For this to happen, it is necessary to support and energise [the] organisation, people, knowledge, and technology for learning." He goes on to stress the importance of communication systems in helping forge a learning culture, to "facilitate the lateral transfer of information and knowledge across formal structural boundaries."

This combination of learning sites, the personal and organisational, is a critical interstice in the conversation about the impact of design participation on ways-of-working in multidisciplinary team settings. It is also a critical juncture in wellbeing within any organisation. Leading Human Resource academics Marsick and Watkins (2003) have defined the key characteristics of a learning organisation as being to:

- 1. Create continuous learning opportunities.
- 2. Promote inquiry and dialogue.
- 3. Encourage collaboration and team learning.
- **4.** Create systems to capture and share learning.
- 5. Connect the organisation to its environment.
- 6. Provide strategic leadership for learning.

They argue that an organisation should address particular aspects, to ensure a productive learning culture. I related these to the research activities by building a frame for measuring impact, which I applied to evaluate the fieldwork and learning.

2.1.1 Design Learning

The changing world has prompted the design sector to think and talk differently. Consultancies and organisations pushed 'user-centred' Design Thinking into a world beyond design, and into a mode of framing innovation (Dorst, 2015 and Mootee, 2013). This progressed to human-centred design (IDEO, 2009), and

now, recently, life-centered designing and thinking (Owens, 2019). It could be said that the response to change, from the sector, has primarily been language, that then, sometimes, changed behaviour. Recently the shift can be observed in the application of the term 'crafting' within consultancy communications, and the move from describing designing as Design Thinking to 'design thinking & doing'. The shifts had partly been led by thought-leader organisations such as IDEO, who [along with other dominant tech and innovation companies] extolled the virtues of the circular thinking that moved us to cradle-to-cradle models of production and consumption (McDonough & Braungart, 2002), then toward systems thinking. They led the sector to see design as an ecosystem around each action, product and activity (Escobar, 2018), thereby creating a new attitude toward how we define design (Rawsthorne, 2018).

In their influential report, the World Commission on Environment and Development (1987) identified that Design is capable of increasing the capacity for progressive thinking about our future world economy, ecology and wellbeing by enabling organisations to deliver a sustainable development that addresses a needs, not growth, agenda.

Antonelli (2019) states that it is up to designers to teach the world how to use them well. Taking a change-led perspective on design, could encourage future designers "to exercise the acute critical sense that comes from their analytical training in order to help other citizens slow down, stop, reassess, and continue or change course." (Antonelli, 2019). The sector, and discipline, has a propensity toward disaggregation, to operate as silos that are defined by their distinction. This ultimately makes it harder for the world, for citizens, to feel comfortable using design to make change happen. It is an uncertain scenario, one which has, in a way, created an ideal testing ground for new ideas (Boym, 2010).

2.1.2 Design Learning's response to the changing world

With the shift from design as object-creation, to design as service for innovation, culminating in design as a service for thinking, private sector design (and the educational component of it) has been part of the Anthropocene, co-opted by the 'Capitalocene' (Davis & Turpin, 2015).

Design education and the Design School, as the defining provider of formal, accredited design education, has followed the money (Rodgers & Bremner, 2019). It has introduced industry-relevant programmes training designers to work in Service Design, Interaction Design, Design Research and so on. It equips students with the formulas industry want. As Frank 'Bifo' Berardi suggests in his essay 'Autonomy and General Intellect' (Berardi, 2013) the crisis of the university was embedded in the inability of modern humanism to cope with acceleration and complexity, "The university of the past, as we have inherited it from modernity, is unable to deal with networked intelligence". Which could explain why we have, up until this moment, created formulas and followed capital. Another point that Berardi notes, one that echoes Roger & Bremner's position, is that the process of privatisation has destroyed the university's autonomy, and thereby it's potential to produce knowledge.

If design is to be a "cognitive, pragmatic and political tool" (Antonelli, 2020) and take a restorative role in the change, that starts with the Design School. Shaping learning that supplies the needs of a current system does not encourage change. Shaping learners that don't challenge the contexts around them, does not allow for change.

Whilst we have seen the radical reinvention of some traditional institutions such as the Willem de Kooning Academy (Chabot, 2013) and the Sandberg Institute (de Vet, 2020), design academic Laura Furniss (2015) concluded that the Design School was out-of-touch with industry needs, along with the world's needs. However, schools which err on the radical side of learning, that are independent of the restrictions of Universities and established reputations, often reside at the edge without responsibility to reshape the system. Some edge institutions offer corporate-ready 'radical' design learning contexts and contents e.g. Hyper Island, Kaos Pilots and Unschool but have not, so far, impacted significantly on the wider design learning ecosystem.

In light of the changing nature of design, Sachetti (Boelen et al 2012) insists on "learning as a permanent, embodied attitude, one that transcends the formal, spatial and temporal boundaries of the school, and overflows into the world and life itself." Institutions of learning, especially art and design schools have always been inextricably linked to the new wave, to social, political and educational uprising and change. Intervening in the conventional order of things can create a ripple of change that radiates out to a wider community. Koyo Kouoh (Kouoh, 2019) describes change, both local and global, as being the aspiration of all forms

of social design, and questions that if social design is a site for 'things' that create a better life, then political activity must not be excluded from that equation. Kouoh argues that, "popular uprisings help shake the tree. But it soon becomes evident that there is a difficult equation to solve. A legitimate aspiration for a better life and good governance depends on access to or creation of tools that allow the achievement thereof."

Design Learning could be considered one such tool. Ivison and Vandeputte (2013. p. 27) discuss how recent design education experiments may have come about for simple practical, academic or social reasons. They state that the context of "the higher education crisis has given them new and broader political relevance. Self-organised schools and alternative learning platforms can be understood both as critical responses to the academic establishment and as speculative attempts to develop viable alternative spaces and models of learning".

2.1.3 Learning in Practice

Since before the industrial revolution, design learning in the workplace has followed a path of 'master - apprentice' model, something which informally, unofficially, stayed in place in agencies into the 1960's. Even now, many small design businesses and brands still have a set 'house style' that new employees are expected to follow. And in the Design School, dated models such as 'Sit with Nellie' (Swan, 2002) are still favoured by staff. The master is still present.

Learning in the workplace has evolved along with the management approaches and the frameworks organisations use to structure their ways-of-working e.g. Lean, Six Sigma, Agile and Design Thinking (Pyzdex & Miller 2018). It now allows for more individual, tailored learning, though it is still highly prescriptive and akin to training, despite the contemporary formats of CPD conferences, talks, short courses, etc. Often off-site, and an optional extra, professional learning has now, largely, moved from 'learning from people' to 'learning by doing', putting learning into the context of everyday working practice.

The rise of increasingly credible, alternative, informal design learning institutions has expanded the design learning ecosystem in recent years. Providers have started to address the gap in formal-informal learning by providing options that don't come with the same fees, but, more critically, the same time investment, due to being able to offer flexible courses more suited to life-long learners (Boud and Solomon, 2001).

At the Ukadia conference in 2014, Lucy Kimbell presented 'Some Futures for Art and Design Higher Education' (Kimbell, 2014), setting out an argument for the establishment of a new kind of institution in response to what she cited as the key influences of change - technology, practice, expanded field of design, the new informal education providers, and the expanded role

of design in our world today. Kimbell suggested four potential models that would cater for the different needs of students, institutions, industry and build innovation-led growth.

Like any good disaster movie, she set out how the current models will crumble, sink, blow-up or fade away, but from the ruins an adaptive, evolved, more relevant model would grow. Ironically, it was a proposed vision for a loosely pin-pointed future, the year 2020, when Kimbell envisaged everything changing.

And indeed, everything has changed. She proposed that cultural and commercial organisations would partner with universities to provide the capital or production investment, while companies would begin to move into offering tuition in partnership with education providers or independently.

Leading Design agency IDEO - having advocated for the role of design thinking, and freely distributed design tools and toolkits to educators - moved into offering formal educational and training certificated programmes via their IDEO-U platform. Their online courses seek to help students "learn the methods and develop the mindsets that IDEO has practiced for decades to help organizations become more resilient, adaptable and innovative." (IDEO, 2020). In a model of learning about design that mirrors the iterative cycle of design itself, learners engage in cycles of see, try, share, and reflect.

With New Blood Shift (Gadgil, 2016), D&AD, an industry body in the UK, responded to the needs of the design industry to diversify and make design accessible to under-represented communities. Students participate in a series of entrance exercises, where-upon they are selected to work on group briefs – in the evenings, so they can learn around sustaining an income – with industry professionals.

With Shift, D&AD act as an ambassador for design learning. The culmination of the programme is real working experience, and it is rewarded not with a certificate or validation, but with paid placements in industry. It very much foregrounds the importance of experience as learning (Jackson, 2011) and work-based learning (Boud and Solomon, 2001).

2.1.4 Future Design Learning

Abruptly, in 2020, the future arrived. Speculation was mute, the future was now, and the Design School did change because it had no option. Design critic and author, John Thackara outlined philosopher Joanna Macy's proposition for a new emerging story, the 'Great Turning', as a profound shift in perception and the realisation that we are part of a complex of living systems. He describes it as a quietly unfolding transformation (Thackara, 2015).

This story is aligned to scientific theory of how complex

systems change: as a variety of changes, interventions and disruptions that accumulate over time until the system reaches a tipping point (Gladwell, 2002). It is then, that energy is released by the system, and this triggers a phase shift whereupon the entire ecosystem transforms.

In 2020, it felt like the Design School, seen from my personal context of working in Ireland, had moved beyond disruption and entered a near-fatal crisis. A state where transformation and organisational change could be adopted. Finally design learning might embrace an allocentric position where it could respond to, and act with, isolation in a fluid way of making and being in the world (Renfro, 2009).

2.1.5 Instrumentalised Design Learning

If a fluid state, it seems relevant, to discuss how the Design School might move between enterprise and learning - into the work-place and back to the learning-space - in a break from previous notions of industry collaboration, and toward, what is possible.

Design education, in the past had a broad intake of students, because of skills-based learning and making has not required traditional forms of intellectual excellence in order for learners to make or practice design. But, as John Maeda argues (Brownlee, 2015), the use of, and role of, technology in design is a critical influence on both the challenge facing formal learning providers – ongoing upskilling of staff in support of students learning technological learning needs - and the rise of the successful self-educated designer.

Applying the lens of complexity theory (Davis & Sumara, 2006) to the Design School current state, it seems plausible, that formal design education may not be able to hold to its inherently traditional position let alone keep up with technology demands.

The Irish Government recently commissioned research into the impact of design on the economy, and the interconnected needs that have to be addressed for design to reach its potential. The 'Together for Design' report (DBEI, 2019) sets out a series of recommendations for the sector. One primary recommendation is that the connection between Higher Education (with the Design School as a key driver for change) and enterprise, requires greater focus. The Design School currently engages with enterprise following a standardised model: collaborative product development or research-led 'innovation' projects, commercial projects developed by students for an industry brief, talks or presentations to student groups, competitions, and organised internships.

It is possible that industry, commercial and cultural organisations could become more than stakeholders within design learning (Kimbell, 2014). The Design School could engage with enterprise in a proactive

way by looking for the potential needs on both sides, and provocatively developing a new shared model of designed learning [thinking and doing].

2.1.6 Energy and Transformation

Vidokle (2006) has noted, in his research into the history of creative schools, that 'education is not in stasis... it is constantly being rethought, restructured and reinvented. More recent interventions in the design learning model, such as the digital revolution, might mark the final stages before the 'great turning' (Thackara, 2015) as a moment that, following Berardi, emancipates knowledge and intelligence from the institution. Covid-19 is the most recent and perhaps greatest provocation for a paradigm shift, and the trigger for a release of creative energy that can help reimagine the Design School and design learning.

Taking the idea of global, simultaneous transformation of 2020, as a lens, the student uprisings of 1968 – a point when the needs of students aligned with workers, when there was a shared social and intellectual purpose – could be viewed as a disruption that triggered a release of energy in the system (Tickner, 2008 and Colomina, 2015)

With the power of networked intelligence, comes capacity to control the model through collaboration and co-created meritocracy. In 'Decolonising Knowledge' (Petti, 2015), Alessandro Petti describes Al-Quds Bard 'Campus in Camps' model which responded to the social implications of the first intifada in Palestine (1987) during which the Israeli government prevented people from gathering together anywhere in the occupied territories to suppress the Palestinian civil protests against its occupation. As a result, schools and universities were closed, leaving a population without any formal structures (physical and theoretical) for learning.

Out of sheer necessity, education became an organic, underground network. Petti depicts a scene of emancipation that Berardi stated should be the ambition of education; universities, unconfined by walls and campuses, set up by teachers and students to meet learners where they are.

Al-Quds Bard 'Campus in Camps' moved with the changing needs of learners, Embodying the tenets of a participatory project (Foth and Axup, 2006), every stage of Al-Quds Bard 'campus in camps' allowed the learning community to define its goals, contribute to teaching and learning in their own terms and to take ownership of the decision-making process. Conflict and crisis became factors of change and empowerment. If education is about developing pedagogies to link ideas, practices and values under conditions of uncertainty (Shulman, 2005) then what happened to formal education in Palestine after 1987 is relevant to today's design learning narrative in 2020/21.

Architect and educator, Elias Zengelis (2015) suggests

that learning institutions adopt a community model, one with shared power for staff and students. He proposed that institutions adopt a collective leadership (Denis et al, 2010) model, something that is, now, increasingly pertinent to participatory approaches to remote or blended design learning.

When considering the designer and user (the student) as equal stakeholders in the educational model – with a core underlying principle of participatory learning – one must also accept that this requires a shift from the applied, to the epistemological, and a distinct move away from a problem-solution focus of traditional models (Findelli, 2001).

John Danvers distilled this need for change in his widely cited paper, Towards a Radical Pedagogy: Provisional Notes on Learning and Teaching in Art & Design (Danvers, 2003), arguing that we needed "a reorientation of learning... around a process-based pedagogy that places particular emphasis on indeterminacy, pluralism, revisibility and dialogue".

2.1.7 Building New

Petti's work in Palestine demonstrates how space can inform communal learning (Renfro in ed. Madoff, 2009) and how knowledge, might emerge from group effort, not the structure of an institution. It attempts to move from the production of knowledge - based on information and skills - to processes of learning based on perceptual shifts, critical approaches and governing principles.

Artist, writer and activist Gregory Sholette (2013) warns against embracing a plenary community model of learning. He states pedagogical activism as simply being the latest novel form of cultural resistance to the neoliberal enterprise culture and its 'society of risk' ethos.

What concerns Sholette is not necessarily participatory models of learning, but models set up by groups, or interventionists as a reactionary kind of reform. Driving this concern is that these DIY pedagogies are born of the collective combined desire to reimagine or reinvent organisational structures, without following the accepted protocols such as appointing a board of directors, filing legal papers, and publishing annual reports.

2.2 Creating Change - How it happens

2.2.1 Participatory Design

Understood in the simplest terms, Participatory Design (PD) finds ways to involve different (not necessarily design) stakeholders around a design project and/or product during its development, with the design, using various co-designing activities throughout the design process (Schuler & Damioka, 1993).

These methods and practices, have become widely adopted across social sciences, design, technology and can be seen to influence both Agile frameworks and inform Design Thinking practices within the multinational studios (Muratovski, 2015). As with many paradigms, this corporate adoption has created a 'PD-lite' version and somewhat lessoned the resonance of the actual practice of Participatory Design, "The paradox is that the more acceptance participatory design has gained in the general design discourse, the more diluted the meaning of "participation' has become" (Smith and Iversen, 2018).

In the tradition of Scandinavian Participatory Design, historically, there has been a strong emphasis on the cooperative aspect of the process. Designer, educator and community activist, Anja Groten, is one of several critics of PD. She argues that there is "the risk of tokenization of participants, who might be invited to join a design process only to legitimise certain design decisions." (Groten, 2019) Her work advocates for a collaborative design approach that moves beyond cooperation, and acknowledges the value of a process of dialogue that exposes and confronts different perspectives, interests and expectations.

Life experience and the development of learning are inextricably linked, the ecology of learning and relational values of learning through placing it in the context of a lived life is critical to creating embedded, embodied, knowledge. And with that notion of embodying knowledge, so too the transition in design, of the terminology (sometimes the thinking) of 'designing for', to 'designing with'. Though Sanders (2002) identifies that shift in attitude as being about designing 'for' users, to designing 'with' users, and from user-centred design processes to that of participatory practices, her description of Participatory Design as being "not simply a method or set of methodologies [but rather] a mindset and an attitude" is pertinent to the position of this body of research. However, it is important to note the further shift in perspective that goes forward with that description [in this research]. Following Antonelli,

looking toward allocentric ways-of-designing, the term 'user' is re-evaluated and, where possible, looks beyond human.

An interesting juncture in the narrative of Participatory Design, is set out in Participation Is Risky: Approaches to Joint Creative Processes (Huybrechts, 2014). Here PD is discussed in reference to the contexts where it's used, the logic being that the definition (and thereby application, use, and outcomes) of PD change depending on those conditions. Looking in the domains of citizen engagement, media, and culture an overarching conclusion is that Participatory Design can be defined as being characterised by risk and uncertainty for both parties in the activity, in what they describe as a 'risky trade-off' with neither being certain of the outcomes.

Huybrecht's argues that this 'trade-off', the negotiations and discussions, the exchanges that happen during the participatory exercise as well as the objects (sketches, prototypes, installations or comments), should be understood as 'things'. They also set out that these 'trade-offs' happen in two places, project-time and use-time (Huybrechts, p. 54).

2.2.2 Situated Design and Mutual Learning

Participatory Design cannot be defined as a singular design or research method, and there is no participatory design process as such (Sanoff, 1990). By necessity, participatory design practices are situated, and each project is contextually relevant, meaning that each application is embedded and is designed to suit specific characteristics and circumstances (Simonsen, Sabo et al., 2014),

Given its 'situated' nature, a core concern for designers advocating the use of Participatory Design is how to scale-up from or build upon what has been learnt in one situation to other organisational settings. Karasti (2014) discusses whether there could be "reforms of infrastructuring that fit with the situated but aren't capable of crossing boundaries... [of] scales and scope".

For Participatory Design to function as it is fully intended, requires those involved to move beyond the role of merely informing the design process, to becoming legitimate [and acknowledged] active participants in the design process (Huybrechts, 2014). That transition is not necessarily a straight-forward move and can be the factor that makes participation fail and results in the

design process stalling in a range of ways. The rationale for using PD approaches in developing and researching in a designerly way is to create inclusivity, equity and equality within the process. Those qualities rely on mutual learning to take place within the 'thing' and process.

Jean Lave and Etienne Wenger (1991) coined the term 'situated learning, arguing that "learning is situated in the sense that it takes place through legitimate peripheral participation in a community of practice." (Simonsen et al, 2014). Simonsen suggests that fostering this process to embed design learning within design teams, studios and organisations is not something that can be delivered solely by a top-down approach such as a curriculum, but rather requires a collaborative process where learners actively participate and participants actively learn through interaction.

Robertson and Simonsen (2013) describe PD as "a process of investigating, understanding, reflecting upon, establishing, developing and supporting mutual learning between multiple participants in collective 'reflection-in-action'... Typically, the participants fall into the two principal roles of users and designers where the designers strive to learn the realities of the users' situation while the users strive to articulate their desired aims and learn appropriate... means to obtain them". Critically, this expands on the notion of mutual learning as a static characteristic of the approach, and clearly sets out how fluid the movement of that shared learning really is. Learning in Participatory Design is a genuinely iterative process, with learners actively engaging in a process and then reflecting upon what has been revealed though this interaction (Kensing and & Greenbaum, 2013).

2.2.3 Dialogic and Discursive Design

An emerging form of participatory design is dialogic design. Innovation researcher Peter Jones, describes this as the "practice of structuring collective language and non-verbal discourse to enact design processes" (Sanders and Stappers, 2012, p. 252). He argues that the role of dialogue in design research is underdeveloped and that a range of appropriate dialogic methods could usefully be employed in design fieldwork and knowledge translation.

While established methods such as design charrettes, town halls and collective brainstorming are forms of dialogic design, there is a clear opportunity to develop tools, frameworks and approaches to promote dialogue and learning between communities of practice.

Tharp & Tharp (2013) have played a key role in establishing the field of Discursive Design. They define this category of creative practice as "the creation of utilitarian objects/services/interactions whose primary purpose is to communicate ideas and —artifacts embedded with discourse. These are tools for thinking; they raise awareness and perhaps understanding of substantive and often debatable

issues of psychological, sociological, and ideological consequence." Their work builds upon the Critical Design language of Dunne and Raby (Dunne 1999 and Dunne & Raby 2001), and argues that design can communicate substantive ideas that are relevant to individuals, collectives and society as a whole. They identify an emerging instrumental form of discursive design that behaves in a similar manner to the myriad of research tools that engage potential users and produce insight into their hopes, dreams, values, concerns, behaviours, etc. Creating 'discussion tools' opens up a dialogue between the designer/researcher and stakeholders within a design project.

Tharp & Tharp identify that a level of deliberate ambiguity and open-mindedness is often leveraged with these discursive instruments, and Gaver (2003) argues that ambiguity allows designers to "suggest issues and perspectives for consideration without imposing solutions... to raise topics or ask questions while renouncing the possibility of dictating answers."

2.2.4 Sense-Making

Sense-making has evolved within the field of design as a method of thinking to aid designers in making sense of the complexity of design problems with which they work. Examples of typical sense-making tools might be mind maps, visual representations of practice, journey maps etc. Sense-making is of value within the context of this thesis as the body of research practice has a core focus on communication, and the synthesis of information, as a way for participants to make sense of the problems being dealt with during project-time.

Originating within the communications field where practitioners were searching for new approaches to gain a deeper understanding of communication, through communication-as-dialogue (Dervin and Foreman-Wernet 2003), the approach of Sense-Making leverages methods which ask research participants to narrate how, when, and where they communicate and how they make sense of information within a particular situation. Viewed in this context, the objects, artefacts and props used within the research activities could be understood as sense-making tools.

2.2.5 Institutioning & Infrastructuring

In attempting to institutionalise participatory waysof-working and ways-of-learning within private sector organisations and Design Schools, there is a need to develop new frameworks and processes that can foster the necessary, sustained, and continuous, dialogue and discourse between disparate communities of practice (CoP), over periods of time. These practices can be moved toward becoming Communities of Interest (CoI) where common, underlying themes support innovative design thinking, doing and learning. 'Institutioning', is an evolving practice addressing the need for strengthened communication between diverse actors within any institution. It has proved effective in improving participatory design by attempting to shift the institutional framing of actors. Institutioning can be described as the "gradual process of altering (consolidating or challenging) existing frames of institutions" (Huybrechts et al. 2017). Successful institutioning requires continuous dialogue between the disparate actors as the shifts in institutional framing occur through "articulating and reflecting on the ways in which various public and private institutions explicitly or implicitly 'participate' in PD and Co-Design processes" (Huybrechts et al. 2017).

The communication, and narratives created with any PD activity have an important role to play in growing the infrastructures that enable CoI to work proactively together, and fundamentally, as a mindset for CoI to approach working together. The scaffolding, however, has to be strong enough. Organisations and educational contexts where PD is a desirable way-of-working and being, require the frameworks and supports to encourage participatory designing, thinking and learning, to develop. And those frameworks, the infrastructure, have to be sustainable over time in those organisations. The process of infrastructuring, is "characterised by a continuous process of building relations with diverse actors" (Hillgren et al. 2011). Successful infrastructuring can improve communication and build a resilient learning culture by sustaining, embedding and empowering Participatory Design beyond its use within client and/or research activities i.e. moving it toward a culture, a way-of-being.

2.2.6 Design Tools

The Oxford English dictionary defines a tool as 'a device or implement, especially one held in the hand, used to carry out a particular function', 'a thing used to help perform a job' (Oxford Dictionaries, 2016).

This research project did not aim to create a toolkit. Nor add to the burgeoning array of design tools and kits available that have fuelled the last decade of Design Thinking. The participatory research activities, discussions and ambitions - the fieldwork 'Things' described in Chapter 5 - required tangible elements and structures to carry out their function, which in this case was to share and establish learning. Due to the fluid nature of the research objectives in practice and corporate context it was necessary to create 'something' rather than applying existing tools. The concepts, tools and techniques that have been developed for, and during, the Things in this research project can be classified using Sanders, Brandt and Binder's (2010) framework for organising the Tools and Techniques of Participatory Design.

To understand the landscape where the tools were to be situated required a survey and analysis of leading design toolkits. Table 2 outlines these tools, their objectives and characteristics, against Luck's definition of what makes participation in design, participatory design (Luck, 2018).

2.2.7 Observations about the tools

A number of themes can be observed in the range of tools and toolkits on offer to the designer (IDRV, 2014). From the widespread 'gamification' of the design process (most typically by using the format of playing cards) to the use of 3D toolkits that assist in the running of facilitated workshops by making interaction more physically tangible.

The notion of tools that could help facilitate dialogue has been developed by design academics, Louise Ravnløkke and Anne Louise Bang. They have moved from proposing 'tools for dialogue' (Bang, 2010) to coining the term 'Tangible Dialogue Tools' (Møller, Ravnløkke & Bang, 2016), and explored the role of objects such as textile garments as mediating objects. According to Dant (1999) "A mediating object is one that carries communications between people – information, emotions, ideas and impressions that could have been communicated by speech, gesture, touch or expression – if people had been with each other".

While their work has focused the early stages of design research for the purpose of knowledge generation, (as many other design tools do) by exploring the role of objects that move beyond the conventional language and the purpose of prototypes (Coughlan et al. 2007) or 'provotypes' (Boer and Donovan 2012), they have highlighted an opportunity for a new form of tool that can be used at different stages of a creative process or indeed the wider context of design learning. IDEO's 'Toolkit for Educators' (2011) supports this notion of the expanded context by leveraging design as a tool specifically for ongoing learning and change.

2.2.8 Learning tools to create change

Danny Jeroense and Olga Potters are advocates of the No School Manifesto, a movement that wants to open up the meaning of learning, and fundamentally question traditional education, through creativity. They ask "How, as a learner, can you tell which tools best suit your characteristics and which ones are suitable for what surroundings and problems?" (Ed. Ouwens, Camuti and & Stevens 2020), and argue that in order to develop new forms of learning in which creativity is the link, new tools are required.

Designers frequently adapt tools, ways-of-working, and thinking, developed in other disciplines to create the infrastructure required for specific knowledge generation purposes within their projects (Koskinen at al, 2011). Many companies reproduce existing design tools and methodologies, with slight modifications to suit their

organisations needs - appropriation and adaptation are, arguably part of the design process itself.

The virtual creative whiteboard space, Miro, is the best current example of how generic, yet far 'design tools' have moved from their origins (some discussed previously). Miro has rationalised tools, kits and facilitation into templates that any user can choose to apply in their sessions, without requiring any understanding of design, methods, or meaning.

Design tools are predominantly about generation, with the common objective of supporting thinking processes that can drive and capture ideas, outcomes and directions (what Miro offers). They are task oriented.

Supporting knowledge growth for the explicit purpose of learning and developing common understanding through participatory discussion, is a practice rooted in reflective thinking and sharing (Schon, 1987). There are few tool options that deliver purposeful 'reflection in action'. The reflective options tend toward two extremes: journaling, review structures and the reflection upon completion of an activity, or toward managing everyday sharing in an 'update' fashion, ordinarily part of a framework such as Agile.

Tools that structure, support and shape learning or sharing through conversation, can readily be found in therapy and wellbeing practices. There, participants in discussions use tools to aid storytelling, communicating difficult subjects and speaking to strangers about experiences - inherently complex subject-matter and conversations. Representative objects, shapes, textures or colours are used as props to guide intuitive and flexible coding that enhances interpretation, language and understanding within these complex discussions.

Design Academy Eindhoven graduate Nicolette Bodewes (2016) created a tactile toolkit designed to be used in psychotherapy sessions, 'Tools for Therapy' is intended as a "communication toolkit that helps people in therapy express their thoughts". Bodewes designed the kit – which features two sets of objects, round sheets of paper and a workbook – after her own experiences with therapy sessions.

Interviewed in Dezeen (2016), Bowden states, "I went into therapy myself... I came into the situation where I had different kinds of therapies at the same time... After years and years of just having normal talk therapy, I started to have psychomotor therapy and creative therapy, which were about all about visualising". Bodewes found those types of therapy much more helpful, her design project intended to create something that could be introduced into standard psychotherapy sessions.

Made up of a basic set of building blocks, as well as a set of 12 more complex objects based on the Jungian Archetypes defined by Swiss psychologist Carl Jung, the tools are intended to represent different situations, people, feelings or thoughts. Both sets of objects come with a round board of tracing paper for the client to draw on, and a workbook for the therapist to refer to and record notes in.

Pioneering graphic designer Bruce Mau recently argued that the future design workplace was a complex system, that the complexity of problems faced by design required a different kind of team (Mau, 2020). In that context, therapy and wellbeing tools could positively enhance designing by their potential for carrying multiple meanings, facilitating interpretation and becoming props for difficult conversations between participants from different practices who come together as Col's

Life Coaching has brought some of these tools and thinking to designers and leadership in the past decade (Ackerman, 2020) as has become more common to use a coach to support career development, or growth in response to a career. Often used for individual, personal learning, they could offer opportunities if applied within team settings where multiple users were involved simultaneously.

2.3 Conclusion

Existing tools are predominantly focused on supporting and developing ways of thinking and delivering creative outcomes from that. Conversations around those tools are left to a facilitator, or leader, to shape.

In a PD context, Ehn (1988) has described how designers and non-designers enter into a meeting of 'language games' through the prototyping of shared 'artefacts' as centerpieces for those design dialogues. In the Design School context, conversation, dialogue, as an activity within learning, is something that is used in peer-to-peer learning scenarios, group crits. or staff-student tutorials or presentations. In the private sector studios it is used predominantly as a way to direct knowledge, impart and share expertise. Currently neither context adequately promotes active learning.

Dialogue is a powerful cognitive tool, in learning, and in life. it is a bridge between states. There is opportunity to focus in on supporting engagement with design conversations, and through that, learning. Having reviewed the available literature on design learning, participatory design and design tools, it is clear that there are gaps that need to be addressed. Most notably around how conversations are formed, dialogues shaped and learning scaffolded. The Sandberg Institute in the Netherlands has framed design as 'a tool to deal with reality, to relate to complex truths, as a compass to find your way and figure out what matters'. (de Vet 2020)

As such this research project seeks to develop new knowledge through discursive design activities, the creation of dialogues and tangible support tools, as action research 'in the wild'. The intention is to understand learning culture in the workplace, investigate what design dialogues look like and to create knowledge

of where they happen, what they need to do and how they can be supported to become part of a team or community of learning. The next chapter explores the methodologies that I employed during the fieldwork and analysis stages of the research study.

Table 2. Design Tools

Toolkit	Oblique Strategies by Brian Eno and Peter Schmidt, 1975	Maketools, Liz Sanders, 2002	IDEO Method Cards, 2003	Philips Co-create Toolkit, Studio LVWP, 2017
Format	Deck of cards. Now also available as an App.	A 'design language' which consists of a wide variety of 2D and 3d items that facilitate the creation and communication of a diverse range of design concepts.	Deck of 51 cards	The Toolkit is a mobile set of 11 drawers containing 760 abstract and representative objects and symbols. Sections include 3D element which embody a range of themes and concepts such as people, environment, Philips logo, abstract objects speech bubbles, houses, personal care and transport.
Objective	The tool aims to stimulate lateral thinking and help users overcome 'creative block'. User chooses a card revealing a cryptic statement intended to stimulate creativity.	Maketools are "emotional toolkits," which are suited to the generative phase of a project. They are designed to facilitate exchange between 'the people who experience products, interfaces, systems and spaces and the people who design for experiencing". Maketools facilitated 'workshops' usually follows a sequence of Say, Do, Make. Participants create artefacts such as collages, sketch models or diaries that show or tell stories and dreams.	The tools showcase user centred design methods developed and employed by IDEO. Each card describes one method and a story about how and when to use it. Users explore new approaches and develop their own. Methods fall into the following categories: Learn, Look, Ask, Try.	The kit is intended to suppor co-creation workshops and encourage empathy and the human side of innovation. Stakeholders physically communicate their thoughts and ideas using the objects and symbols.
Design Principles (Luck, 2018)	Empower Communities of Practice A. Design and test Tools and Techniques	Situate Design Section 1. Empower Communities of Practice	4. Design and test Tools and Techniques 2. Situate Design 1. Empower Communities of Practice	3. Foster Mutual Design Learning 1. Empower Communities of Practice

3.

ENTANGLEMENT AND methodology CIRCULARITY

Methodological Rationale

ا.۱	Wethedelegical Rationale			
3.2	Pedago	agogical and Professional Practice Rationale		
	3.2.1	Learner-Centered Design		
	3.2.2	Design-Based Research		
3.3	Design	Approach		
	3.3.1	Design Interventionist Persona		
3.4	Action	Research within Design Research		
	3.4.1	Design Methods		
	3.4.2	Methods for Discussing and Analysing Action Research		

- 3.5 Research Ethics
- 3.6 Conclusion

This chapter outlines the overarching research strategy employed in undertaking this study, in response to the deficits in design learning knowledge and practice identified in the contextual review. It examines the development of the project research methodology, and the specific research methods used during two action research cycles of fieldwork. There is also a brief discussion of the ethical concerns associated with the chosen research strategy.

3.1 Methodological Rationale

Design theorists Horst Rittel and Melvin Webber introduced the term "wicked problem" in order to draw attention to the complexities of addressing multi-faceted design challenges. They defined these as "a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognise" (Rittel & Webber, 1973).

The 'wicked' and circuitous nature of this research project, brought together a number of intersecting fields that required a methodology unbounded by traditional disciplinary constraints.

3.2 Pedagogical and Professional Practice Rationale

Design education, rooted in a culture of studio-based learning has largely followed a constructivist approach, founded on the work of Dewey (1959), who posited that learning as an active, constructive process. Conventionally, design students are encouraged to construct and/or create their own subjective knowledge, linking new information to prior knowledge through an iterative creative process akin to Argyris and Schon's double-loop learning model (Argyris and Schon, 1978).

Having been educated within this culture, it was an important personal step to review my own experiences as a design learner, educator and practitioner. I have never explicitly led with methods or a methodological

approach. Instead, I have tended [in my career] to lead with the experience, and the context, I would look at what was happening, ask questions and use design methods & methodology to support the structure of exploring different answers.

Reflecting upon the fragmented story progression of own pedagogical practice (Didion, 2005, Frank, 1995) I was able to identify several methodological approaches that I have consistently drawn upon, either explicitly or implicitly throughout my practice. Reviewing the ways I've worked, across a decade as a design educator, researcher and practitioner, but specifically focusing in on theories that have supported my own learning within the span of time covered in the MRes, there are two which I adhere to. Whilst I followed an inductive research approach, these theories supported investigative practice-based activity, namely the Action Learning aspects of my research process.

3.2.1 Learner-Centered Design

Throughout, I sought to create educational scaffolds - such as Things, and creative interventions - that supported learners developmental growth and needs. This approach mirrored Soloway's learner-centred design (LCD) theory (Soloway 1994). Soloway's approach was initially developed to address the challenge of designing online platforms and software to assist traditional educational delivery models, but I deployed it in tangible, experiential forms.

The concept of scaffolding in central to LCD, where the learning environment is designed to respond to the changing needs of the learner and support the learner as they need it. This approach aligned with the model of a studio tutor who facilitates learning through questioning learners to reflect on what they are learning (Soloway 1996). It shaped how I interpreted my role in 2017 operating within, and leading, multidisciplinary teams in a multinational design studio.

3.2.2 Design-Based Research

My pedagogical practice draws upon the Design Based Research (DBR) method. This learning theory and methodology was initially developed by Collins (1992) and Brown (1992) in the early 1990's, and sought to uncover the relationships between educational theory, designed artefacts, and practice. It has been widely adopted as a methodology for understanding how, when, and why educational innovations work in practice. A group of leading educational theorists and practitioners published a key positioning paper - under the auspices of the Design-Based Research Collective - which stated that the intention of design-based research was to probe the nature of learning, in order to identify generative or predictive theories of learning. They also intimated that the creation of models, rather than artefacts or programmes, should be the objective of the innovationled activity (DBR, 2003).

3.3 Design Approach

When determining an appropriate methodology for the research project it needed to be robust and flexible enough to operate in a variety of contexts, both professional and educational.

Integrative Design is one such approach where the design researcher is not bound by a singular method or discipline, but rather adopts a magpie-like approach of reaching across fields to determine the appropriate methods and theories to develop a cohesive methodology which addresses the research question(s).

Ralf Michel (Michel, 2019) defines Integrative Design as being "not about a new design method, but instead about becoming conscious and about communicating. The point is to acknowledge, as a designer, and in all seriousness, that many people are part of the realisation of new possibilities and solutions, and that the role of the designer is to develop and visualise these possibilities and solutions in a sensual, meaningful, physical and tangible way".

For the purposes of this thesis, integrative design is characterised as being both multidisciplinary and transdisciplinary. In multidisciplinary design, "teams share the knowledge and experience from the viewpoint of their own disciplines, and the result is a co-designed outcome" (Muratovski, 20156). Whereas transdisciplinary

design "is most suitable for working on complex problems for which no single discipline possesses the necessary methods on its own to frame or resolve them (Muratovski, 20156).

By integrating multidisciplinary and transdisciplinary design approaches, I navigated the complexity of the research agenda and evolving question(s), by focusing on the importance of dialogue and communication within design studios to support resilient learning cultures.

The projects' methodological approach has been informed by best research practice within the creative industries and education. It draws upon methods and approaches within research for design (Muratovski 20156), research for product design (Milton and Rodgers, 2013) research for architecture (Lucas, 2016), research through practice (Koskinen 2011), practice as research (Barrett and Bolt, 2010 and Nelson, 2013), researching education (Cousin, 2009 and Jones et al, 2006) and design learning (Powers, 2017).

Through a curated set of activities, I utilised a number of methods, and leveraged a variety of design tools, whilst following a holistically-led design approach. The integration of design research and design practice (designing learning) was integral to this body of research.

3.3.1 Design Interventionist Persona

As a design educator, researcher and practitioner, my pedagogical and epistemological thinking translates into practice (the practice of designing learning). My position is that of a 'Design Interventionist', designing mechanisms that provoke discussion within and between communities of design learning and communities of design practice.

The aspiration for good learning governance and a better learning life needs the correct tools, or improved ways of utilising the ones we have. I have sought to do this through the creation of provocative educational and industry learning products, applying services and methods that seek to stimulate debate whilst instigating positive change 'for', 'into' and 'through' design (Frayling,1993).

Following an inductive approach, I conducted research in order to develop theories that made sense of the experiences, scenarios and learnings (Laurel, 2004), across the extended and evolved nature of the research project, 2016 - 2020.

The research occupied an Interpretivist paradigm. I used an investigative theory building approach, interviewing key stakeholders, and investigating contexts and scenarios. This knowledge was used within an Action Learning vehicle to apply and develop my understanding of how the patterns, theory, approaches - uncovered in the interviews - bore relevance to the specific context of design learning. Following a Constructive Design

Research Methodology informed by Dewey (Dixon, 2020) the project occupies a space beyond 'research through design' (Friedman, 2008).

3.4 Action Research within Design Research

Design Research literature generally agrees that Action Research provides a robust and appropriate framework for the generation of new knowledge through practicebased research activity (Archer, 1995 and Koskinen, 2011).

In his article 'Action Research and the Practice of Design', Cal Swann (2002) outlines the case for Action Research being used as a methodology for practice-based research within the field of design stating that:

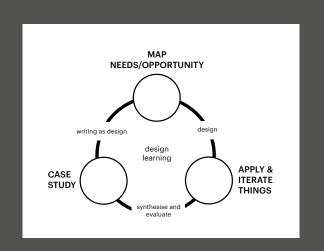
"Action research arises from a problem, dilemma, or ambiguity in the situation in which practitioners find themselves. It is a practical research methodology that usually is described as requiring three conditions to be met. First, it's subject matter normally is situated in a social practice that needs to be changed; second, it is a participatory activity where the researchers work in equitable collaboration; and third, the project proceeds through a spiral of cycle, acting, observing, and reflecting in a systematic and documented study." (Swann, 2002, p. 55).

As a design practitioner and educator, seeking to instigate change within a corporate and academic

context, it was clear that my situation met the conditions outlined above, and therefore it was appropriate to adopt Action Research as a methodology.

This study adopted Susman and Evered's (1978) five step Action Research process, outlined below (Figure 7). Figure 8. details my 'Action-ed' design learning process drawn from Susman and Evered's model.

Figure 8. The cyclical process of action-ed design learning within my research project



The following activities took place during each step of Cycles 1 and 2:

1. Diagnosing

Establishment of research and project objectives with colleagues and stakeholders, review of relevant literature and precedents, reflection on previous experience.

2. Action Planning

Development of a protocol for fieldwork, selection of methods to ensure fulfilment of research objectives, relevant ethical material distributed.

3. Action Taking

Carrying out of the study.

4. Evaluating

Analysis of insights gathered and findings generated.

5. Specifying Learnings

Analysis and presentation of the findings, implications for further research established.

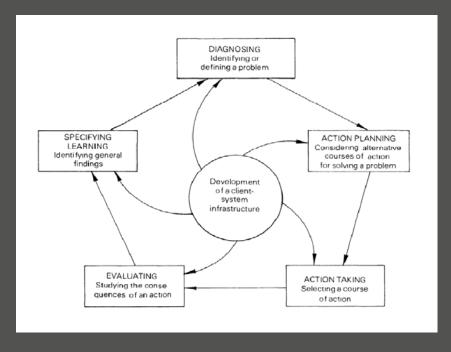


Figure 7. The cyclical process of action research (Susman-and-Evered 1978) Diagram

3.4.1 Design Methods

The combination of tools, toolkits, and techniques that I have strategically put together to address the defined goals of my research project fall under an Action Research heading. Key methods utilised during the action research cycles are set out in Table 3. below.

3.4.2 Methods for Discussing and Analysing Action Research

I adopted a Case Studiy approach to trace, analyse and disseminate the research project. This approach reflected the dynamic nature of the research journey, the evolving contextual settings for the fieldwork and the need to create a bridge between social dialogue and personal reflection.

To quote Yin, "Case studies are the preferred strategy when 'how' or 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context" (Yin 2009).

Table 3. Key design methods (Hanington and Martin,, 2012 and Curedale, 2018) used across the research study.

Thing	Tool	Description
0 70	7070707070	-0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
1(I)	Cognitive Walkthrough	A method that evaluates whether the order of cues and prompts in a system reflect the way people cognitively process tasks and anticipate "next steps" of a system
	Behavioural mapping (adapted to systems)	Method used to systematically document location-based observations of human activity, using annotated maps, plans, video, or photography
	Design Charette When design features and characteristics inspire subsequent round the end result is more likely to be an optimised design solution Body Storming Situates brainstorming in physical experience, combining role-play simulation to inspire new ideas and empathic, spontaneous prototy Card Sorting (adapted to objects) When user comprehension and meaningful categorizing is critical, sorting can help clarify	
		A narrative that explores the future use of a product from a user's point of view, helping design teams reason about its place in a person's day-to-day life
	Flexible Modelling	Given a component kit of parts, users can provide insight into product or interface configurations as guiding information for designers
020	より行うていたらならの	TEFOTOTOTOTOTOTOTO
1(II)	1(II) Creative Toolkits Collections of physical elements conveniently organised for particular modelling, visualisations, or creative play by users, to inform and design and business teams	
	Critical Incident Concepting	Understanding how users experience your product at critical moments can help to optimise the designs for future users
	Cultural Probes	Provocative instruments given to participants to inspire new forms of self- understanding and communication about their lives, environments, thoughts and interactions
	Concurrent Think-aloud Protocol	A method that requires participants to verbalise what they are doing and thinking as they complete a task, revealing aspects of an interface that delight, confuse and frustrate
	Directed Storytelling/Interviews	Allows designers to easily gather rich stories of lived experiences from participants, using thoughtful prompts and guiding and framing questions in conversation

Thing	Tool	Description
0,01		
9	Projective Generative Research	Engage users in creative opportunities to express their feelings, dreams, needs and desires, resulting in rich information for concept development. Projective - focuses on helping users articulate this beyond conventional means
	Evaluative Research	Involves testing of prototypes, products, or interfaces by real potential users of a system in design development
gual.	うりつりつうできずり	
1(III)	Experience Prototyping	Facilitates active participation in design through subjective engagement with a prototype system or service, product, or place
	Flexible Modelling	Component kit of parts, users can provide insight into product or interface configurations as guiding information for designers
	Rapid Iterative Testing & Evaluation	(RITE) a powerful formative usability inspection method that helps teams identify and remove major problems in an interface early in the design process before prototypes are built
	Role Playing	Acting the role of the user in realistic scenarios can forge a deep sense of empathy and highlight challenges, presenting opportunities that can be met by design
	Scenarios	A narrative that explores the future use of a product from a user's point of view, helping design teams reason about its place in a person's day-to-day life
	Simulation Exercise	Simulation exercises are deep approximations of human or environmental conditions, designed to forge an immersive, empathic sense of real-life user experiences
	Concurrent Think-aloud Protocol	A method that requires participants to verbalise what they are doing and thinking as they complete a task, revealing aspects of an interface that delight, confuse and frustrate
	Evaluative Research	Involves testing of prototypes, products, or interfaces by real potential users of a system in design development
20,00	a Op Op Challad.	いし、マストには、マスリボンスとも、とうで
2(I)	Stakeholder Maps	Help to visually consolidate and communicate the key constituents of a design project, setting the stage for user-centered research and design development
	Stakeholder Walkthrough	Bring end users, stakeholders, and the design team together to evaluate early prototypes, providing actionable recommendations for improvements and building empathy
	Flexible Modelling	Component kit of parts, users can provide insight into product or interface configurations as guiding information for designers
Ž	Cognitive Walkthrough	Evaluates whether the order of cues and prompts in a system reflect the way people cognitively process tasks and anticipate next steps' of a system
	Task Analysis	Breaks down the constituents elements of a user's work flow, including actions and interactions, system response, and environmental context
	Scenarios	A narrative that explores the future use of a product from a user's point of view, helping design teams reason about its place in a person's day-to-day life
	Scenario Description Swimlanes	Deliverables that visualise the activities of multiple actors in a flow of events and prove that a holistic perspective is greater than the sum of its parts
	User Journey Maps	A visualisation of the experiences people have when interacting with a product or service, so that each moment can be individually evaluated and improved
	Picture Cards	Cards contain images and words that help people to think about and tell true stories of their life experiences, grounded in context and detail.
	Laddering	Reveals the connection between a product's obvious physical characteristics and the deeper, more profound personal values that it reinforces in a customer's life
Ç	Relationship/Behaviour Mapping	Method used to systematically document location-based observations of human activity, using annotated maps, plans, video, or photography
	Interviews	Direct contact with participants, to collect first-hand personal accounts of experience, opinions, attitudes, and perceptions
	Constructive Generative Research	Engage users in creative opportunities to express their feelings, dreams, needs and desires, resulting in rich information for concept development. Projective - focuses on helping users articulate this beyond conventional means

Thing	Tool	Description
2020	10 10 10 10 10 10 10 10 10 10 10 10 10 1	THE COUNTY OF DESIGNATION
2(II)	Experimental Survey	Method of collecting self-reported information from people about their characteristics, thoughts, feelings, perceptions, behaviours or attitudes
	Laddering	Reveals the connection between a product's obvious physical characteristics and the deeper, more profound personal values that it reinforces in a customer's life
	Stakeholder Maps	Used to visually consolidate and communicate the key constituents of a design project, setting the stage for user-centered research and design development
	Scenarios	A narrative that explores the future use of a product from a user's point of view, helping design teams reason about its place in a person's day-to-day life
Í	Scenario Description Swimlanes	Deliverables that visualise the activities of multiple actors in a flow of events and prove that a holistic perspective is greater than the sum of its parts
	Task Analysis	Breaks down the constituents elements of a user's work flow, including actions and interactions, system response, and environmental context
	User Journey Maps	A visualisation of the experiences people have when interacting with a product or service, so that each moment can be individually evaluated and improved
0 6	17070707070	nder of ofference to the form of ofference of the first ofference of
2(II)	Picture Cards	Cards contain images and words that help people to think about and tell true stories of their life experiences, grounded in context and detail.
	Card Sorting	When user comprehension and meaningful categorizing is critical, card sorting can help clarify
	Cognitive Walkthrough	A method that evaluates whether the order of cues and prompts in a system reflect the way people cognitively process tasks and anticipate "next steps" of a system
	System Behaviour Mapping	Adapted from - method used to systematically document location-based observations of human activity, using annotated maps, plans, video, or photography
	Observation	Requires attentive looking and systematic recording of phenomena - including people, artefacts, environments, events, behaviours and interactions
	Evaluative Research	Involves testing of prototypes, products, or interfaces by real potential users of a system in design development
- Sint	Lead at the	ALL DE CONTRACTOR A PROPERTY.
Self Reflection Thing	Behavioural Maps (adapted)	Method used to systematically document location-based observations of human activity, using annotated maps, plans, video, or photography
	Picture Cards (adapted)	Cards contain images and words that help people to think about and tell true stories of their life experiences, grounded in context and detail.
	Card Sorting (adapted)	When user comprehension and meaningful categorizing is critical, card sorting can help clarify
	Observation (adapted)	Requires attentive looking and systematic recording of phenomena - including people, artefacts, environments, events, behaviours and interactions
	Mental Model Diagrams (adapted)	People tend to behave in ways consistent with dearly held beliefs, the mental model diagram can help articulate root causes behind behaviours and develop solutions that deeply resonate with people
20000	of the property	くってのておくらどかなみがのである。この
Restorative Learning Thing	Value Opportunity Analysis (adapted to storytelling)	Maps the extent to which a product's aspirational qualities align to people's idealised lifestyle or fantasy version of themselves
	Unobtrusive Measuring (adapted)	Used to acquire information without direct contact with participants, through non-reactive physical traces, archives, and observations
	Touchstone Tours (adapted)	Designed as a conversation that uses artefacts and the environment as touchstones for questions and insights
	Think Aloud Protocol (adapted)	A method that requires participants to verbalise what they are doing and thinking as they complete a task, revealing aspects of an interface that delight, confuse and frustrate
	Task Analysis	Breaks down the constituents elements of a user's work flow, including actions and interactions, system response, and environmental context

Thing	Tool	Description
to go;	0,0,0,0,0,0	ON
	Storyboards (adapted)	A visual narrative that generates empathy and communicates the context in which a technology or form factor will be used
	Scenarios (adapted)	A narrative that explores the future use of a product from a user's point of view, helping design teams reason about its place in a person's day-to-day life
	Scenario Description Swimlanes (adapted)	Deliverables that visualise the activities of multiple actors in a flow of events and prove that a holistic perspective is greater than the sum of its parts
	Thematic Networks (adapted)	A step-by-step process that helps to identify, organise, and connect the most common themes in rich, qualitative data
	Interviews (adapted)	Direct contact with participants, to collect first-hand personal accounts of experience, opinions, attitudes, and perceptions
	Mind Mapping (adapted)	When a topic or a problem has many moving parts, mind mapping provides a method of visually organising a problem space in order to better understand it
	Research Through Design	Recognises the design process as a legitimate research activity, examining the tools and processes of design thinking and making within the design project, bridging theory and building knowledge to enhance design practices
	Evaluative Research	Involves testing of prototypes, products, or interfaces by real potential users of a system in design development
6000		TO TO TO TO TO YOUR ON ONE ON
Project Learning	Semi-structured Interviews	I used a semi-structured interview protocol to conduct 2 sets of interviews and one slow conversation [as interview] activity. All observation summaries were categorised into themes (Miles & Huberman, 1994), helping to provide a way of analysing the qualitative findings that reflected the initial research questions, and subsequent fieldwork, in the project.
	Tangible Dialogue Tools	The research project involved the creation of a number of tangible dialogue tools - which are described as 'Things' - to support the design learning framework.
		These can be defined as "a series of collaborative activities involving people (designers and non-designers) using tangible artifacts to represent aspects of their personal experience with the aim of generating meaningful solutions for the issue to solve" (Sanders & Stappers, 2012).
	Reflective Sensemaking Tools	The process by which people give meaning to their experiences
	Journey Maps	A representation that describes step-by-step how a user interacts with a service/experience
	Learning Arches	adapted the Kaos Pilot Arcs developed by Kaos Pilots (ref paper) to help develop a visual language for charting and communicating my research journey (Appendix A)
	Design Wellbeing Wheel	adapted a Life Coaching 'wheel of life' template to become a prototype tool for measuring experience and wellbeing during projects

3.5 Research Ethics

This research project complied with GSA's Code of Practice on Research Ethics. Sourcing appropriate sites for fieldwork and the ethical recruitment of participants can often be a challenge for design researchers who wish to trial tools and methods 'in the wild', and in some cases can deter researchers from undertaking this step. There also exists a tension between the clarity required for gaining ethical approval for academic research activities, and the generative and ambiguous nature of the design process.

In the context of this study, the fact that Action Research Cycle 1 took place in a live commercial context and Action Research Cycle 2 took place in a live educational setting added extra layers of complexity to the studies. The main challenges encountered included gaining the trust and support of key stakeholders, and the generation of a clear plan of activities possible within the constraints of my professional practice and teaching, whilst remaining open to emergent possibilities.

Cycle 1 was undertaken whilst employed within a multinational design studio, and as such, the work undertaken is subject to a non-disclosure agreement. Accordingly I have anonymised all colleagues, clients, stakeholders and project information. Note that only developmental activity, designed and developed explicitly by myself, is used, and no deliverables or assets are included in the visual or textual discussion.

Cycle 2 was undertaken whilst employed by the National College of Art and Design (NCAD) as a Lecturer, and as such the work undertaken was subject to NCAD's Code of Conduct and Research Ethics policy. I have anonymised details of students, and sought written permission to include details of colleagues and the curriculum which was subject to NCAD's Intellectual Property policy in the context of this study,

3.6 Conclusion

This chapter outlined the methodological approach that was employed in this research study and discussed the rationale behind the selection of Action Research as a framework for this study. A five-stage cyclical Action Research process was identified (Susman & Evered, 1978), and the role of a framework and use of tangible dialogue tools in this study was defined. The chapter concludes with a discussion of the methods proposed for coding and analysing the diverse range of fieldwork to be undertaken, and an outline of the project's research ethics.

4.

PLAUSIBLE fieldwork SPECULATIONS

- 4.1 Creating Dialgoues
- 4.2 Opening Conversations about learning
- 4.3 Learning Topology Conversations
- 4.4 Framing the Participatory Research Journey
- 4.5 Cycles, Studies and Things Research Fieldwork
- 4.6 Case Study 1: Thinking with Tangible Tools & Props
- 4.7 Case Study 2: Designing Services Through Participatory Research Methods
- 4.8 Case Study 3: A Self-reflection Tool
- 4.9 Case Study 4: A Restorative Learning Model
- 4.10 Concluding Design Conversation
- 4.11 Conclusion

This Chapter sets out the fieldwork conducted within the research study, across two Action Research Cycles, four Case Studies and seven Things. The work undertaken in these Cycles is framed by conversations that were conducted at the beginning and close of the fieldwork, with key sectoral figures. These dialogues shaped the research direction, the analysis, and development of future research directions.

4.1 Creating Dialogues

Adopting an autobiographical approach, grounded in autoethnography, enabled this thesis to frame the fieldwork with conversations that 'tell' and 'show' its research story in an engaging and evocative way. This approach provides readers with some distance from, and perspective on, the immediate events of the research journey (Adams, 2006, Lamott, 1994, Ellis, Adams & Bochner, 2011).

It was relevant to have a change-conversation in 2016, because the Design School was in a perpetual state of crisis, struggling to do what was needed. Then, it was appropriate to look outwith the School for a provocation to create change.

It was necessary to return to discuss a perspective shift in 2020/21 because both design practice and learning were suddenly distanced experiences, so too, their relationships and definitions. It remained pertinent to shape a dialogue around expanding the view and creating change in the bigger ecosystem by finding a fresh perspective on design learning. It has to adapt. Design Learning has to learn new ways to talk for, into and through design.

4.2 Opening Conversations about learning

In 2016 I conducted a series of informal interviews to gain an understanding of industry and sectoral perspectives - within private sector practice and the Design School - on the future of design learning. These

allowed me to test initial research questions, aims and objectives. I interviewed a set of leading institutional figures in the UK and Ireland to understand their viewpoint, identify key themes, and create a compass for my research journey. Full biographies and sample transcripts are in Appendix B. Pivotal points from the conversations can be seen in Figures 9., 10., 11., 12. and 13. Job titles were correct at the time of interview.

John Mathers

CEO of the Design Council, and former President of the Design Business Association.

Toby Scott

Former Director of the Design Council, and co-author of the Double Diamond model of the design process. He is a facilitator and Design Thinker with Knowinnovation.

Karen Hennessy

CEO of the Design and Crafts Council of Ireland and Vice President of the European Design Associations. She was the CEO of Irish Design 2015.

George Boyle

President of the Institute of Designers in Ireland, founder of the Fumbally Exchange.

Key Take-aways from the Opening Conversations include:

Disciplinary differentiations slow or stop collective action, thinking and are a block to creating change as,

In ten years time if your company doesn't have a chief design officer, it'll be like not having a Chief Marketing Officer. There is acceptance and understanding of the need for design and how it helps companies succeed. The story in the investment community, is that, if you don't have a designer on the board then it will be very hard for the organisation, and you are less likely to get funding. So that is my prediction: there will be a key design officer-type role that is as important as the marketing role...

John Mather, 2016 CEO Design Council UK

through and in the design sector.

- Ongoing learning, CPD in industry, either doesn't happen or it is disconnected and this could be a bridge/connection with Design Schools.
- Incremental change hasn't created change, a systemic shock is needed.
- Design is needed by business/enterprise, but those sectors have to move forward from using design as a selling tool - it is up to design, as well as multinationals & businesses to change this.
- Business/enterprise can become design-led by thinking about how to change their culture, not just by adding in design on top.
- Design educators need support to evolve and continue learning themselves - to encourage them to adapt & change with technology and needs, to experience the system from a user's perspective and to provide time/space to innovate design learning.
- Moving from design learning in the Design School to working in design is not an easy transition, there's little support for graduates from, or in, schools and industry doesn't have the infrastructure to necessarily provide it.
- Design can be intimidating to a business/enterprise, but at the same time, they apply it without fully understanding what terms, actions, thinking means.
- It is not necessarily about doing something else, or new, but working into what is already there to develop it - strategic approach to how existing

elements can be better connected.

 Agencies, bodies and organisations are creating interesting models that are attempting to create change, it could be about connecting those 'models'. There needs to be the education sec of re-training the staff and I think th idea translated for something that ha be something that bigger scale.

What you need is a actually take that it's valuable and in

a real shake up within tor ... some process existing teaching e Design Academy r staff could well be ppens, but it needs to t happens on a much

an institution who will up and recognise that nportant...

John Mather, 2016 CEO Design Council UK The critical thing about transformative people to have that transformative it's done at speed and collaborative collectively, has that 'moment' and behaviour. It's not that they know a it. That, in transformation terms, is real change.

I always use stories. The story is a wall tell you a story, you own that story you. I could go further by getting you to share a visualisation of some getting you to go and try something physically doing something; you're

That activity allows you to achieve to speed because you're changing qui and narrative, together. Moving bey Visualising at speed is critical...

breakthrough, but that ly. So that everybody, that then changes their hd absorb and understand where design can trigger

ray of visualising things. If I hat story has influenced ou to draw things, getting thing. Or, even better, out so that you are building to think.

things at a really radical ckly, through experience yond talking is critical.

I think the opportunity is he coaster and go for the wild how people engage in all so societies are shaped, the p bodies work...all of those the influence on, but the power don't think that's yet happe how the community acts ar happening. And there has t want to do it. And if those t coaster will go on without u

Design shapes civilisation, I know the think that there's always been a tractive catalyst for civilisation's progreshift starts with creative thinking, a make that acceptable.

The original inventors of the steam computer, didn't do so well, it was t desirable, beautiful, want-able, that

ere for us to get on the rollerest ride and actually really change orts of ways of doing business, how olitical systems, how governmental nings design can have a huge r has to be recognised first, and I ening. There has to be integrity in nd moves, and I don't think that's o be determination, a will and a hings are not engaged, the roller-IS.

nat's a big claim, but I actually ditional view that invention is ss, but I think the paradigm and designers managing to

engine, the aeroplane, or the he people who made them treally made them inventions...

George Boyle, 2016 President, Institute of Designers Ireland I think people have separated creator many decades, hundreds of year every human's nature, and I think and matured and brought out to confar you take that is a matter of eduaccess and exposure, a matter of those are the reasons that college connect cultural experience, with

It's the same in design as in many disciplines, I think that people carby the word 'design' and the idea of and more we're seeing people reaits value and its scope to create so immense profit.

Karen Hennessy, 2016 CEO, Design and Crafts Council of Ireland

ativity, culturally, ars really... it sits in it has been cultured ertain levels. How cation, a matter of curated experience... is exist. To curate and out boundaries.

other creative n be a bit intimidated of 'design'. But more ch out and recognise ocietal value, and also

CYCLE 2 Framing the Research Project **Participatory Framework** Study 4: Restorative Learning Thing This Case Study explores new frameworks for design learning and offers an opportunity for engaged validation, ongoing evaluation and to apply the knowledge generated in this research project. This Thing identifies future research opportunities, and is pivotal in the development and implementation of the research dissemination plan. CYCLE 1 **Reflective Participation** Study 3: Wellbeing Wheel This Case Study explores the potential for capturing reflection as a way to value and measure wellbeing CYCLE 1 **Active Participation** Study 1: Thinking with Tangible Tools & Props Study 2: Designing Services Through Participatory Research Methods These Case Studies aim to uncover the potential for participatory design learning activities which could address a number of team and project problems that ordinarily become barriers to successful delivery. 1. Empower Communities 4. Design and test Tools **Participatory Design** 2. Situate Design 3. Foster Mutual Design of Practice - through working Learning and Techniques **Principles** - by finding ways to directly with people - by designing and - that actually, in give a voice to those who to understand testing tools and practical, concrete, may be invisible or weaker actions actually in, methods that not only specific situations, in the organisational or 'in the wild' settings. encourage but enhance helped different community power the understanding and participants to structures. learning of participants communicate their through finding common knowledge, vision and ground and common role/contribution. ways of working within the context. **Phases of learning** rehearsal | off-stage | on-stage | cool down Criteria for Learning (a) Enhance dialogues between multidisciplinary team members within the context of a design-led project (b) Increase the impact and role of interviews, and the data gathered therein, on how projects develop (c) Move beyond conventional storytelling models of communicating research and towards 'storying'

4.3 Learning Topology Conversations

In 2016 I spoke to a range of design practitioners, to take an Inventory of how learning manifests in professional designers lives. Based in the UK and Ireland, participants covered a spectrum of roles and capacities: a self-employed practitioner, an employee at a small-medium strategic design agency, a creative in a multinational media company, a small retail business owner and somebody who worked in design/tech recruitment whilst running her own design business.

The intention was to capture what design learning looked like, and to use these Inventories as a way to understand patterns that could indicate the sectoral needs. This activity addressed question (D) of the 2016 research agenda (Table 1) in that it created a sample set of data of what learning looked like in the design industry, in 2016. This activity is detailed in full in Appendix B.

Key Take-aways from the Inventories include:

- There may be 4 phases of learning rehearsal, offstage, on-stage, cool down.
- Solitary and collaborative learning were critical, and dependent, but distinct.
- Common language used throughout includes: observing, absorbing, collaborating, questioning, sharing, informal, practicing, involving.
- When discussing peer-to-peer working, or situations where they felt equal, participants used a common language, words such as: observing, absorbing, collaborating, guestioning, sharing.
- Learning was defined by experience childhood learning encounters, professional/kit restrictions, work setting and openness to learning within workplace.
- A desire to do learning for work, at work, and it being acknowledged as part of working, is important to the learning culture and habit.
- Learning was defined using words like: constant accumulation, everyday, curiosity, personal growth, giving back, gathering, cataloguing, structured, new, interest, building connections.
- Learning continued when participants 'switched-off' and this was a critical part of the learning process most undertook solitary activities that involved using motor-skills and full focus on a simple, repetitive, known physical tasks.

4.4 Framing the Participatory Research Journey

Across five years, this research project has evolved alongside the discovery process, my personal and my professional learning. In 2019 I was invited to Canterbury University in Christchurch, New Zealand on an Erskine Fellowship, which led me back into lecturing and

teaching in 2020. Which, in turn, altered the course of the second Action Research Cycle.

My primary research question in January 2020 was how I might frame and review the critical impact and interlinked value of the activities.

Although a range of projects were undertaken during the fieldwork, this thesis critically discusses only a curated set. This chapter sets out key projects as Case Studies, aligned to a set of criteria: four phases of work-based design learning that were identified within the Learning Topology conversations, to Huybrechts delineation of Participatory Design process (2014), and to Luck's principles (Luck, 2018).

The intention of the Studies were to:

- (a) Enhance conversation between multidisciplinary team members within the context of a project.
- **(b)** Increase the impact and role of interviews, and the data gathered therein, on how projects develop.
- **(c)** Build out from conventional communication of research findings to move beyond storytelling and toward storying.

Combined, this created a formative 'frame of work' (Table 4) for the critical discussion of the research activity in this fieldwork chapter, and the evaluation of value and impact in Chapter 5.

4.5 Cycles, Studies and Things - Research Fieldwork

These Case Studies include participatory activities, objects, artefacts, conversations and material. Understood collectively, they are termed 'Things' for the purposes of describing all the items associated with each participatory activity (Huybrechts, 2014).

Following Antonelli (2019), an 'expanded view' was applied within the work-place and project-place, specifically within the context of problem solving, Design Things (Bjogvinsson, Ehn and Hillgren, 2010) were used as mechanisms to realise change as a critical driver for learning, addressing question (B) of the 2016 research agenda (Table 1).

Outlined in this chapter are four Case Studies carried out within the fieldwork. They are described within two Action Research Cycles. They are delineated into three classifications of activity. This created a typology of participatory approaches. Studies are strategic, change-driven explorations of Participatory learning, concepts and thinking, situated in real-world contexts. Activities were classified as different kinds of participation, to form an elementary typology for the Design Learning research, this included, active participation, reflective participation and participatory framing.

Each Study is evidenced by design experiences, field notes and artefacts (Jorgenson, 2002), communicated in this chapter, each following the consistent structure of:

- Overview of the Case Study and Things contained therein.
- Table that outlines the Study aims, objectives, activities, date, methods, classifications and observations.
- Visual essays documenting [aspects] of the Things in action 'in the wild'.

Each study aims to describe the culture around, and within, the projects contained therein (Goodall, 2001), in order to tell the story of the research journey accurately. It adheres to a robust autoethnographic methodology.

4.5.1 Sites for Fieldwork

CYCLE 1

The first three Case Studies were undertaken within live projects whilst working in a multinational design studio (2017-2018) as part of multidisciplinary teams, in a Lead & Senior Service design or Design Researcher role.

Part of a multinational company, the studio was based in an innovation hub alongside disciplinary pillars that included data analytics, software engineering, life sciences, and design. The core business was to attract new SME and large business clients through innovative services, and to use design-led thinking to drive innovative for their existing blue chip clients.

Projects were multi-disciplinary, led by the team which had the most resonance with the client problem. Projects operated within an Agile framework, and moved through a stage-gate development model:

- 1. Opportunity assessment.
- 2. Kick-off, identifying a problem to solve.
- 3. Proposing solutions for the problem, initial research, & prototyping, validation.
- 4. Building out from prototype to create a realised product.

At each stage-gate a modified team is assembled to take the project forward. Each stage ended with discipline specific team reviews to generate 'lessons learned' and project reviews.

CYCLE 2

The fourth Study, a Restorative Learning Thing, was located in the Undergraduate programme of the Design School at the National College of Art and Design (NCAD) in Dublin, Ireland. It was a prototype thematic learning programme that was delivered within their Studio+ offering (an optional one year programme of credited professional or alternative learning between 2nd and 3rd Year) and delivered in a remote learning model to twenty-three, students.

Action Research Cycle 1

ACTIVE PARTICIPATION PROJECT

4.6 Case Study 1: Thinking with Tangible Tools & Props

Project Description

A security project for a multinational oil & gas company provided an opportunity to explore the potential of enhanced conversations that could improve thinking, as well as communication, for a very complex problem and brief.

Introduction to challenge areas

The core driver for the interventions I made was the level of complexity: the problem was more complicated than any of the team had encountered previously, which impacted on behaviour, narrative, efficient working and leadership.

We were led to spend considerable time circling around in early weeks, trying to understand what the problem ask was, getting it wrong, re-starting, repeatedly. This wasn't necessarily a bad way of working, but compounded by leadership not being present, by the Project Leader pursuing a different trajectory than the client understood, and by several tiers of client leadership being involved but not necessarily communicating transparently with each other or the project team, the tech-loved 'fail fast fail often' approach, led the project to stall completely.

It was a complex problem, compounded by an ill-planned team and confusing leadership & direction. As the unofficial design team lead - I was left to steer our group from a design and research perspective. The experience, from start to finish, was messy.

Participatory Research Approach

Within a pre-portfolio phase, a client problem - this was for an existing client of the parent company, brought in by the account lead - was investigated for its innovation, research and development capacity.

A Participatory Research approach was used to help develop techniques for thinking together, as opposed to just prototyping or creating together (which was the standard application). The team was disparate in its knowledge-base, so knowledge sharing and creation was the primary aim of the activities.

Research Structure

Iterative dialogue-based activities to establish and grow communal knowledge across the team to enhance design approaches to stakeholder needs.

Participants

9 internal team members, 1 director, 2 project stakeholders, 1 client account lead plus 3 expert groups of 'white hat' hackers (worked for the parent company)

Rationale

To embed shared understanding of the project scope, and how each pillar could contribute relevant knowledge, equally to help solve for it. To develop shared ways-of-working that would develop into productive collaboration during project-time

Process

Three iterative approaches were employed with the ambition of establishing a research approach for future teams addressing complex problems at this first pre-pitch phase, as well as generating and transferring knowledge within this project.

Conclusion of all activities within Study 1

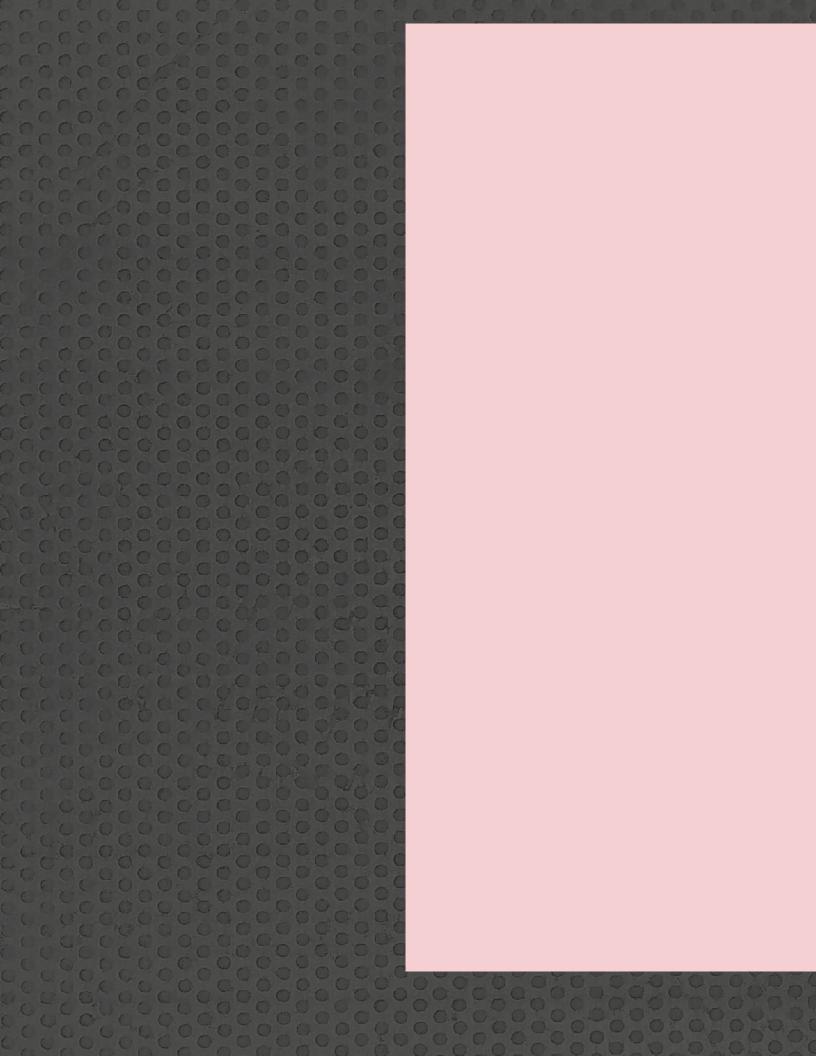
The interventions I made did not greatly impact on the project outcome or direction because senior leadership dismissed them - for being too 'artistic'. However, the impact on the whole team, as well as some of the design team, was incredibly positive. In terms of 'opening eyes' to what design could really do to improve working process, these activities were very successful.

What I learned in the process of developing these participatory things for this project is that participants responded better to rough unfinished, unpolished objects or props, they enjoyed the idea that their conversations using the object or artefact were helping shape it into a better, more finalised prop. Restrictions, spontaneity and unexpected elements of the activity resonated with all pillars and disciplines: perhaps it was a reflection of their everyday ways-of-working, or work, but the opportunity to be surprised, to think fast without consequence, to be playful seemed to generate stronger thinking and more productive conversations.

The response of senior design leadership was unexpected, but in reflection, it was a sign of how far 'participation' still has to go within corporate design practice. It was also an indication of how the unpolished, unfinished or spontaneous tools can be read very differently, by non-users and therefore appropriate communication material ought to accompany any activity or tools.

Within this Study, I discuss three Things:

- (I) Team Alignment Thing
- (II) Conversation tool Thing group meeting and individual informal interviews
- (III) System Mapping Thing



(I) Team Alignment Thing

Project problem/barrier & participatory response

TEAM WORKSHOP SESSIONS

After the first two weeks, sensing that the control mechanisms for the team, as well, as the project were not in place, I saw the design team fracture over our inability to understand what the problem statement meant. The project team interactions became increasingly fraught because nobody knew where to start with the direction we were given. I introduced the idea of a 'team alignment' session.

Aim

Bring the team together, discuss what we think the project goal is, share and understand terminology, and attempt to find a common way forward

Objectives

- To generate general knowledge of security for oil & gas sector, issues, solutions, potential challenges and key directions previous investigations have taken.
- To determine, through collective activity e.g. workshops what the specific problem is that we can solve for, and where the value lies in terms of innovation and research for the studio.
- · To develop a body of transferrable knowledge that can be passed on to other teams,
- · To make our approaches and methods replicable for other teams.

Date & Duration	Participatory Deisgn Principle	Phase of Learning	Criteria for Learning
July - August 2017 (project duration: 5 weeks)	Empower Communities of Practice - by finding ways to give a voice to those who may be invisible or weaker in the organisational or community power	OFF STAGE	(a) Enhance dialogues between multidisciplinary team members within the context of a project.
Methods	structures.		
Cognitive Walkthrough Behavioural/Sytem Mapping Design Charette Body Storming Object Sorting Scenarios Flexible Modelling	3. Foster Mutual Design Learning - by designing and testing tools and methods that not only encourage but enhance the understanding and learning of participants - through finding common ground and common ways of working within the context.		

Activity

The team members were called together for a working session with diaries blocked out for 2hrs but no indication of how we were delivering that session. We began with a simple agenda: to create a rough prototype model of the organisation, and to share knowledge and language so that everybody could discuss this project on an equitable level.

The activity consisted of a physical modelling activity, a question and timed response using the props, and a drawing aspect which we did on an interactive whiteboard.

Facilited the workshop using everyday 'tools' that are known to all, keeping them simple and recognisable - wooden childrens' blocks, coffee cups, stirrers etc. from the staff kitchen - made the group laugh when they came in to see it all on the tables. The use of boundary objects in this session were critical to its success.

Knowledge/value generation observations

Overview

- The child-like, 'throw-away' nature of the tools and props meant that the group proceeded with less caution than in a conventional meeting
- · They almost dismissed the exercise as not being critical, because the tools were playful, and therefore used them without inhibition
- · Created stronger ideas and free communication: the real value was the generation of conversations that took place.

Modelling activity

- · Tacit knowledge was generated through discussions about what block represented what aspect of the system or infrastructure
- Through questions from others in the group about how said blocks might connect, why they were positioned where they were
- Through debate about what different aspects of the model were called and why.
- The knowledge generated falls into a category I'd describe as 'project way-finding' focused on technical terminology, understanding of systems, technical processes or purposes.

Question and timed response activity

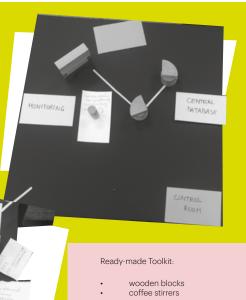
- Participants worked as a group to physically make assets (paper coffee cups) secure, using whatever was in the room. People
 used tables, chairs, and made very bold security models for the cups.
- · Fast thinking and communication on the simple idea of what security in a system looks like.
- The high spirited debates and arguments that took place while tables tumbled, cups got crushed and assets were stolen, encouraged the team to act out the roles intuitively - very real questions and realisations occurred because of real physical involvement and play.

TEAM ALIGNMENT THING

Prototyping a System Model







DATABASE

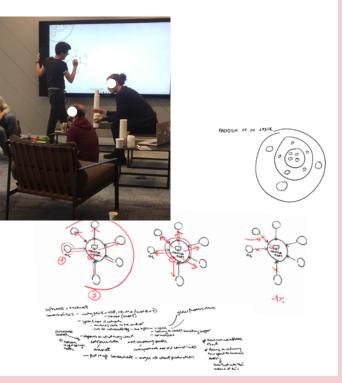
post-its paper cups small tables digital whiteboard



Thinking through doing - modelling

Bringing the team together to share knowledge on the complex project problem required finding a method for communication that would be understood across all disciplines. Using familiar, everyday items in the staff kitchen, we were able to talk and build quickly, to iterate and adapt models collaboratively.

Critically, the activity focused conversation on the generation of shared knowledge, as opposed to the differentiations in understanding. Within the session the team worked between the digital whiteboard and modelling to discuss selected questions about the problem area. A common language and baseline of understand was developed in this short session, and that encouraged a team approach to the problems.





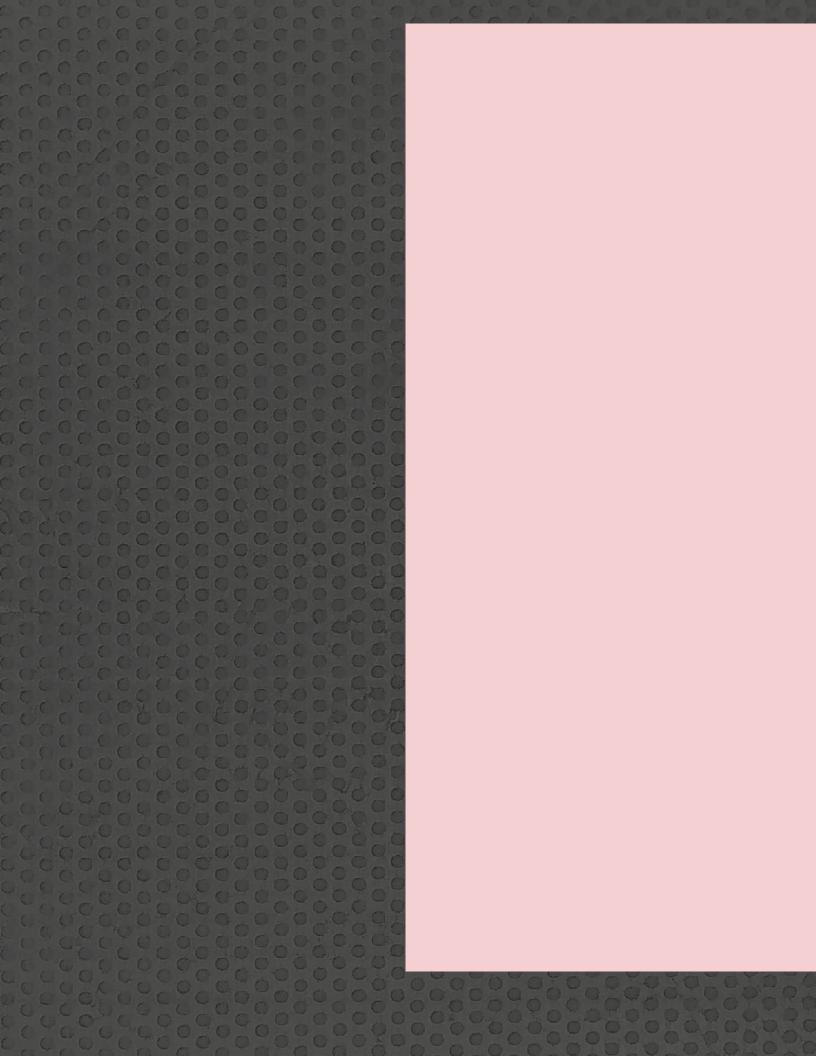




How can we secure a system? - Question & Response

During the session, conversation moved toward the question of what we meant by 'secure'. We all had different ideas of what that might mean, so we tested our security notions using readymade vessels. Team members from Internet of Things, and Advanced Analytics led us through testing possibilitites.





(II) Conversation Thing

Project problem/barrier & participatory response

GROUP MEETING AND INDIVIDUAL, INFORMAL INTERVIEWS Meetings led to increased frustration and people returned with questions remaining to be answered, discussions still to be had, problems and project blocks remaining. This slowed progress, and there was complete inaction on a number of agreed designled tasks. Several of the design team left the project, there was disaggregation within the design team as well as project team

Aim

Introduce small interventions that might, cumulatively, stimulate movement on project action points and lead to a shared feeling of making progress toward something

Objectives

- · To find ways to enable conversations to happen, and be constructive
- To create access to different knowledge held by team members
- · To create spaces within the project workday that felt open to everyone, constructive and without animosity

Date & Duration	Participatory Design Principles	Phase of Learning	Criteria for Learning
July - August 2017 (project duration:5 weeks)	S. Foster Mutual Design Learning - by designing and testing tools and methods that not only encourage but	REHEARSAL	(a) enhance dialogues between multidisciplinary team members within the context of a project
(project daration weeks)	enhance the understanding and learning of participants - through finding common		
Methods	ground and common ways of working within the context.		
Creative Toolkits Critical Incident Concepting Cultural Probes Concurrent Think-aloud Protocol Directed Storytelling/Interviews Evaluative Research Projective Generative Research	4. Design and test Tools and Techniques - that actually, in practical, concrete, specific situations, helped different participants to communicate their knowledge, vision and role/contribution.		

Activity

A low-fidelity dialogue tool for a meeting about preventing a cyber security breach (an attack, on the system).

A team meeting was scheduled to discuss the expert interview findings and understand the technicalities of a cyber security attack. Having attempted to get the visual designers to tell the story of an attack, using photography of wooden blocks, to no avail, the design team and creative technologist storyboarded an attack with simple diagrams.

From this, we simplified the storyboards down to a three step visual graphic analogy: a semi-circle, a line, and a triangle figure. This is something we thought could be an accessible visual talking point in the meeting.

Thinking about how effective the physical aspect of the Team Alignment 'thing' was, I quickly made a bowl shape with clay to represent the semi-circle in our visual graphic, and placed marbles in it to represent the assets that the system protects.

Knowledge/value generation observations

Team Meeting activity

- In the meeting, after the initial nervous laughter of a clay bowl being put on the table in a hi-tech innovation hub, the engineers, creative technologist team member and project leader began prodding the bowl.
- The creative technologist described an attack by moving the bowl with his finger, talking about the way the assets moved
 together the more we added, but moved independently when there were fewer which suggested that perhaps instead of
 isolating and protecting the valued assets, we should add more, something, we discovered was actually how they approached
 securing systems.
- By the end of the meeting, the bowl had been altered, returned to a bowl shape, had additional props added and removed...
 it had become a device for prompting and thinking as a group.

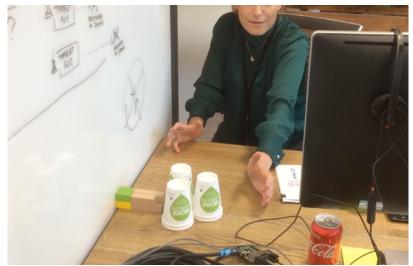
Informal interview activities - video/visual in person - with colleagues who had security/systems knowledge

- Tested some of the props used in the Team Alignment (Thing I) in a one-to-one, interview format
- · Participants were asked to show me what secure looked like, using materials either on their desk or that I brought
- Participants were genuinely excited by the format and activity seen as a break from their work
- · The level of creative thinking recognised by team members across all domains was exceptional.
- · Not having advance notice or time to prepare was positive restricted time and materials forced them to think freely
- The team were asked to make and describe their process they all appeared to either talk & do simultaneously, or create a test build then describe it

CONVERSATION THING

Tools for Creating Dialogues







Informal video interviews: Show me what secure looks like?

Using only what was available to them on the desktops, a data analyst, brand & business designer, software engineer and creative technologist were asked to demonstrate how they might make a system [of paper cups] secure from attack. These 'on-the-fly' research interviews were very effective for sense-checking the ideas and ways the team interpreted a secure system during development of the Alignment Thing.

Vulnerability bowl test (pass - MRes)



Interviews (password - MRes) https://vimeo.com/500144283

Talking about vulnerability and controlled breaking points

- Group Team Meeting

In advance of a team meeting about the vulnerability of the software security system, colleagues and I mapped out a conversation about protection & vulnerability, using simple diagrams and text prompts.

For the meeting I brought in a lo-fi dialogue tool - a quickly made clay bowl - to use as a prop in the conversation we had prepared. The bowl acted as a form of boundary object, helping facilitate dialogue, creating mutual understanding, between the team The prop allowed our Creative Technologist to discuss and demonstrate, in an accessible way, how a single asset is more vulnerable to attack than a set of assets -the more marbles that were put in the bowl, the slower they moved, and in a more controlled way.

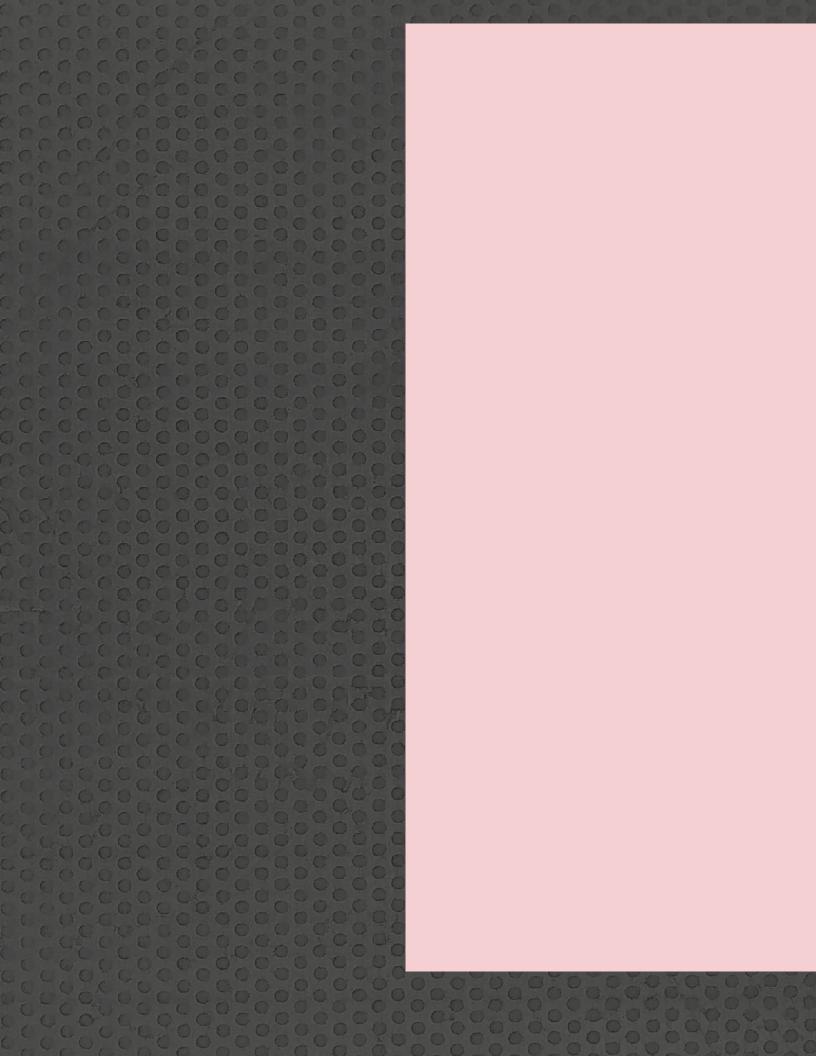












(III) System Mapping Thing

Project problem/barrier & participatory response

The initial task for the design team had been to create a model of the physical infrastructure, systems and potential system weaknesses; the direction was that this should be a tangible aid for client workshops in the next phase.

For a variety of reasons this tool was not realised. During the second month, when project ideas had progressed a little, team members concluded that having a visual or tactile model could help conversations and thinking within the team move forward more fluidly.

NOTE: we had been directed not to pursue these kinds of conversation tools, this 'model' was developed as a personal exercise.

Aims

To develop a lo-fidelity, tangible system map as a prototype to develop thinking around how a fully interactive digital table could function, and be used to generate research insights and become a tool for future design research project needs.

Objectives

- To develop a model that could use everyday, recognisable objects to represent the system thereby making a complex problem more accessible to everybody.
- · To test how objects could relate to each other and establish what elements of that system are needed within the model.
- To test practical aspects of creating an interactive model effectively.

Date & Duration	Participatory Design Principles	Phase of Learning	Criteria for Learning
July - August 2017 (project duration: 5 weeks)	If the tool had been progressed and applied, it could have addressed:	designed for: ON-STAGE	(a) enhance dialogues between multidisciplinary team members
	4. Design and test Tools and Techniques - that actually, in practical, concrete,		within the context of a project
Methods Experience Prototyping Flexible Modelling Rapid Iterative Testing & Evaluation Role Playing Scenarios Simulation Exercise Concurrent Think-aloud Protocol Evaluative Research	specific situations, helped different participants to communicate their		
	knowledge, vision and role/contribution. 3. Foster Mutual Design Learning - by designing and testing tools and methods that not only encourage but enhance the understanding and learning of participants - through finding common ground and common ways of working within the context.		

Activity

A system model was prototyped using everyday household objects, Bare Conductive electric ink and a Raspberry Pi board. We created an arrangement of connected artefacts that represented the elements of the infrastructure and system.

The proposed table model would use flat graphics on the base to add a further layer of information. Zoning methods - large abstract graphic shapes - were tested using way-finding vinyl on studio floor. With concentric rings of electric ink around objects, we tested levels of attack & defence that users could visually and tactfully play with during workshop conversations.

The idea was that with this design-led, lo-fi version of the model, participants (including client stakeholders) could take part in directed discussions about security ideas the team had been having. Throughout the proposed activity, participants would add notes to the table/objects, key learnings, functions, potential developments etc. so that we could then build those into the function of the model when it moved toward a fully interactive table with programming aspects.

Knowledge/value generation observations

- We created a first rough prototype to test individual objects/ideas. This allowed us to discuss how they might represent different elements and how they could function if they were fully digital. The prototype created opportunity to play with concepts of what an interactive system model could be if it was design-led instead of tech-led.
- By 'connecting' lo-fi dialogue tools to sounds or lights, gave the user an immediate sense of action and consequences without having to imagine it (as had been the case with previous conversation tools, props).
- In terms of this being a viable approach to enhance discussions about security breaches in a system, this basic level of interaction between team members and stakeholder was effective.

SYSTEM MAPPING THING

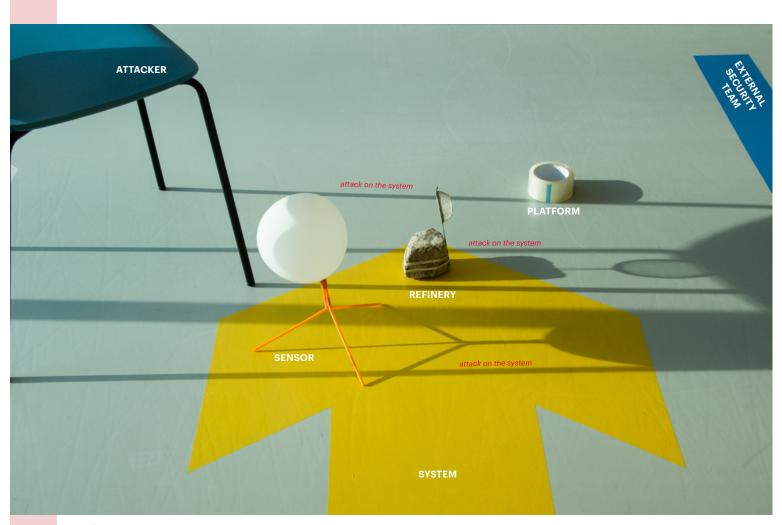
Testing a Model for Thinking

Lo-fi digital prototyping

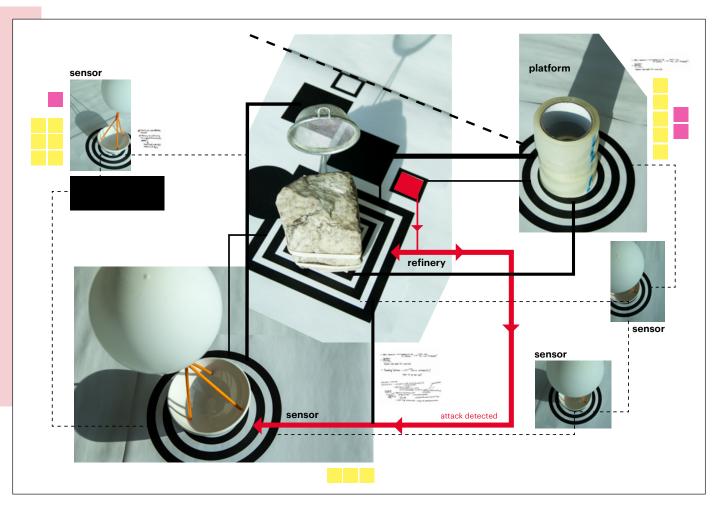
This 'fast and dirty' system model made use of familiar materials and objects to build an interactive model using conductive ink and an Arduino kit.

The purpose for this mock-up was to create a model of the security system for the team to talk through ideas of how to work with stakeholders in a workshop where we'd co-develop an approach to innovating the security system. The intention was for this to be a playful model that would grow into an IoT digital asset for future stages of the project.

The ambition was to design something that stakeholders would feel comfortable moving, taking apart, or re-building themselves during the workshop as they discussed where potential interventions could be made to improve their security.



System concept test



The model was based on our understanding of the existing system, connections, vulnerabilities etc. The digital table-top itself can be written on during the workshop as a way to collect additional thinking/notes.

Table-top model as participatory Research tool

Using simple digital post-it note tagging, the workshop group would add information - generated through participatory exercises - to supplement the knowledge already gathered from project research.

As exercises and dialogues take place, our team add, remove, remodel aspects of each part of the system as necessary. Additional connections, breakers or assets can be introduced as they come up in conversation.

The artefacts could be moved around on the bases, removed from the circuit or additional conductive conduits can be inserted. With this flexibility we could play out attack journeys on the model, and fashion new assets to be inserted as we discuss preventative measures or planning for Internet-of-Things security enhancement.

Action Research Cycle 1

ACTIVE PARTICIPATION PROJECT

4.7 Case Study 2: Designing Services Through Participatory Research Methods

Project Description

This was a project driven by data analytics and interaction design, in Phase 2 of the inhouse innovation process. The team was tasked with building an A.I infused platform that enabled quick and accurate end-to-end mapping and validation for Zero Based Supply Chain (ZBSC) Visibility Phase, and fed seamlessly into the downstream ZBSC process.

An internal project for the parent company, the users of the product were management consultants and senior managers who delivered the Visibility Phase of the Zero-Based Budget (ZBB) Spend Mapping process for global clients. Some of these management consultants and senior managers were actively involved as stakeholders in this project, along with global directors who had oversight of the direction.

Introduction to challenge areas

There were latent challenges with this project that had surfaced in the first stage of its development prior to our team joining. At the time, when generating the direction for design research within this project these challenges could be outlined as:

- Creating and sustaining synergy between the diverse team who are working on different, distinct aspects of the product exploration.
- Ensuring that design works within an agile framework

 translating our research ways-of-working from
 project goals/tasks, to epics, stories etc.
- Not having clear design epics or activities in the initial planning made it very difficult for us to validate and define our confidence in each Sprint Review.
- Managing stakeholder expectations for a live, real product delivered ASAP, with studio requirements for a Phase 2 project.

Participatory Research Approach

How Might We design a participatory approach to gathering the required project information from stakeholders (accountants) that has parity across each interview experience, and enables us to get richer knowledge than previous research gathering attempts and with this, how can we disseminate the learning in a holistic way?

Within this second stage project we used a Participatory Research approach to develop a body of knowledge in collaboration with the product users, with the team developing it and with those managing the process.

The rationale behind the choice was to create an open framework of ongoing learning (not just synthesised research outputs) owned by everybody involved with the product. This approach not only developed our collective understanding of the problem, but it generated a platform for sharing knowledge, at the same time as engaging users and stakeholders in our iterative project design process.

A critical aspect of the success of our approach was the prototype version of a universal design kit for participatory user interviews – a set of simple, visuallyled, prompts that could be used to encourage storytelling in the interviews and activities.

Research structure

As our participants were not available in the one place at the one time, we developed a sequence of replicable activities that could be run in the same way, with different people and locations. Within this approach, we had flexibility to introduce laddering techniques, to iterate on observations and insights from previous activities with sets of participants – this allowed our methodology to produce ongoing learning for those involved in leading the research as well as those participating in creating it.

Participants

INTERVIEWS: 7 Management Consultants and Senior Managers (external) stakeholders participating in short workshop sessions across a 3-day period

DISSEMINATION WORKSHOP: 16 - Advanced Analytics, Software Engineering, Design and Strategy project team (internal) participating in a 1-day workshop session

PROJECT WORKSHOP: 18 - Product Owners, Sponsors, project stakeholders and project team participating in a 3-day workshop

Rationale

Through these activities, our ambition was to facilitate storytelling and prompt deeper insights around the Spend Mapping Visibility Phase with particular focus on the user's process, workflow, pressures, relationships and actors involved. It was critical that the sequence of research activities be cohesive in delivery style and approach.

Although there was variety in the sequence of the tools used and activities, and their prominence in the session, the core activities remained constant across individual, group and multi-group sessions.

Process

Interviews, dissemination workshop and project workshop (with team & stakeholders) applied activities such as a pop-quiz, range of mapping experiences and tangible discussion formats

Conclusion of activities within Study 2

Research outcomes from both activities were translated into material that could be transferred to the software designers to enhance system development. Whilst the research activity produced strong visual, textual and narrative findings, some of the impact was lost when it was turned into the established format - a journey map. Despite this being received positively by the Delivery Lead, international stakeholders and team, senior design leadership thought it was not appropriate.

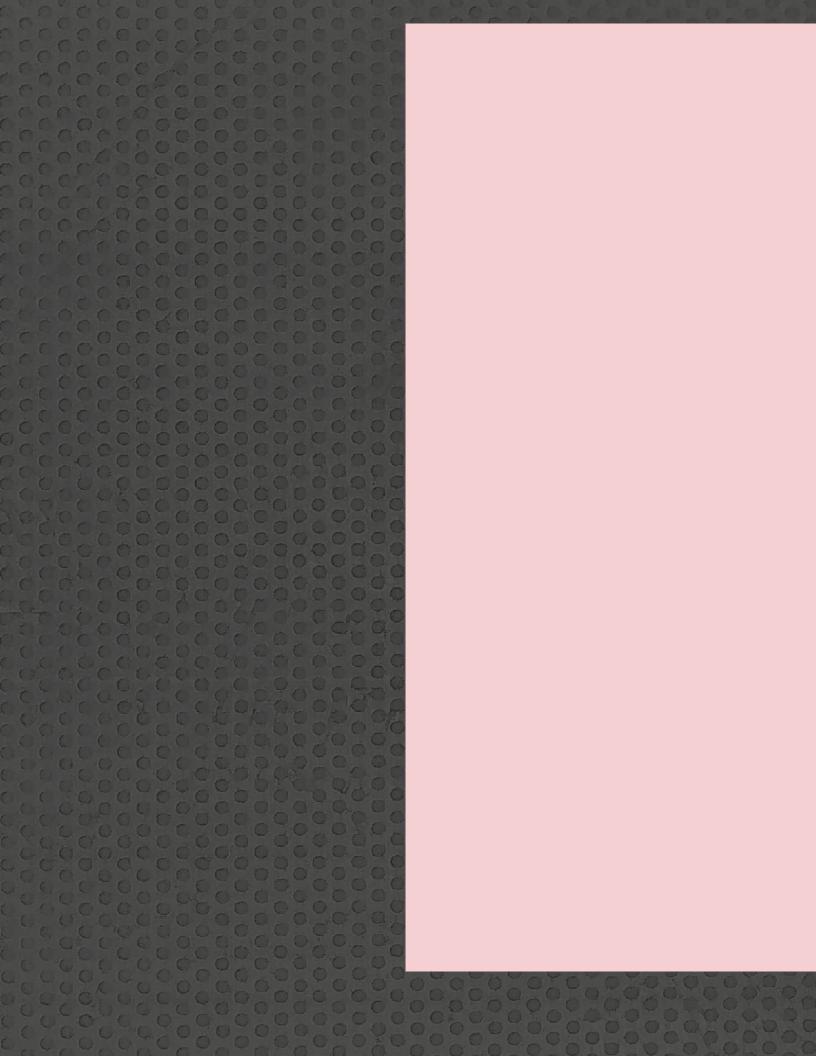
The research process and experience were not tangible to design leadership not directly involved in the research, even with compelling documentation using visual, text-based and service design tools.

Including everybody in the generation of findings, giving the full team the opportunity to experience the design research process themselves as participants created new value. as well as progress. The full team (beyond design) understand what the research was and experienced it as something playful, flexible and within that, they had equitable discussions instead of thinking in silos. It demonstrated that project value could be measured in ways other than financial, or successful solutions; a valuable project generates synergy between disciplines, people and thinking.

By creating an inclusive design research approach within this project, the dominant pillar (data analytics)w found design accessible for the first time on the project. The synergy that was created between team members during the dissemination workshop carried through into a change of working behaviour in the studio space.

Within this Study, I discuss two Things:

- (I) Interview Thing with relationship modelling
- (II) Dissemination Thing



(I) An Interview Thing (external)

Project problem/barrier & participatory response

Previously the only direction for the project had come from a lead stakeholder, who worked in the area of the business we were problem solving for. His personal experience and opinions were dominant in leading the project direction.

We needed to understand, first-hand, how others who worked in that area of the business experienced the problems and where they lay.

Aims

To understand the latent experience of a range of users (spend mapping management consultants & senior managers, and people involved in developing the product) during the Spend Mapping process, in the context of their own work environments.

Objectives

- Develop an engaging set of tools and an approach that enriches the multiple interviews that were carried out in multiple locations, with multiple people involved in the product.
- Through the research activity, to bring together the data & software sides of the team, with design, to holistically explore and research the next steps in developing the project idea.

Date & Duration	Participatory Design Principles	Phase of Learning	Criteria for Learning
20th-23rd September 2017 (project duration: 10-12wks)	Empower Communities of Practice - by finding ways to give a voice to those who may be invisible or weaker in the organisational or community power	ON STAGE	(b) increase the impact and role of interviews, and the data gathered therein, on how projects develop
Methods	structures.		
Stakeholder Maps Scenarios Scenario Description Swimlanes Stakeholder Walkthrough Task Analysis User Journey Maps Picture Cards Laddering Cognitive Walkthrough Relationship/Behaviour Mapping Interviews	2. Situate Design - through working directly with people to understand actions actually in, 'in the wild' settings. 3. Foster Mutual Design Learning - by designing and testing tools and methods that not only encourage but enhance the understanding and learning of participants - through finding common ground and common ways of working within the context.		

Activity

Toolki

A set of lo-fi dialogue tools that could be used to enhance all project discussions and activities.

These tools were visually-led to allow the range of participants [from different countries, professions and levels of design familiarity] to use them comfortably.

The graphic style of cards, diagrams etc. was hand-drawn to make the tools feel less formal and more friendly to participants (accountants) who were working in this way for the first time.

Mapping Process

Activity 1 - Swimlanes, overview of the working journey, discussions or thematic areas documented visually along the swimlanes.

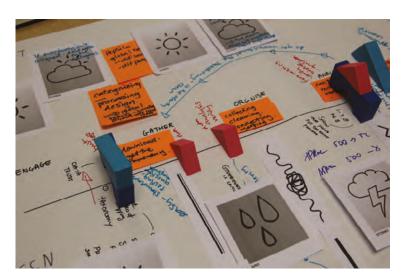
Activity 2 - Relationship modelling with knowledge from first activity, concentric rings (like a target) zoned to the stages of the journey (as quarters).

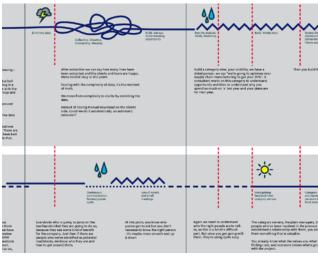
Users modelled aspects of relationships across stages of process e.g. placing blocks close or far away, indicating movement of information between parties and discussing relationship changes, noting incidental characters /activities involved.

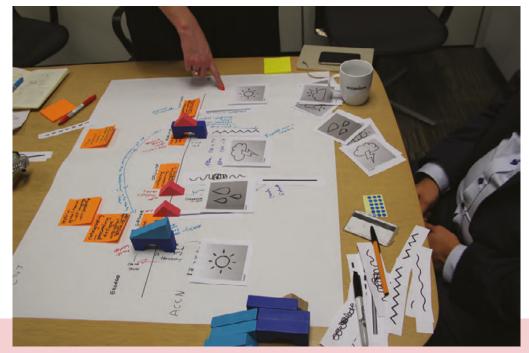
Knowledge/value generation observations

- · Design, within the context of this project was perceived not to hold value, and only of use for communications.
- Creating a participatory research process allowed the full team and stakeholders to be included in building the
 research, to actively take part in growing the project learning. Not only was this beneficial to team morale, but it
 created visibility for design and was time efficient for the research.
- Working with a range of people involved in the business area we were solving for was beneficial to the project learning because we got more detail, and different versions of the story we had been told, so we understood how the problem mapped across the range of users of the process & system.
- Those nuances and variations shed light on some of the assumptions that had been made by the team and changed the direction of the solutions.
- Being able to work with the stakeholders, in person and in their environment where they were comfortable
 encouraged them to communicate differently, more opening and therefore generated stronger research.
- Developing research with those users directly benefited the project learning because we got more detail, and different versions of the story we had been told. This allowed us to understand how the problem mapped across the range of users of the process & system.

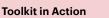
Translating the participatory experience into a project blueprint and journey map allowed the lo-fi kit to be developed into a language system.







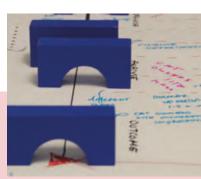




Journey Mapping used the tools to understand where the 'moments that matter' really were, and what transactions took place during the journey. The intention of these offsite participatory interviews was to understand the experiences of users.

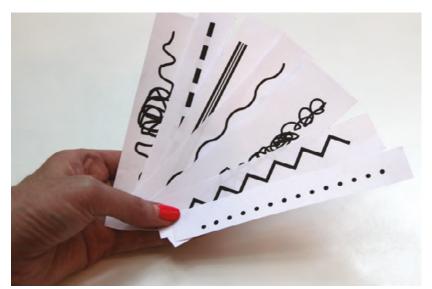
Stakeholders had not been open about problems in the interaction between users within the system, or painpoints that were human-led, nor were they comfortable using critical language about steps in the journey, people, experiences or tools.

To encourage critical discussions, the toolkit included weather symbols to help participants describe experiences and different styles of lines to annotate the workflow and interaction. Wooden childrens blocks provided objects that could be placed on the journey maps to describe bridges, transfers, blocks or moments of pressure.



AN INTERVIEW THING

Participatory Stakeholder Interviews



Lo-fidelity Toolkits - Day 1

Going in to this project, there was little trust in the Design Research process from both the project team and the stakeholders.

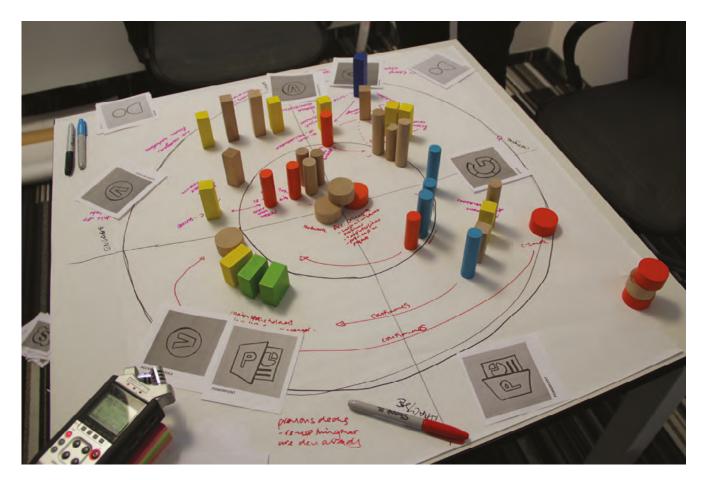
Stakeholders were adamant that process-data and statistics were all the research that was needed, and that time was the biggest issue with the current system. The scope for Design Research was extremely limited, until, with little notice, we were told we had access to users, offsite and overseas. With 2 days to plan and travel, a simple, conversation toolkit was designed.

A number of critical research activities were proposed, to gather data and communicate a design direction, in support of the Interaction Design approach. The Design Research findings had to be compelling enough to push the project to be more than simply be a 'black box' Al solution.



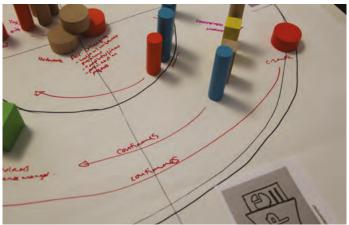


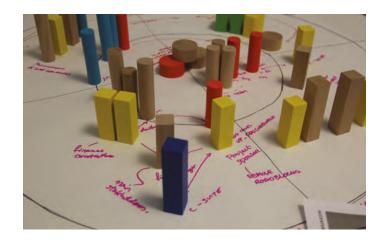




Mapping the relationships, changes and communications across the project phases in the process.

What became apparent was that modelling on the paper 'map' encouraged participants to think about and annotate movement around the wheel phases of their process. And more so than mapping in a swimlane, this circular template encouraged participants to see the relatiobships and behaviours as having a beginning and endng, and to describe roles coming in and out across the process, or the same people moving functionality within the process.





AN INTERVIEW THING

Relationship Modelling Interviews



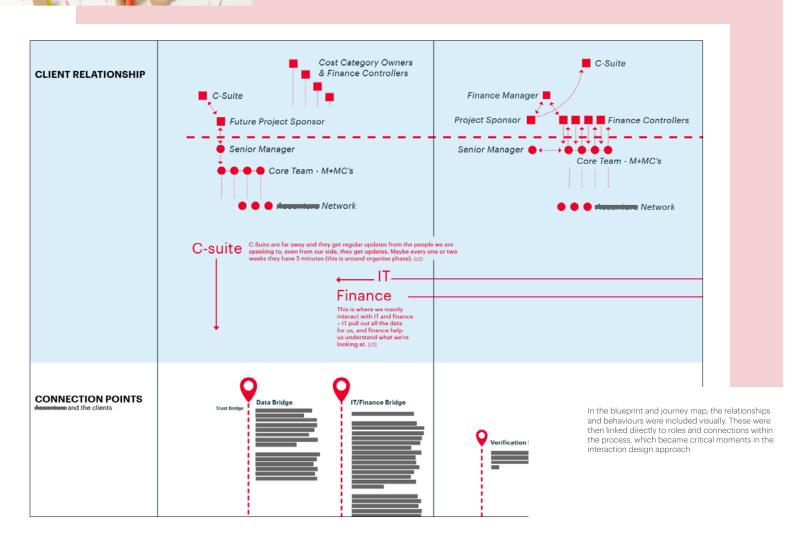
Relationship Modelling - Day 2

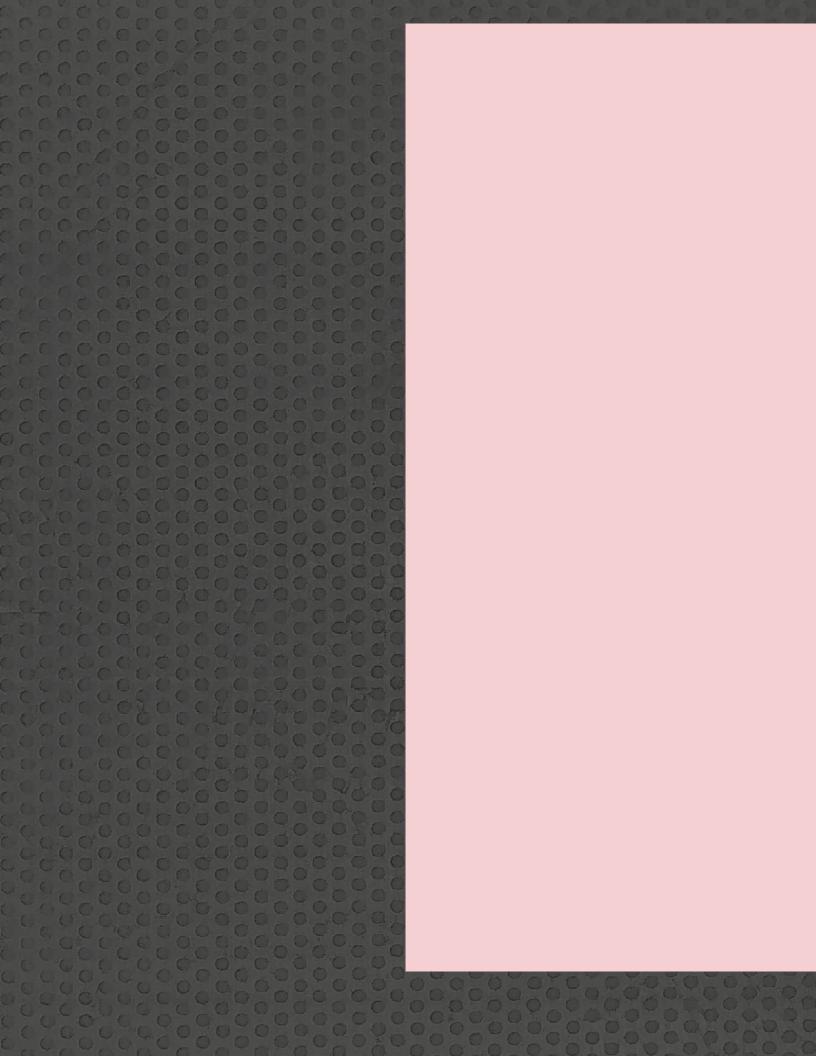
Understanding different stakeholders, users and clients behaviours across the process was critical to making sense of the painpoints described in the first sets of interviews [undertaken the previous day]. If the Team was able to understand who was involved in the process, when, why and how their role or influence changed across that process, then this could influence the interaction design approach.

Using the wooden blocks again, we shifted the participants to another way of viewing their everyday process, by creating a wheel-like map with concentric rings for the different user groups.

Interviewed individually, the participants moved blocks around and as they talked, we annotated key points on the paper, and sometimes they added notes to this as well. Creating dialogues shaped by physical activity and 'doing', really helped the users to communicate more freely.

Across the activities we discovered previously hidden layers of meaning behind the actions, decisions and tools used during the process as well as many roles and actors we had not been aware of.





(II) Dissemination Thing (internal)

Project problem/barrier & participatory response

The large team had a tendency to work in disciplinary silos, generate and share developments within those and the only opportunity to cross-over was at the morning Stand-Up meetings.

With the research being undertaken so far into the project timeline, after the Data team, and lead project stakeholder felt they had a solution, it was important to disseminate the research actively.

Finding ways to share the research findings with the whole team in a meaningful way was critical to Design Research having influence on the data & software development.

Aims

To make the research process and findings tangible, for the whole team, across all levels and disciplines. Within this, to find opportunity to positively share perspectives and opinions on the results, impact and value for the overall development of the product.

Objectives

- · To engage everybody with the research findings in a way that encouraged them to develop conclusions themselves.
- To include everybody's voice in the conversation around how the research could impact the product development.
- To share perspectives on the research findings, and work through them with respect to the product development potential.

Date & Duration	Participatory Design Principles	Phase of Learning	Criteria for Learning
3rd October 2017	3. Foster Mutual Design Learning -	OFF STAGE	(a)
(project duration: 10-12wks)	by designing and testing tools and methods that not only encourage but enhance the understanding and learning of participants - through finding common		enhance dialogues between multidisciplinary team members within the context of a project
Methods	ground and common ways of working within the context.		(c)
Experimental Survey			build out from conventional
Laddering	4. Design and test Tools and Techniques -		communication of research
Stakeholder Maps	that actually, in practical, concrete,		findings to move beyond
Scenarios	specific situations, helped different		storytelling and toward
Scenario Description Swimlanes	participants to communicate their		storying.
Task Analysis	knowledge, vision and role/contribution.		
User Journey Maps			
Picture Cards	1. Empower Communities of Practice -		
Card Sorting	by finding ways to give a voice to those		
Cognitive Walkthrough	who may be invisible or weaker in the		
System Behaviour Mapping	organisational or community power		
Observation	structures.		

Activity

Pop-Quiz

Ice-breaker to get full team into the mindset for the day and also set the scene for what we would be covering. It provided a very fast way to do voting, mapping and get information on key points brought forward from first sessions held off-site with stakeholders. A 40min session.

Mapping

Using the same mapping tools and prompts as the off-site stakeholder sessions, groups (a person from each discipline was in each group) worked through the phases of the journey. Discussing key points that they were provided with. A structured 2hr session.

Discussion Groups

Creating a distinct space in the workshop day for groups to look, listen and discuss the mapping activity helped it become a reflective activity instead of continued generation. A set of simple activities were used to structure the discussions. A self-led 2hr session.

Playbacks

Groups informally presented their discussions back to the whole team - pinning-up their key points, streamlined journey and a 5 minute verbal pitch. This created an opportunity for all groups to learn - identifying similarities, differences, prompts for further thinking etc. 1hr activity

Knowledge/value generation observations

- Collectively discussing the full end-to-end journey, putting themselves in the shoes of the users (but at the same time bringing their knowledge of what the product can do to enhance the current process) generated fast, cocreated learning
- By participating in the process, the full team owned their design learning there was no need to tell them what design does, they were doing it themselves.
- Participants were clearly excited to have time, opportunity to discuss the project problems and journey animated conversations, laughter, and positive debates about aspects of the project journey were taking place with new people joining the team, it was also a very positive and simple on-boarding activity
- After the session a short 'reflection' questionnaire was circulated that asked participants to describe how the
 workshop was and why, what they learned, the changes they might make in their way of working on the project and
 suggestions for the development of the workshop.

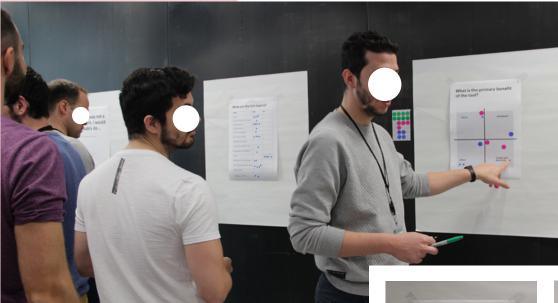
Multidisciplinary groups were formed to walk-through the user process, incorporating findings from the off-site research interviews, as well as their own perspectives. Groups created user journey maps.







The workshop started with a pop-quiz







A DISSEMINATION THING

Team Research Workshop

Dissemination as an opportunity for allignment

Instead of reporting on the findings, a one day workshop was designed for the large multidisciplinary team - it was intended to be a space for them to play with the findings from the off-site, stakeholder interviews, to debate the fit/need/opportunity together and to expereince the research process for themselves.

It was the only time they had all come together to talk about project potential, instead of simply doing or making to solve the problem.

The steps of the research process were adapted to suit the large group and time available. Fast, interactive 'throwaway' activities, such as voting were introduced to deliver quick, concrete data on our research findings from the interviews.



Storytelling activity within discussion groups



Groups played-back the journey map 'moments that matter' and key learnings from the various activities across the day. These were then incorporated, along with the user research insights, into the overarching design research story for the project.

Action Research Cycle 1

REFLECTIVE PARTICIPATORY PROJECT

4.8 Case Study 3: A Self-reflection Tool

Project Description

Reflective spaces within a participatory process are critical to embedding practice or thinking. If, as in this fieldwork, the notion is that participation could be the design learning mindset, then addressing how reflection works within that, is critical.

This self-reflection tool, an adaptation of a life coaching 'wheel of life' mechanism, was initially a visual aid to track progress and focus during the MRes 2016 (see Appendix A). When I moved into the private sector studio, I saw the potential for this analogue tool to chart the focus and work undertaken by people whilst working around their main projects - it was an approach to visually mapping the work, creating a topology of practice and visibility about where time was used.

Initially it was tested informally with a few colleagues - we filled in the map at the end of each week, which became a positive affirmation. It provided a sense of achievement and satisfaction that then became a reflective support whilst working on a number of projects

Introduction to the Challenge Area

As a personal development project, I was able to form a holistic view of where the challenges lay within the projects and teams.

- People were pulled in many directions outside of their main projects and felt like they were juggling a lot.
- Smaller projects, workshops were not monitored by leadership, rarely acknowledge.
- Some aspects of the additional work wasn't measured or valued visibly by leadership.
- Post-project reviews didn't always uncover the roots of problems, therefore didn't create change for future projects.

Reflective Activity Approach

I tested it along with a colleague across a period of 6 months, each of us on different projects, and we used it as a personal emotional monitoring aid, perhaps similar to design journaling.

The tool was an individual activity within a participatory approach to learning during project-time. The digital

version of the tool, a 'bot', checked in with us every hour as we were working.

It was an emotionally focused measurement tool, one that was automated but still used individual reflection instead of task achievement (as Agile, Lean etc. do) as a basis for understanding and creating value in workplace experience.

Research Structure

Participants

- myself on a Spend Mapping/Data project (Study 2), as p/t Team Lead, Service Designer
- colleague on a Life Sciences/pharma project as interaction designer

Process

The tool ran in the background as a bot on our computers that opened up a question box on screen every hour with 2 questions - what were we working on and how we were feeling, on a scale of 1 to 10 - and took a screen grab of our desktop. Responses and images were automatically collated in a folder on the computers.

Research Toolkit

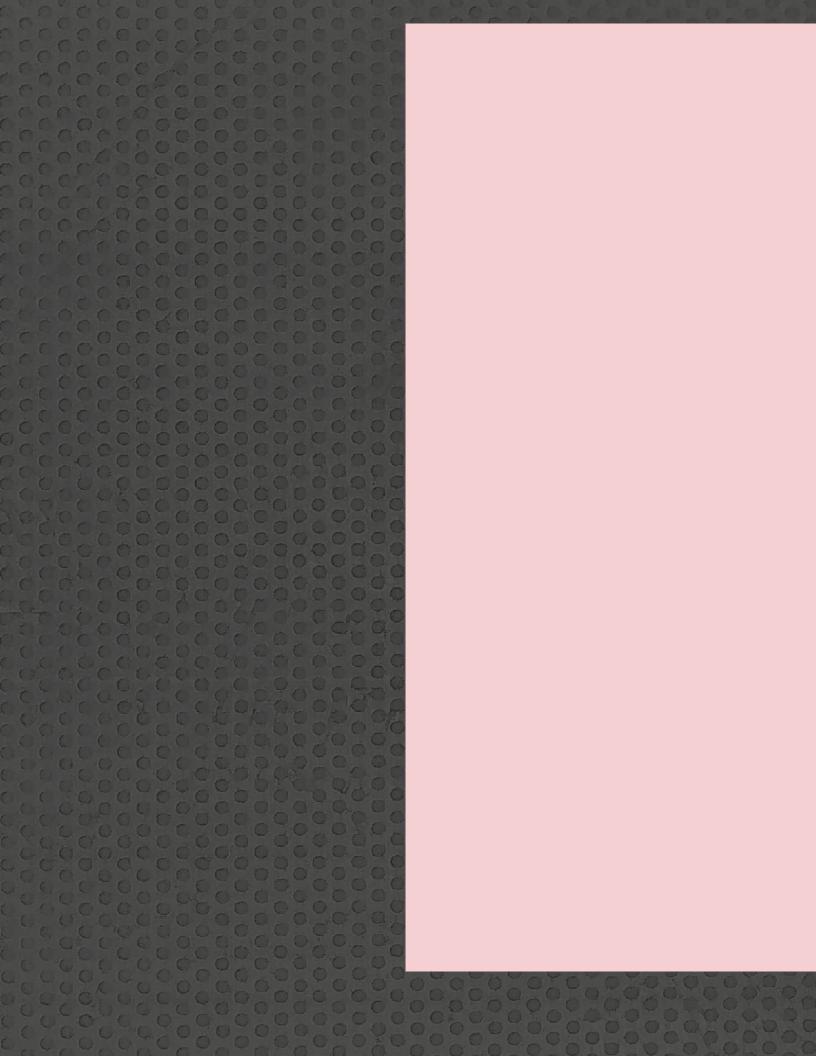
A prototype bot developed from using the analogue wheel tool, and feedback from 3 of us on the experience of filling it in at the end of each week.

Conclusion of activity in Study 3

Although this tool was only taken to the first stage of initial, informal testing after using the analogue version, there appeared to be scope for something like this to have positive impact in the workplace. In 2020/21 when working is remote and wellbeing is largely intangible to others around us in our teams. The renewed interest in mindfulness, work-wellbeing and holistic health at work during this period has created a need for individual reflective tools within an approach to participatory design learning, based on Hettler's Six Dimensions of Wellness Wheel (Hettler,1976)

At the time, in that context, there was not scope to test it further, however one director who reviewed the project development thought it could influence a needed shift toward ongoing, holistic measurement of wellness instead of the, then current model of team set-up meeting at the start and review meeting at close. It was thought that there was a need for progressive HR thinking to filter into how design was managed, and that introducing evaluative methods were critical to making management and leadership more intuitive.

Having developed this individual tool from Life Coaching experience, I can see the potential to create a suite of discrete, individual props for reflective workplace learning activity that would strengthen individual engagement in team scenarios.



A Self-Reflection Thing

Project problem/barrier & participatory response

Delivery Leads and Directors did not have shared in-depth awareness, or knowledge of the learning/working/emotional experience of teams on projects - they relied on periodic project group meetings and reviews at the end of projects to gather insights on wellbeing. This approach was incredibly subjective and often time pressured.

Aim

To create a discrete reflection tool that supports a positive position for the individual, and feels responsive to use. It should also generate data that can be used by both management and the individual to improve experiences on projects

Objectives

- To create a cumulative structure for reflection during projects that could aid understanding of on-going wellbeing in the workplace.
- To move toward including individual emotional response as a measure of project health.
- To create something that moved beyond design journalling as a reflective activity, and could be used to engage, measure, visualise experiences.
- To create a device that allowed individuals to feel like their work and wellbeing mattered through increasing visibility (even if only for each user initially).
- · Through this, to create stronger teams with people who felt more in control (through increased visibility).

Date & Duration	Participatory Design Principles	Phase of Learning	Criteria for Learning
6 months in total, but 3 months of collated data October 2017 - December 2017	Empower Communities of Practice - by finding ways to give a voice to those who may be invisible or weaker in the organisational or community power structures. But if the Thing was used, it would address:	applied throughout but greatest value when analysed during COOL DOWN	(c) build out from conventional communication of research findings to move beyond storytelling and toward storying.
Adapted from: Behavioural Maps Picture Cards Card Sorting Observation Mental Model Diagrams	4. Design and test Tools and Techniques - that actually, in practical, concrete, specific situations, helped different participants to communicate their knowledge, vision and role/contribution.		

Activity

A digital prototype based on an analogue tool that had been tested in two different contexts, this edition was created as a 'bot' installed on two laptops. A dialogue box would appear on screen every hour, the user was asked to log a wellbeing value between 1 and 10, briefly state what they're doing, it took a screen shot at that moment. This information was then catalogued.

Two users (one of them myself) tested this 'bot' over a period of months whilst working on a number of projects.

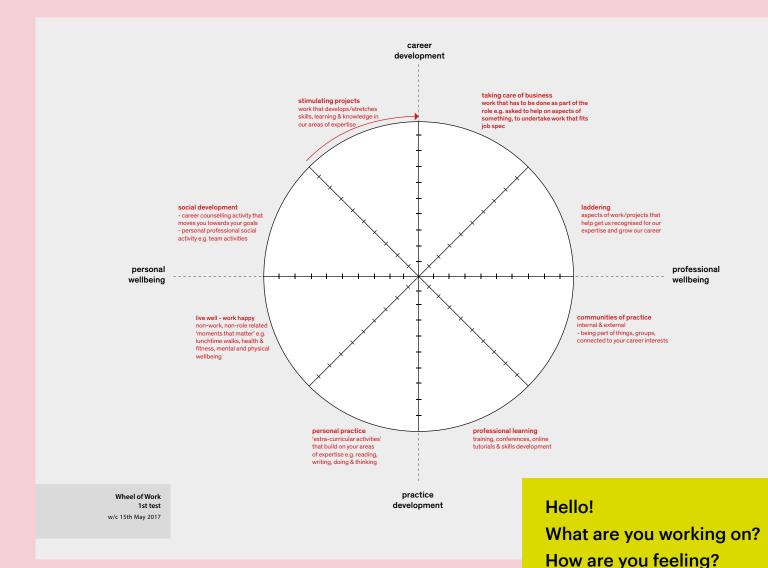
The intention was that this 'bot' could be developed to collate patterns, relate it to projects, or points in projects where people feel certain ways, identify the gaps and this data could then be used to better support teams working across projects. It was hoped that this could become an aid for wellbeing-led leadership and management.

Knowledge/value generation observations

- Although this only reached lo-fi prototype stage, the tool & testing showed the potential for improved approaches to individual wellbeing and personal learning on projects.
- It highlighted the role of collated, individual understanding of personal wellbeing, in interpreting behaviour such as project participation, engagement and learning progress in a project.
- Being able to create a way-of-working that both supported reflective practice and enhanced management approaches for team wellbeing would bring increased value to the work experience. If an approach could generate qualitative results for the individual, visibility for everybody, and quantitative data that leadership could use to create
- The drawback was that when busy with projects, the pop-up box was a bit annoying I found myself less interested in regularly responding when under pressure on projects

A SELF-REFLECTION THING

Wellbeing Wheel, 2017



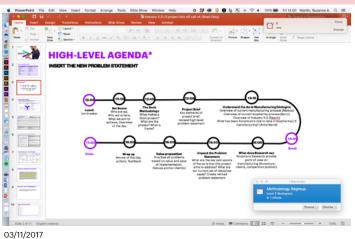
Wellbeing Wheel Development

Initially, an analogue tool - adapted from the wheel I'd tested in 2016 during the first year of the MRes - was used to chart how we were spending our time at work. We completed one at the end of each day for a 3 week period. In review, I realised that it didn't indicate the way we felt each day, just how much we were doing. It also didn't have the same holistic impact when charting work for an employer, as it did when charting my own research work. We then developed a simplified digital tool to test whether that provided holistic wellbeing feedback for the user.

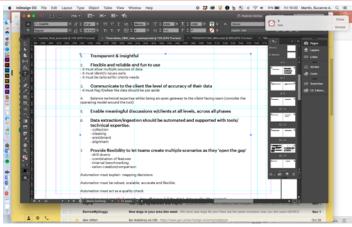
Initial analogue wheels can be seen here:

 $\underline{https://documentcloud.adobe.com/link/track?uri=urn:aaid:scds:US:c7556afb-9bc7-4518-9f69-cfc9c9d95468}$

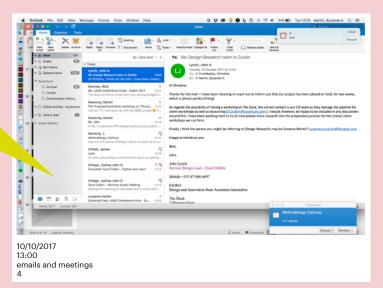
Work Log Screen-shots Image of what you are working on at the wellbeing check-in (samples)



13:11/2017 14:42 talking about tangible dialogue tools with Eoin 7



03/11/2017 16:06 meeting 6



Work Log Data Record of responses to the wellbeing check-in (extract)

10/11/2017	02/11/2017 16:00	15:00 looking at LinkedIn!
10/11/201/	ZBSC document 4	6
zbsc doc		
4	02/11/2017	12/10/2017 12:00
	15:00	meetings
10/11/2017 17:00	ZBSC document 5	7
exporting a bit of zbsc		
5	02/11/2017	11/10/2017 15:00
	14:00	writing and meetings
10/11/2017 16:01	wrap-up document ZBSC	3
being distracted	5	
3		11/10/2017
	02/11/2017 12:01	14:00 drawing on the blueprint
10/11/2017 15:00	meeting	7
15:00 zbsc doc	6	
4		11/10/2017
	02/11/2017 11:00	13:02 talking
10/11/2017	emails	5
14:00 zbsc doc	4	
4		11/10/2017
	02/11/2017	12:06
10/11/2017	11:00 ZBSC wrap-up	sticking blueprint together and 7
12:00	7	·
zbsc doc		11/10/2017
	01/11/2017	11:14
10/11/2017	15:00	sticking blueprint together
10/11/2017 11:00	waiting for a meeting	6
zbsc doc		
6	01/11/2017	10/10/2017 18:08
	14:01	packing up
09/11/2017 18:04	expenses and timesheets	11!
listening to abi talk		
2	01/11/2015	10/10/2017
	01/11/2017 13:00	17:00 emails
09/11/2017	methodology	4
15:02 talking to Fab	10	
8		10/10/2017
	24/10/2017 14:00	16:07 client relationship models for b
09/11/2017	making a table with workshop con	5
13:00 zbsc doc	5	
zosc doc		10/10/2017
	24/10/2017	15:00
08/11/2017	13:03 lunch	transcribing 6
16:00	6	
thinking of going home		
2		10/10/2017
3 —————	24/10/2017	
3	24/10/2017 12:00	13:00
3 08/11/2017	12:00 typing up workshop notes	
3 08/11/2017 14:00 call	12:00	13:00 emails and meetings
3 08/11/2017 14:00	12:00 typing up workshop notes 4	13:00 emails and meetings 4 10/10/2017
3 08/11/2017 14:00 call	12:00 typing up workshop notes 4 24/10/2017 11:00	13:00 emails and meetings 4
3 08/11/2017 14:00 call 5 	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of reseau	13:00 emails and meetings 4 10/10/2017
3 08/11/2017 14-90 call 5 08/11/2017 13-15	12:00 typing up workshop notes 4 24/10/2017 11:00	13:00 emails and meetings 4
3 08/11/2017 14:00 call 5 	12:00 typing up workshop notes 4 124/10/2017 11:00 planning consolidation of reseat 4	13:00 emails and meetings 4
3	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of reseat 4 23/10/2017	13:00 emails and meetings 4
3	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of resear 4 22/10/2017 14:00	13:00 emails and meetings 4
3	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of reseat 4 23/10/2017	13:00 emails and meetings 4
3	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of reseas 4 23/10/2017 14:00 methodology meeting prep	13:00 emails and meetings 4 10/10/2017 12:00 admin and work juggling 5 09/10/2017 17:00 text from interviews onto journ 7 7
3	12:00 typing up workshop notes 4	13:00 emails and meetings 4
3	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of reseu 4 23/10/2017 14:00 methodology meeting prep 5 18/10/2017	13:00 emails and meetings 4 10/10/2017 12:00 admin and work juggling 5 09/10/2017 17:00 17:00 19/10/2017 16:03 2BSC looking at Jame's scamps
3	12:00 typing up workshop notes 4	13:00 emails and meetings 4
3	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of reseu 4 23/10/2017 14:00 methodology meeting prep 5 18/10/2017	13:00 emails and meetings 4 10/10/2017 12:00 12:00 5 09/10/2017 17:00 19/10/2017 16:03 ZBSC looking at Jame's scamps
3	12:00 typing up workshop notes 4 24/10/2017 11:00 11:00 planning consolidation of reseat 4 23/10/2017 14:00 methodology meeting prep 5 18/10/2017 13:00 ZBSC	13:00 emails and meetings 4 10/10/2017 12:00 admin and work juggling 5 09/10/2017 17:00 17:00 19/10/2017 16:03 2BSC looking at Jame's scamps
3	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of reseat 4 23/10/2017 14:00 methodology meeting prep 5 18/10/2017 12:00 23/10/2017	13:00 emails and meetings 4 10/10/2017 12:00 12:00 5 09/10/2017 17:00 19/10/2017 16:03 ZBSC looking at Jame's scamps 9 09/10/2017 15:00
3	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of reseau 4 25/10/2017 14:00 methodology meeting prep 5 18/10/2017 13:00 ZBSC 13/10/2017 16:02	13:00 emails and meetings 4 10/10/2017 12:00 12:00 5 09/10/2017 17:00 19/10/2017 16:03 ZBSC looking at Jame's scamps 9 09/10/2017 15:00
3 08/11/2017 14:00 14:00 15:5 08/11/2017 13:15	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of reseat 4 23/10/2017 14:00 methodology meeting prep 5 18/10/2017 12:00 23/10/2017	13:00 emails and meetings 4 10/10/2017 12:00 12:00 10/10/2017 17:00 17:0
3	12:00 4	13:00 emails and meetings 4 10/10/2017 12:00 10/10/2017 17:00 text from interviews onto journ 7 09/10/2017 16:03 ZBSC looking at Jame's scamps 9 09/10/2017 15:00 2BSC drawing weather on a journ 7 09/10/2017
3	12:00 typing up workshop notes 4 24/10/2017 11:00 planning consolidation of reseau 4 25/10/2017 14:00 methodology meeting prep 5 18/10/2017 13:00 ZBSC 13/10/2017 16:02	13:00 emails and meetings 4 10/10/2017 12:00 12:00 10/10/2017 17:00 17:0
3	12:00 4	13:00 emails and meetings 4 10/10/2017 12:00 10/10/2017 17:00 text from interviews onto journ 7 09/10/2017 16:03 ZBSC looking at Jame's scamps 9 09/10/2017 15:00 2BSC drawing weather on a journ 7 09/10/2017
3	12:00 12:00 14:00 24/10/2017 11:00 11:00 12:00 12:00 12:00 12:00 13:0	13:00 emails and meetings 4 10/10/2017 12:00 admin and work juggling 5 09/10/2017 17:00 text from interviews onto journ 7 09/10/2017 16:03 ZBSC looking at Jame's scamps 9 09/10/2017 2BSC drawing weather on a jour 7 09/10/2017 18:00 2BSC drawing weather on a jour 9 09/10/2017 18:00 09/10/2017 18:00 09/10/2017 18:00 09/10/2017 18:00 09/10/2017
3	12:00 12:00 4	13:00 emails and meetings 4 10/10/2017 12:00 12:00 12:00 12:00 12:01 17:00 17:
3 08/11/2017 14:00 14:00 08/11/2017 13:15 paying IJAD 6 6 08/11/2017 12:200 22:80 22:80 23:80 24:80 25:80 26:80 2	12:00 4 24/10/2017 11:00 11:	13:00 emails and meetings 4
3 08/11/2017 14:00 14:00 08/11/2017 13:15 paying IJAD 6 6 08/11/2017 12:200 22:80 22:80 23:80 24:80 25:80 26:80 2	12:00 4	13:00 emails and meetings 4 10/10/2017 12:00 admin and work juggling 5 09/10/2017 17:00 text from interviews onto journ 7 09/10/2017 16:03 ZBSC looking at Jame's scamps 9 09/10/2017 15:00 ZBSC drawing weather on a journ 09/10/2017 14:00 09/10/2017 14:00 15:0
3 08/11/2017 14:00 14:00 15:5 08/11/2017 13:15	12:00 4 24/10/2017 11:00 11:	13:00 emails and meetings 4 10/10/2017 12:00 admin and work juggling 5 09/10/2017 17:00 text from interviews onto journ 7 09/10/2017 16:03 ZBSC looking at Jame's scamps 9 09/10/2017 15:00 ZBSC drawing weather on a journ 09/10/2017 14:00 09/10/2017 14:00 15:0
3 08/11/2017 14:00 08/11/2017 14:00 08/11/2017 13:15 08/11/2017 12:20 08/11/2017 11:01 12:00 08/11/2017 11:01 12:00 08/11/2017 11:01 13:05 08/11/2017 14:06 08/11/2017 15:06 08/11/2017 16:06 08/11/2017 16:06 08/11/2017	12:00 12:01 13:02 14:02 24/10/2017 11:00 11:00 12:01 12:01 12:01 12:01 12:01 13:01 13:01 13:01 13:02 13:0	13:00 emails and meetings 4 10/10/2017 12:00 10/10/2017 17:00 text from interviews onto journ 7 16:03 ZBSC looking at Jame's scamps 9 10/10/2017 15:00 2EBSC drawing weather on a jour 7 10/10/2017 14:00 2EBSC drawing weather on a jour 7 10/10/2017 14:00 10/10/2017 14:00 10/10/2017 14:00 10/10/2017 14:00 10/10/2017 13:57 2EBSC blueprint 8 (just had lunch with Ascanio)
3 08/11/2017 14:00 14:00 08/11/2017 13:15 08/11/2017 12:20 22:20 22:20 22:20 23:21 24:20 25:25 26:26 26:26 27:27 27:20 28:11/2017 27:20 28:11/2017 28:25 28:	12:00 12:01 12:02 13	13:00 emails and meetings 4 10/10/2017 12:00 10/10/2017 17:00 text from interviews onto journ 7 10/10/2017 16:03 ZBSC looking at Jame's scamps 9 10/10/2017 15:00 2ESC drawing weather on a jour 7 10/10/2017 15:00 2ESC drawing weather on a jour 7 10/10/2017 15:00 2ESC drawing weather on a jour 7 10/10/2017 14:00 2ESC drawing weather on a jour 7 12:50 12:
3	12:00 12:00 13:00 14:00 14:00 14:00 14:00 14:00 14:00 14:00 14:00 15:00 16	13:00 emails and meetings 4
3 08/11/2017 14:00 14:00 18:11/2017 18:15 18:15 18:15 18:15 18:15 18:16 18:16 18:16 18:17 18:16 18:17 18:17 18:17 18:18 18:1	12:00 12:01 12:02 13	13:00 emails and meetings 4 10/10/2017 12:00 10/10/2017 17:00 text from interviews onto journ 7 10/10/2017 16:03 ZBSC looking at Jame's scamps 9 10/10/2017 15:00 2ESC drawing weather on a jour 7 10/10/2017 15:00 2ESC drawing weather on a jour 7 10/10/2017 15:00 2ESC drawing weather on a jour 7 10/10/2017 14:00 2ESC drawing weather on a jour 7 12:50 12:
3	12:00 4	13:00 emails and meetings 4 10/10/2017 12:00 10/10/2017 17:00 text from interviews onto journ 7 10/10/2017 16:03 ZBSC blocking at Jame's scamps 9 10/10/2017 15:00 ZBSC drawing weather on a jour 7 10/10/2017 14:00 81 had lunch with ascanio 10/10/2017 13:57 10/10/2017 13:57 10/10/2017 13:58 10/10/2017 13:59 10/10/2017 13:57 10/10/2017 13:57 10/10/2017 13:57 10/10/2017 13:57 10/10/2017 13:57 10/10/2017 12:04 2BSC blueprint 8 (just had lunch with Ascanio) 10/10/2017 12:04 2BSC blueprint 5
3 08/11/2017 14:00 14:00 18:11/2017 18:15 18:15 18:15 18:15 18:15 18:16 18:16 18:16 18:17 18:16 18:17 18:17 18:17 18:18 18:1	12:00 4 24/10/2017 11:00 11:	13:00 emails and meetings 4 10/10/2017 12:00 admin and work juggling 5 09/10/2017 17:00 19/10/2017 16:03 ZBSC looking at Jame's scamps 9 09/10/2017 15:00 ZBSC drawing weather on a jox 7 7 19/10/2017 15:00 ZBSC drawing weather on a jox 7 10/10/2017 15:07 2BSC blueprint 8 lhad lunch with ascanio 09/10/2017 13:57 ZBSC blueprint 8 (just had lunch with Ascanio) 09/10/2017 12:04 ZBSC Use State
3	12:00 12:00 13	13:00 emails and meetings 4 10/10/2017 12:00 10/10/2017 17:00 10/10/2017 16:03 2/BSC looking at Jame's scamps 9 10/10/2017 15:00 2/BSC drawing weather on a jou 7 10/10/2017 14:00 2/BSC drawing weather on a jou 7 10/10/2017 18:00 10/10/2017 18:00 10/10/2017 18:00 10/10/2017 12:04 10/10/2017 12:04 11/09/2017 11:09 11/09/2017 11:09 11/10/2017
3	12:00 12:00 12:00 13	13:00 emails and meetings 4 10/10/2017 12:00 10/10/2017 17:00 19/10/2017 17:00 19/10/2017 16:03 ZBSC looking at Jame's scamps 9 09/10/2017 15:00 ZBSC drawing weather on a jour 7 109/10/2017 15:00 ZBSC drawing weather on a jour 109/10/2017 15:00 ZBSC blueprint 109/10/2017 12:04 2BSC blueprint 11/109/2017 12:04 2BSC blueprint 5 11/109/2017
3	12:00 12:00 13	13:00 emails and meetings 4
3	12:00 4 24/10/2017 11:00 11:	13:00 emails and meetings 4
3	12:00 12:00 12:00 13	13:00 emails and meetings 4 10/10/2017 12:00 10/10/2017 17:00 lext from interviews onto journ 7 10/10/2017 16:03 ZBSC looking at Jame's scamps 9 10/10/2017 15:00 ZBSC drawing weather on a journ 7 10/10/2017 14:00 9/10/2017 14:00 9/10/2017 13:57 11/09/2017 12:04 11/09/2017 13:13 ZBSC blueprint 8 (just had lunch with Ascanio) 11/09/2017 13:13 ZBSC blueprint 5 11/09/2017 13:13 ZBSC planning 7
3	12:00 12:00 13	13:00 emails and meetings 4
3	12:00 12:00 12:00 13	13:00 emails and meetings 4 10/10/2017 12:00 10/10/2017 17:00 lext from interviews onto journ 7 10/10/2017 16:03 ZBSC looking at Jame's scamps 9 10/10/2017 15:00 ZBSC drawing weather on a journ 7 10/10/2017 14:00 9/10/2017 14:00 9/10/2017 13:57 11/09/2017 12:04 11/09/2017 13:13 ZBSC blueprint 8 (just had lunch with Ascanio) 11/09/2017 13:13 ZBSC blueprint 5 11/09/2017 13:13 ZBSC planning 7
3	12:00 12:00 13	13:00 emails and meetings 4

Action Research Cycle 2

PARTICIPATORY FRAMING PROJECT

4.9 Case Study 4: Restorative Learning Model

A general view of activities, exercises and outcomes, captured as a formative review of work undertaken (which was still ongoing at the time of publication).

Project Background

This fourth Study, put learnings from the research activity in Cycle 1 into practice, in a Design School context. It tested tools, thinking and knowledge from the research project, within a virtual learning environment at the National College of Art and Design (NCAD), Dublin, Ireland. It was the first prototype of a learning framework and culture, developed within this research project.

Project Description

Titled 'A Place in the Changing World', this was a thematic research programme, for a cross-disciplinary cohort, in the School of Design at NCAD, as part of its Studio+ offering.

The term restorative design is usually applied to sensory things that keep users in the present moment, uplift spirits or create a safe space. In the context of developing a new research model for a cross-disciplinary cohort, coming together for the first time during a global pandemic, to learn remotely for the first time, a restorative approach was vital.

Introduction to the Challenge Area

As part of a new learning pillar developed within an existing learning platform, the biggest challenges were around translating participatory methods used within Cycle 1 for digital delivery. Working with a group of young learners who did not know each other, had no experience of working in a cross-disciplinary context and had not worked with a design research brief, set specific knowledge sharing and management challenges.

Learning Activity Approach

Disciplinary knowledge was not as important as developing critical, creative thinking that could be applied to real-world contexts in the future. Through Participatory Design practices, Design Research (Action Research) and with learning around Phenomenology (and other relevant paradigms), students developed their abilities to read, understand and tell stories of place which could frame their actions as future designers.

Programme Structure

TOPIC: a place in the changing world

LENS: designing content

WAYS-OF-WORKING: crafting design narratives that tell, the project story

INTENTION: (a) learning, understanding and applying writing as part of the creative process (b) using images, clips to visually relay that story to viewers

OUTCOMES: text-based and visual content curated to shape project communication

REAL WORLD APPLICATION: advertising, copy-writing, journalism, PR, content design, design research, design practice, film & media

COHORT: communication design, product, interaction design, jewelry, fashion, textiles

Learning Structure

Participants

23 undergraduate students from across the design school who opted to do the additional Studio+ year before their final, 3rd, year

Process-led approach

- Rooted in a physical, individual experience to provide tangible context.
- Flexible scheduling and working on time-based activities.
- Visual/audio prompts, virtual artefacts and texts.
- Audio walk-throughs and schedules available in advance of session.
- Pre-populated classroom folders (audio guides, talks, presentations etc.).
- Developed a common language for activities that was recognisable.
- Balance of rehearsal, off-stage, on-stage and cooldown learning.
- Conversations, speakers and research resources woven across the programme.
- Deliverables that provide a tangible narrative for the group learning and individual, critical reflection.

Rationale

Instead of trying to replicate the experience of studio learning, online, I delivered the knowledge they needed using a range of methods, modes and approaches. The topic was to define change stories, which seeded the notion that they might apply that to themselves, to change how they worked, thought and behaved.

Process

A framework for learning based on a common language for materials, weekly 'briefs' with recorded audio walkthrough, accompanied research boards online, an informal 'speaker' programme, and structured activities in group or studio digital classrooms.

In combination, the speakers and conversational audio walkthroughs created a soundtrack to their individual practices of working, allowing them to pull out whatever seemed relevant to their trajectories, existing knowledge. And encouraged learning through 'active listening'.

Learning was accessible to divergent students and acknowledged the range of VAKT's learning styles within the cohort (Hadfield, 2006).

Conclusion of Study 4

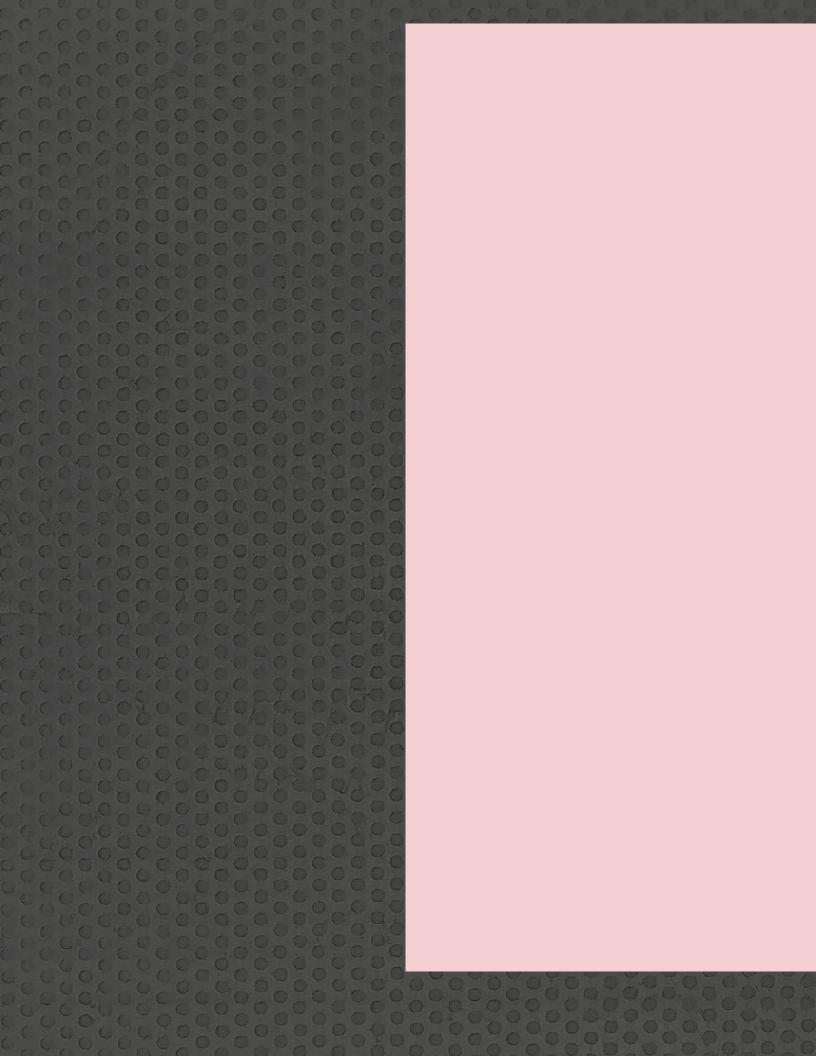
The Radical Pedagogies project (Colomina, 2015) described how frameworks of smaller activities created a network of knowledge that had bigger implications on change. From the changes that were put in place due to the global pandemic, we see bigger implications on networks of knowledge creation in the Design School.

The project delivered within this Study had to dismantle the groups preconceived notions of what a design project looked like, and what learning was; they were so used to producing 'stuff' to evidence learning that constant reassurance was needed throughout to make them comfortable not producing. Moving toward an allocentric model, supporting a shift away from physical artefacts as proof of design knowledge is critical.

Confidence in, and value of, communication skills and media as well as strategic thinking were low; this impaired the learners ability to produce work to the level they were capable of. Linked to this, the value of dialogue and discussion had previously been seen as a step toward the production of a 'final outcome', however through this project, the cohort identified that discussions and the space/time to have those dialogues were one of their key learning outcomes.

Upon completion, the cohort submitted a self-reflection activity, which aimed to embed awareness of their own learning through a series of prompts and questions. From this it was clear that the learners not only understood what they'd learned, but also the ways they learned were ones which they wanted to take forward into future projects.

Leadership responded positively to the structure of both the learning approach, and the learning systems designed within the module.



Project problem/barrier & participatory response

To introduce research-led thinking to a multidisciplinary cohort, that encouraged them to work across disciplinary boundaries and develop new forms of structuring their designerly thinking within future projects.

In this newly developed module, disciplinary knowledge was not as important as developing critical, creative thinking that can be applied to real-world contexts in the future. Through Participatory Design practices, Design Research (Action Research) and with learning around Phenomenology (and other relevant paradigms), students developed their abilities to read, understand and tell stories of place which could frame their actions as future designers.

Aim

To support students developing 'tools for engagement' which would not only enable them to effectively communicate stories in this project effectively but give them a foundation and changed perspective in their continued studies, which they'd bring into the future workplace.

Programme objectives

- · Generate a collective narrative about, and of, 'place' that enhances understanding of design in context
- · Encourage responsibility for what is immediate systems, contexts, implications of actions
- · Create designerly connections between place and people, with each other, and the wider context
- · Understand the implications of design on place

Learning objectives

- Building ways of working as opposed to skills-based learning.
- · Developing empathy and awareness of 'place'.
- · Understanding what place means and how it manifests in behaviour, actions, decisions and consequences.
- Growing a sense of what brings people together, when we are all, increasingly, apart.
- · Shaping 'tools for engagement'.
- Establishing collaboration techniques that can be put in place in multidisciplinary settings from early stages
 of design project-time, all the way through use-time.
- · Understanding the needs of teams, users, place and contexts within a project.
- Ability to transition from macro to micro views of problems.

Date & Duration	Participatory Design Principles	Phase of Learning	Criteria for Learning
Autumn trimester October 2020 - January 2021 8 weeks of learning	3. Foster Mutual Design Learning - by designing and testing tools and methods that not only encourage but enhance the understanding and learning of participants - through finding common	REHEARSAL	(a) enhance dialogues between multidisciplinary team members within the context of a project (b)
Methods	ground and common ways of working within the context.		increase the impact and role of interviews, and the data gathered
Value Opportunity Analysis, Unobtrusive Measuring, Touchstone Tours, Think Aloud Protocol, Task Analysis, Storyboards, Scenarios, Scenario Description Swimlanes, Thematic Networks, Interviews, Mind Mapping	4. Design and test Tools and Techniques - that actually, in practical, concrete, specific situations, helped different participants to communicate their		therein, on how projects develop (c) build out from conventional communication of research findings to move beyond storytelling and toward storying.

Activity

Successfully translating the learnings and activities developed in Cycle 1 into digital, or non-tangible, tools was critical to the delivery of this activity

- Objects/tools become canvases designed to collect and shape conversations.
- · Workshops become designed sequence of exercises run in one studio space verbal or visual prompts are key.
- Conversations and dialogues to share knowledge become discussion prompts.
- Facilitation becomes audio walk-throughs recorded so it can be listed to, as, when and repeatedly.
- Guides and structures are similar in both but needs more multi-sensory support for digital.
- Accessible knowledge sharing i.e., everybody has access to support research, interviews etc. and can interpret
 them as they wish.

Knowledge/value generation observations

- The project was about changing how to see the world, immediately seeded the idea that they could make changes in how they worked, learned and behaved.
- The learning was rooted in a physical, individual experience that provided them with a direct and tangible context to then translate - this acted as a bridge between real/normal pre-pandemic learning and current remote only model.
- Multidisciplinary groups required a spectrum of approaches (sensory delivery as well as content delivery).
- Flexible timing but detailed activities that were time-boxed -allowed students to re-visit or pick-up.
- · Using a common language for activities that was recognisable at a glance created equity in the learning.
- Followed a rhythm of learning phases rehearsal, off-stage, on-stage and cool-down learning across the days and weeks
- Pre-loaded classroom with audio guides, talks, presentations etc., and schedule in advance -allowed students to revisit or pick-up.







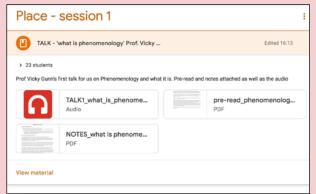


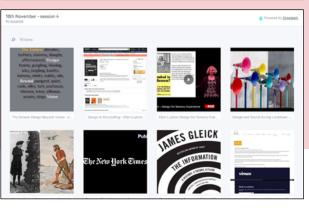
Shaping the Learning

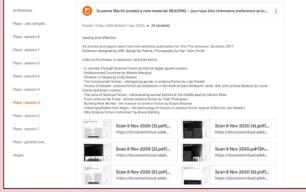
Critically, the learning was generated by a range of voices across the Trimester. A key 'guest speaker' presentation and discussion kicked off the programme, followed by two critical conversations with industry figures who spoke about storytelling from the perspective of social media, and from an diversity & inclusivity perspective. A Digital Comms expert created sequenced presentations, contributed to feedback and joined studio sessions.











Ongoing Support

Across the trimester, input came from different voices each week - discussing everything from research paradigms to design fiction writing; and in different mediums: audio talks, essays and sets of online resources on Dropmark.

This ensured variety of input, perspectives and also media, to suit different learners.

Studio+ A Place in the Changing World



Place. Placed - displaced. Know your place. In your place. Place-making. Time and place.



Programme Brief

Without prescribed, tangible outcomes, this thematic learning brief was designed to read more like an open project pitch.

As designers we have a role to play in shaping the world that is changing around us. We have the creative skills to think, to be and to do things differently. We have responsibility to speak up, and speak out. You have a voice.

The word 'place' is loaded with connotations and implications. It means something very different to everybody, and now, in this pandemic-world, literally and figuratively, set ablaze with environmental, political and deep-rooted equality issues, 'place' is front and centre in all that we do.

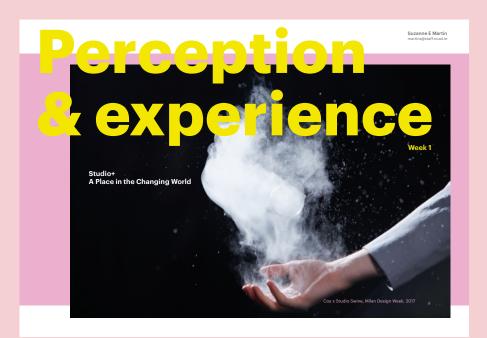
Where we are, who we are and what that means has been foregrounded. Our world, now, at this point in 2020, is not the world we hoped it would be when we started this year in January. So it is our place, as designers to imagine a better one, to take responsibility, individually, and create action, collectively.

As Paula Antonelli sets out in the introduction essay to Broken Nature, XXII Triennale di Milano, 2019, design is not only an actor in building the foundation of our 'civilisation' and the artefacts that sustain, articulate and bear witness to it, but design also influences and shapes behaviours across life in all forms "In it's most modernist and functionalist version, design is hailed as problem-solving and human-centred, but since humans subsist under the illusion that survival depends on dominion, it goes without saying that all design is human-centered in that it touches all live beings ... but cares only about some - humans." Now, we are called to move from that position - that has been the status-quo since the industrial revolution - to a new way of applying, doing, being and thinking about design and designing. We are asked to learn, through design, how to widen the view.

Working together, as a design collective, creating and collaborating on the design theme of 'Place', this programme of research supports you to think as citizens and act, on that, as designers.

A RESTORATIVE LEARNING THING

Diverse voices shape learning



















Suzanne E Martin



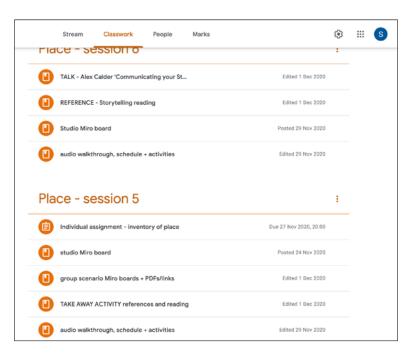


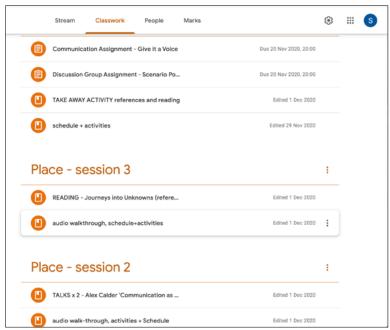
Weekly Briefs

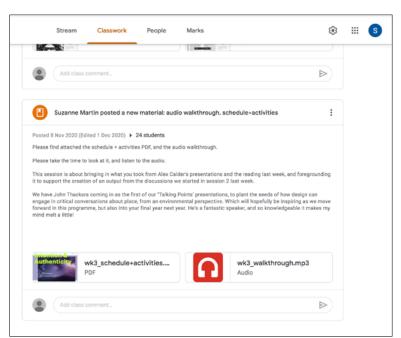
Working in an entirely digital space, the learning support needed to be regular and engaging. As such, a specific outline for each weekly session was produced and uploaded for the day - an element of excitement was created by not publishing every individual step in the programme up-front.

A RESTORATIVE LEARNING THING

Week-by-week focus shifts









Having used the discussion activity to help build-out your collective thinking around what you found, observed, and brought forward from wk1, this framing activity provides some context (theory and design) for where that could go.

The intention of this activity is to generate knowledge, precedents, of how others use similar material to think/provoke change, and to place what you're doing in a bigger design context 1hr+ activity

Please read the 'pre-read' notes which are the first document, top left as it will help you understand the rationale for each of the references I've linked to.

These are a start-point and by no means a summary of all relevant references, there's plenty of room to explore

Communication as an agent for change - Alex Calder 2 x 30min presentations

As we are working with objects and speculating about fictional stories for them to create or communicate change this week, she has put together a couple of presentations to introduce the idea of, and way that, advantage on the she will be suffered to the stories of the she will be suffered to the she will be

It touches on power and empowerment, positioning & transparency, practice and protocols of communication through a series of 'case studies' on brands looking through the lens of their comms platforms and ways-of-working.

PART I Communication and its discontents

PART II Stories of Change No one cares - the challenges of building a brand





Speculation & Fiction

We've looked around, thought about what we are seeing and how we feel about it. Let's take that somewhere, let's open up our perspective and experience to change how others might look, think and see.

10am LISTEN TO MEETING AUDIO

10.30 DISCUSSION GROUPS (group 1hr+) - group mapping, brainstorming, ideation

11.45 CONTEXTUAL FRAMING ACTIVITY (1hr+) - read, listen, watch content in the links and explore

14..00 DESIGN FRAMING ACTIVITY (1hr) - individually, bring in learning/thinking from the FRAMING ACTIVITY to the miro board produced in your group discussion conclusion

15.00 DESIGN POSITIONING ACTIVITY (group 1hr) - bring everything together to build a fictional scenar io around the object/story developed across the previous activities

Come together in your groups and work collaboratively to discuss, break down and progress ideas of the objects, activities, stories, key words etc. 1hr+ group activity

See 'groups list' document for your group Please run your own meetings - be inclusive, be open to others ways and pace of thinking & doing Please work on a mirro board to collect the thinking - find a template that suits or work on a blank board Work with one object/story from each person - bring the discussion together on a group board

- Give 2min pitches of your object/story/perspective
 What are the headlines these objects/stories talk about
 Are there commonalities
 Who are they talking to what are they saying why are they saying it
 What are the technology/interaction (human, machine, environment) needs that would allow the object (s) to commoniate the story to fully on
 What could be your fictitious set-up for each of your imagined objects and narratives look for the
 commonalities
- commonanties

 Are there precedents for this kind of imagined object/purpose can you think of any examples of ways it's been done, could be done

- one 'working' board with images of objects, headlines, commonalities, etc.
 final group board with one selected object (sketch or hacked image) headlines, story, fictional set-up, notes, precedents etc.

Having framed some of the ideas [that were thrown around in your group discussion] with investigation into speculative design and different practices, the aim of this short activity is to bring some of that knowledge back to the group/board. 30min activity

Check in with your group briefly, decide how you are going to add/edit to pull in some directions and design ideas

- Look at your notes of what stood out from the contextual framing references
- Lous at your notes of what stood out from the contextual fraining references investigation what is relevant to the group object/story/fictional purpose are there interesting aspects of some of the projects, talks, texts that could help tell the story of your group object

- You might add to or edit the first board (perhaps tagging existing post-its with comments or adding texts/images to associated items).
 You might create a list or document that the group all co-edit live.
 You might create a list or document that the group all co-edit live.
 You might create a lipage moodboard style PDF that you circulate within your group to be tagged with comments by the other.

Create a fictional scenario for the group 'object' and story 1hr activity

It might be helpful to define loose roles within the group, and try to consciously manage your group engagement - think inclusively and find ways that you're all comfortable contributing

- define and design a fictional image/object/prototype (based on the 1st discussion session and board) define and session are session and board) design dialogue/conversation, setting Build a plot-line or script for this scenario Design characters and interactions with the object, characters and audience

- Design characters and interactions with the object, characters and audience interactions What is it changing, what is it doing, why is it a fictional scenario we should be interested in

- miro board(s) of group development/thinking group PDF/clip/storyboard/visual/poster/cartoon/screenplay/poem/musings/ ramblings of draft scenario concept



Weekly Briefs

A common language was developed for the learning activities, that remained consistent across the trimester to help learners feel comfortable navigating a new style of learning, and new design directions.

It created a visually coherent and legible digital classroom, which allowed learners to easily access and review materials, and learning, across the sessions as we progressed.

Above, sample brief

Far left, materials for each weekly session in the digital classroom

A RESTORATIVE LEARNING THING

A week in brief

OUD VIBRATING OF HIS ALARM DISTURBED EP SLEEP. OPENING HIS EYES, HE SEES 7:30

HIM IN THE FACE.

sted copy: the persistent rattling of his alarm roused him from sleep. Struggling to h his eyes open he sees the figures seven, and thirty, staring him in the face. Another gins.

hey carol are you okay to take on doing 4 of the comic images like cian did above?

yeh of course!





suzanne martin

just a thought for playing with the v for the sounds/actions to try to con the feeling a little more, also bringing alliteration and more descriptive we like wrench which imply mechanical operation as opposed to natural....a might help send the message

Leave a reply. Use @ to mention.

nicely with the mini clips sturmine texture sits nicely with that

so are yo

okay, tha

I think it angle...a

you are

Yeah we're editing the story I wrote to suit the images and editing in a comic style

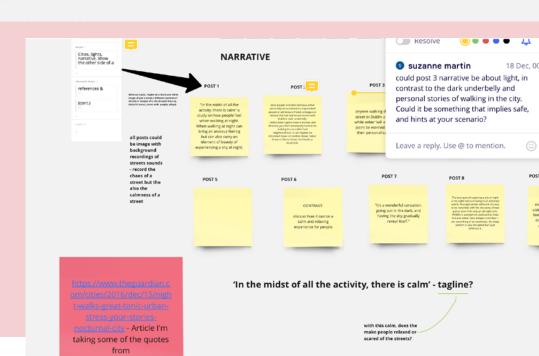
I like this, I think this could be really interesting

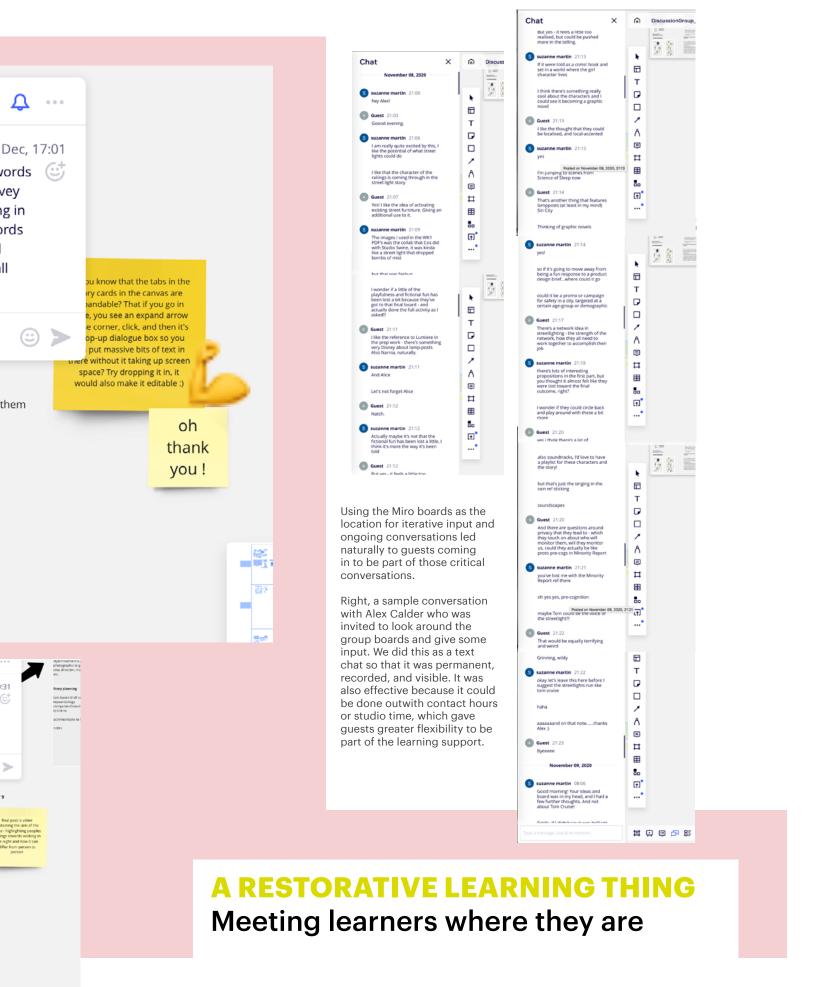
Communication and Feedback Loops

There is the thought, in digital or social media communications, that you can be more effective if you meet your users where they already are i.e.. instead of trying to migrate them to a new platform or different place to experience your message, use the apps/tools they are already on. This logic was applied to the programme.

Input, feedback and conversations took place on the Miro boards, and ranged from post-it note conversations with students, to comments, to chat stream conversations or general sharing of links & references for me/them to look at.

The openness of the dialogues made it easy for both parties to be part of, and also allowed other students to see the discussions happening in other groups.





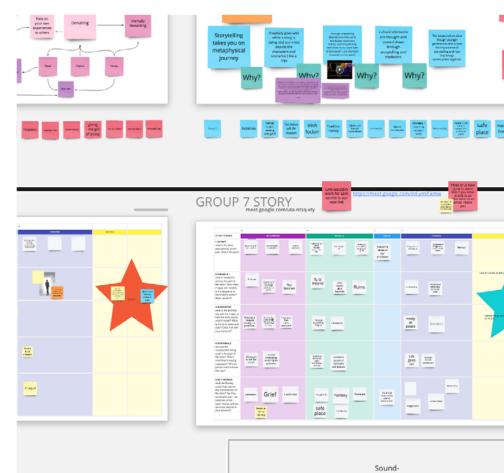
Digital Props and Tools

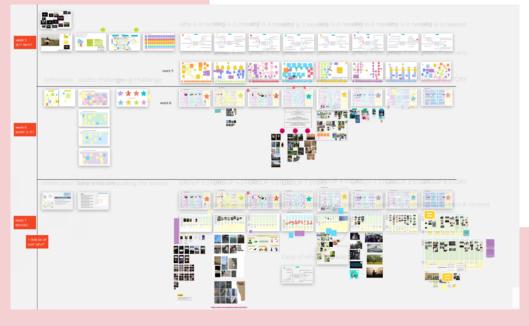
Using Miro as the main studio space and group working space meant that learners were able to think collectively despite being remote, and to capture their discussions visually.

This process was enhanced through the creation of bespoke canvases, tools and devices for structuring, as well as capturing, their thinking.

Most critically, a canvas for storytelling provided a framework within which to collectively plot a storyline across different lanes of activity and functionality - the canvas held the content (post-its, text, images) in place even if moved, so it had a practical function too.

Across the last 4 weeks we worked in one board as a studio class, and for this I created elements that provided learners with common start-points, hid frames to create the element of anticipation that one would have in a classroom/workshop, planned in ice-breakers or break-out sessions etc. Sessions were organised across the weeks as full-board swim lanes allowing everybody visibility of the development from week to week. See below.





Acoustic to start, middle and end Start- Hectic busy people yet not connected in any way sense of lonliness felt sound- Children, traffic

Middle- Calmer, magical, fairylike, windshim End- Calming, peaceful, countryside, waves/sea

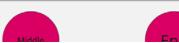
Aesthetic-

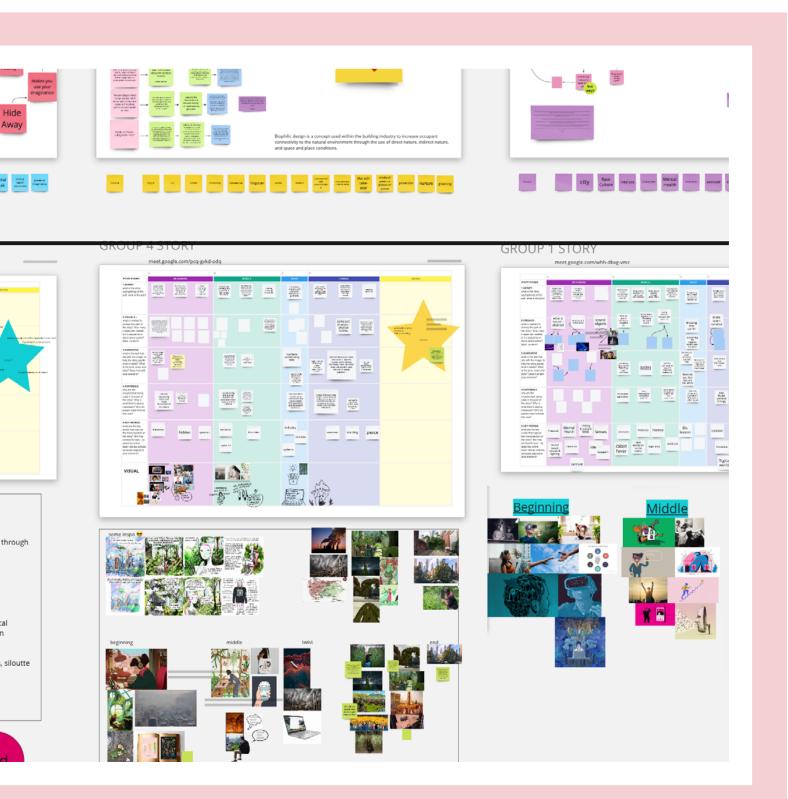
Colour determining emotions

Start- gloomy, purple/grey, smog-buildings/streets vliddle- Colourful, sparkle, fairytale like, memories-notrealistic, whimsi End- Green, fields, blooming flowers, waves, rooted, reality- connection

Plan-

raph water/waves ,busy city/streets, forest/windshimes, elderly- hands Sounds- city children/busy place, calming waves, wind, Visit places connected to story and document. Explore Artists/storytellers on how they portray stories.

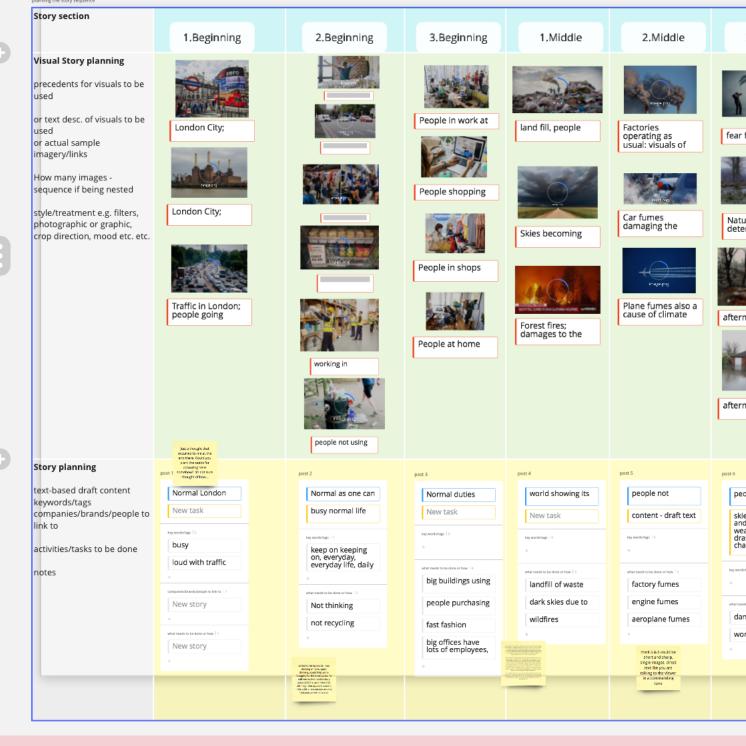


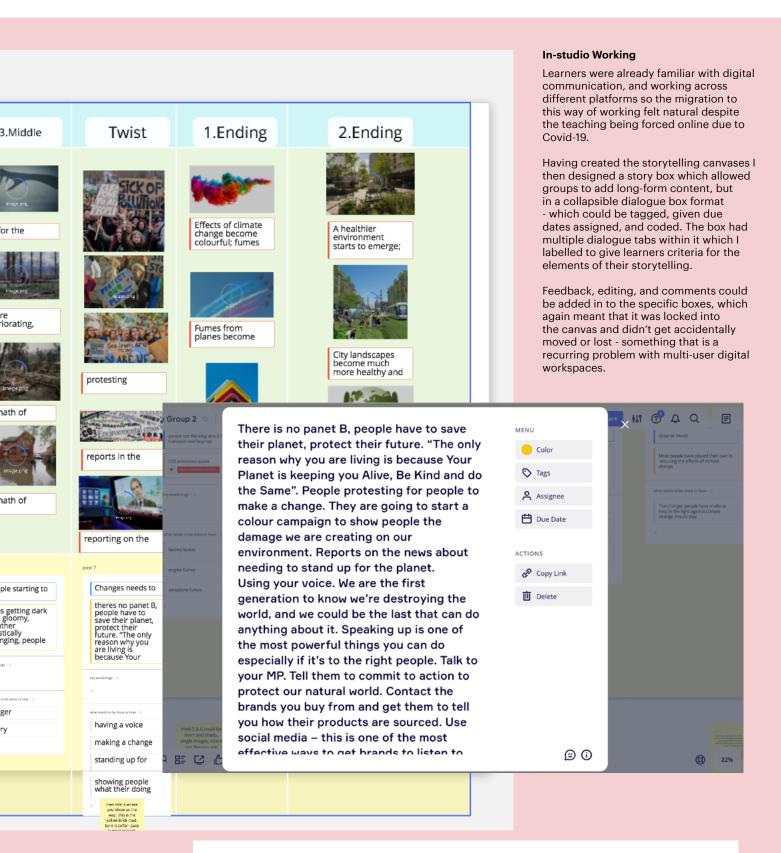


A RESTORATIVE LEARNING THING

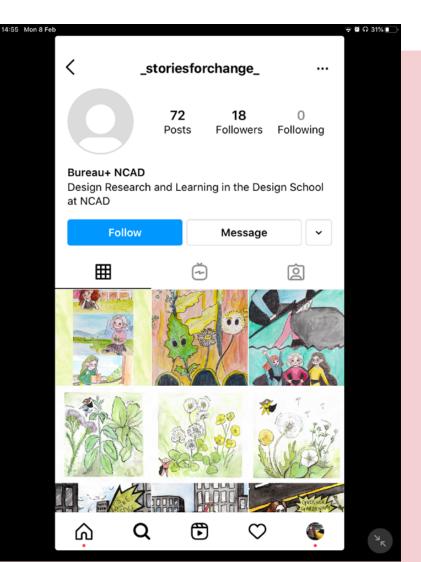
Ways-of-working

Group 2 - plan & content





A RESTORATIVE LEARNING THING Working in New Ways

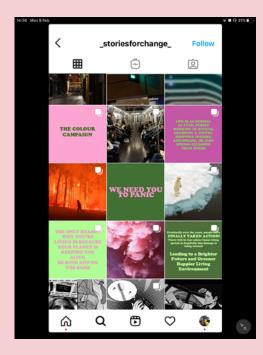


Telling the Story

To evidence their journey, the discussions and themes covered, each group practiced communicating their collective thinking across different mediums as part of their 'final submission'. Their conceptual stories of change were told in 9-frames on Instagram which required them to produce written and visual narratives - and because these were group stories, this also involved management of tasks, roles and collective voices.

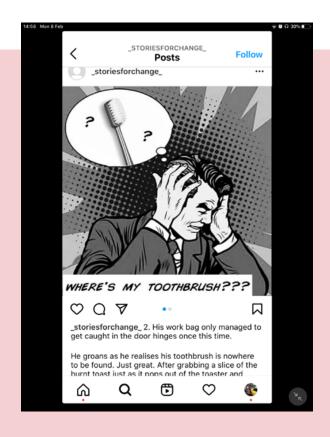
Many learners said they found this useful for their own communication practice as they were just beginning to think about how to promote their own thinking and work. Others saw the potential of the story to become more than simply words or images, and to act as a product. In culmination, the process and act of creating a public-facing story from the module gave learners a virtually tangible output to a programme of learning largely based on internal group dialgoues.

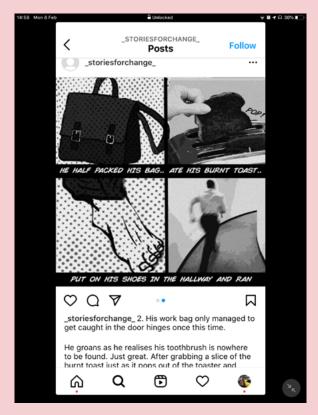








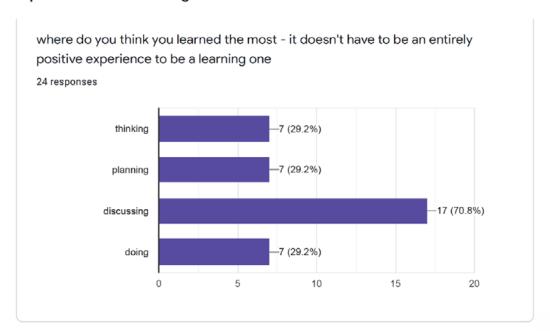






A RESTORATIVE LEARNING THING Telling the Story

6. Where do you think you learned the most - it doesn't have to be an entirely positive experience to be a learning one?



7. What one thing do you need to improve on?

photographing experiences and objects

Communication skills

discussing and connecting

Connecting

Balancing workload.

planning

Letting go, explore, thinking "abstract"

Getting everyone together at the same time to do work

Time management

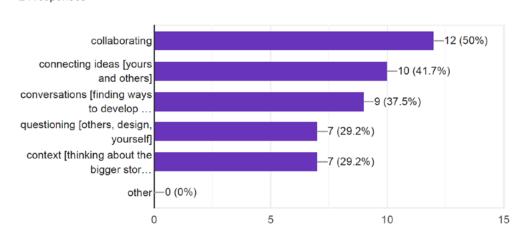
elaborating on my ideas and not going for the first idea that comes to mind

Communication

Knowledge on indesign, Abili ability to explore out of my coll found working as a group from the communication maybe think even bigger of w

Where do you feel like you stretched and learned the most, about yourself as a designer, in this programme?

24 responses



9. What are two 'design learning takeaways' - things you learned about your ways-of-working that you can take forward?

- every idea can lead to a different path and to look at things more widely
- Organising Miro board. Reaching out for help.
- ideation
- · Ideation and Teamwork
- · Better planning and time management.
- Throw ideas at the wall and see what sticks don't let the inner monologue doubt them. No idea is a bad idea... good ideas can stem from bad ideas. Don't be afraid to voice outlandish ideas. Learn to manage time better so you can set out what you wanted to do I opted for making a shorter, less impactful ad than the one I had scripted. This frustrated me when I had to submit. If I want to avoid feeling like that in the future then I'll have to manage my time better to achieve what I want instead of submitting something that 'does the job'.
- lateral thinking and connecting ideas
- · Getting a good story out of a few images to start with. Trusting the process
- To think in detail about a scenario to get the most out of it, Better understanding of working remotely.
- Working in a group can be very beneficial to push myself to try new things and expand from my comfort
 zone in my design practice. I need to be more strict with myself with regards to the time I spend on tasks.
 I need to prioritise more.
- the first takeaway task where we went to a place and took three things we noticed first and described them and then the second task of going back to the same place and elaborating on it.
- · Not everyone's schedules line up so be prepared. Email & communicate more
- · Using miro is a good way of developing a theme. Looking at surroundings and situations in more detail
- ability to develop ideas using miro, Online communication with team members
- · To story board and think of my idea in words and as a story rather than a stand-alone visual.
- something small can turn into something big and creative
- As mentioned, to think and create without barriers of what other expect or what will impress. I do think it essential to look for critique as much as possible, other people can highlight things I dont see.
- I get caught up with lots of different ideas and then can never work any of them to completion because
 there are too many. I need to work on staying still and focuses, and on being patient. Even though I'm an
 illustrator I love using words, and sometimes they come to me before an image, and to explore this before
 I get halfway through drawing something and then to realise it doesn't fit what I actually wanted to do
- · collaboration, planning + making drafts
- I learned that I work better when I have the opportunity to discuss my work with other people, maybe
 I just need to think out loud sometimes. I also think the processes we used to give objects a narrative
 helped me generate so many fun ideas, this is definitely something I want to try to do again!
- 1. I really benefit from working in a notebook and taking notes, which I can then refer back to. 2. I benefit from going and working (drawing/photographing/writing) "on site".
- · I enjoyed the collaboration with other people, and how working with others helps prompt new ideas and

Reflection/Reaction

As part of the final submission, learners individually completed a questionnaire that prompted them to consider not only what they'd done, but how they had done it and what that meant in terms of their design learning journey. The questions encourage them to own their learning.

A RESTORATIVE LEARNING THING Embedding Learning

4.10 Concluding Design Conversation

The conversations and insights from the semi-structured interviews with UK and Irish design thought-leaders in 2016/17 proved invaluable for developing direction in the research project.

In concluding these first two Action Research Cycles, I invited design critic and author John Thackara to be part of a reflective discussion about the research. Thackara's book 'How to Thrive in the Next Economy' shaped my thinking coming in to the MRes in 2016. Given his international expertise and insights, but perhaps more importantly his approach to design and the design ecosystem, a conversation with him was an opportunity to sense check the research fieldwork.

In May 2020 I suggested that we pick-up the conversation - that had been started when I was invited to his research retreat in August 2019 - and proposed an Exquisite Corpse model of design discourse. We had an email conversation that took place every 1-3 days, over the course of 6 weeks.

Talking Points and Insights

The conversation was conducted between May and June 2020, a sample of the transcript is in Appendix D. Below are some of the key insights:

- 1. Any discussion about the possibilities for 'framing the system' needs to include provocations for, and perspectives on, change. It should address structures that influence and shape learning, supporting institutions that act as incubators as cooperative platforms, as bridges, as connectors. Key words: influence, connections, questioning power structures.
- 2. Learning comes from experiencing; therefore, we should understand what collective experience of studio-based learning is, versus the experience of collectivity. Exploration of new notions of learning and experience are needed, making learning experiences that are memorable is critical. To do that we need to speak the same language of learning, the learner and the learned. Key words: signpost, talk, look.
- 3. Learning is a relationship, humanise the story, view it as a conversation between two people, "... the risk you might take in a new relationship with a lover or friend -you cannot foresee the outcome but you have a certain trust that can sustain its possibility. Who knows if the friendship or love will last? But we can reflect on the experience and the feelings that allow us to take risks and to experiment the laughter and joy in the face of uncertainty..."
- **4.** What is edge to one, is centre to another. Local variations of design learning could point the way forward, indigenous ways of thinking, doing and making. Key words: collaborating, connecting, iterating, adapting, experiencing.

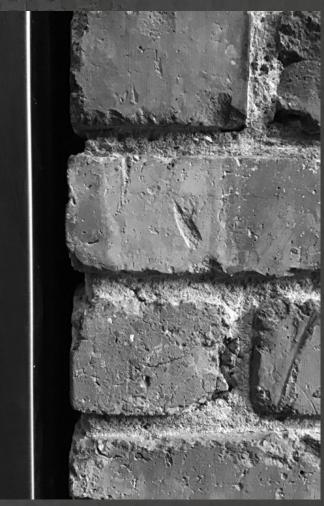
- 5. Nomadic design learning, a homeless design school as a structure to influence and shape the design learning, one that house new thinking, a temporary space with a sense of freedom by being uprooted from the norm. Key words: peripatetic, predictive, intentional, intuitive, with few or with many, actorsagents-contexts.
- **6.** The storying of place. The workforce and workplace of the future reimagined with routes from current pathways to future, ecological centered roles for design graduates. Using design to help create the tools, methods and structures for effective collection, monitoring and application of data about our 'place'.

4.11 Conclusion

This chapter described a curated set of activities undertaken as fieldwork across during two Cycles of Action Research, four Case Studies, and seven Things. It aimed to highlight the evolving, iterative nature of this expanded research journey. Informed by the practice of designing learning and communication, it was critical to show the doing of this research study, as well as the thinking.

This chapter opens with industry interviews, and learning inventories of those working in the sector. The chapter closes with a visual essay that tells the story from my conversation with John Thackara. Using extracts and images from the process, the essay sets the stage for analysis of the fieldwork in chapter 5.

The learning experiences you value - the edge, unconventional or radical pedagogical design learning models - are great examples for the Design School, but that it's often hard for a school to do anything like those edge examples because the infrastructure, systems, staffing, spaces etc. get in the way. Radical models can be held up as examples, some create impact, some are incredibly positive, but it's almost impossible for them to be incorporated into the existing systems and structures - many who start them wouldn't want that anyway, they exist as a revolt or reaction to the system.



19/05/20 Suzanne (SM) to John (JT)

For a while, I bla as a whole, and members in part myself, for being learned that inst because you tell when you show or not - when the for me, messing way of interveni hope that the co so will the institu med the institutions self-obsessed faculty ticular. Then I blamed g ineffective. Finally, I titutions do not change them to do so, nor even them how. They change eir context changes. So, about at the edge is my ng in the context - in the ntext will shift and, then, utions.

I wondered if this quote, relating to trust and risk, from a Belgian philosopher, Isabelle Stengers, captures how you went in to the RCA, and indeed, how many approach the design school initially!

"... the risk you might take in a new relationship with a lover or friend - you cannot foresee the outcome but you have a certain trust that can sustain its possibility. Who knows if the friendship or love will last? But we can reflect on the experience and the feelings that allow us to take risks and to experiment - the laughter and joy in the face of uncertainty..."

Peripatetic. Predictive. Persistent. Intuitive. Intentional. Outside. Resistant





Collaborating, Connectin

Teachers and students ali freedom if they are forced if they are ejected from the choosing to leave them.

Being nomadic could be a students to the 'storying of next students can learn he bioregion re-connects us through the unique places

g, Iterating, Adapting, Experiencing

ke may experience a sense of I to camp out in temporary spaces eir silos, in other words, rather than

brilliant way to expose design of place' as Regenesys puts it. These ow to do bioregioning for real. A with living systems, and each other, s where we live and work.

I suppose it's not so much about venue, as the change in experiences - from the physical and tangible learning in the studio, to virtual, solo physical and self-led (in terms of in-the-moment and motivation to engage fully) experiences. I think it really will feel like an ejection or eviction to staff and previous students.

Which, I agree, is brilliant and much needed. Yet for those students coming in, it'll be exactly that phrase which everyone is enjoying applying to everything in our lived lives, it'll be the 'new normal'. So it is a really fascinating moment in terms of designing learning. There's a sensory and experiential element that we, as educators, perhaps haven't had to think about in terms of day-to-day learning experiences in the design school.

A homeless design school can also be revival by showcasing locally-sourced needed to use them, and under-used to be re-purposed.

In time, design schools could evolve in platforms. A challenge for all change of stakeholders who need to be connected to get things done.

Why not retool design schools as bridged foster reciprocal relationships between in a common goal: the long-term healt place?

Collaborating, connecting, iterating, Networked. Placed. Renewed.

an engine of economic d materials, the skills spaces with the potential

nto cooperation makers is the diversity ected and stewarded in

ges and connectors that en diverse actors united th and vitality of their

experiencing.



01/06/20 SM to JT

'An engine of revival', what a great statement. Renewal. Regeneration. Re-imagined.

The creative tasks you've listed are something that would be interesting to map to learning paths: to chart from current design learning to those new activities, because I'm sure there are interesting routes. I've been thinking recently about the design learning needed to better support a 'workforce and workplace of the future'.



07/06/20 JT to SM

In the renewed a come, we will ne pubic institution public libraries, t and public garde defend them, and same time. That adding and deep that connect an i usterity onslaught to ed to defend all kinds of s - from post offices and to community colleges ens. The art will be to d transform them, at the task is best achieved by ening the relationships nstitution to its place.

analysis and discussion MAGICAL . PRAGMATISM

5.1	Positioning
5.2	Summary of analytical approach
5.3	Route (a) Positioning
5.4	Patterns within the learnings - opportunity categorisation
5.5	Headlines
5.6	Creating Value
5.7	Route (b) Positioning
5.8	Fiieldwork analysis approach
5.9	Patterns Within the Learnings
5.10	Opportunity Identification and Stories for Change
5.11	Chapter Conclusion

This chapter discusses and analyses the fieldwork activities along two approaches to firstly establish the headlines, stories and principles, then, critically, to put these into action to shape the impact, value, and role of this work. It builds toward understanding how resilient learning could be scaffolded.

5.1 Positioning

In any private sector setting where design now lives, the teams working on solving problems are diverse, the level of complexity is too great for any one discipline to address (Mau, 2020). The research fieldwork demonstrated a need to find ways to support disparate Communities of Practice (CoP) becoming aligned communities of Interest (CoI). These CoI could be defined as "groups similar to CoPs, but from different backgrounds, coming together to solve a particular [design] problem of common concern" (Arias & Fischer 2000). Like so much of the larger ecosystem in 2020/21, focus is needed to frame and support CoI's.

Institutioning is a process of altering frames within organisations or institutions. The framework of approaches tested within the fieldwork created a series of principles for making the practice of participatory learning work. These formed the basis of support scaffolding for the analysis of the research activities.

Infrastructuring is a process of building relationships with diverse actors within the organisations of institutions. Within the context of the research Things, the potential for infrastructuring to enable the successful institutioning of the ways-of-working is demonstrated.

5.2 Summary of Analytical Approach

The dominant mode for building a coherent analysis of this body of research has been auto-ethnographic

reflection (Pace, 2012), through a creative narrative process. This mode draws together working experiences with the research methods, placing the inherently interventionist design processes of the MRes research, into a bigger critical ecology where the role and value of these interactions is positioned within a design learning context.

Addressing the aims and objectives of the 2020 MRes research proposal (Table 1, p. 34), this chapter discusses the analysis and key learnings along two routes:

(a) A reflective review and critique of the research that defines a framework for institutioning by discussing the analysis in terms of: discursive design, sense-making, boundary objects, dialogue tools and reflective practice.

This route sets out the analysis to frame the need for design leadership as a knowledge broker within participatory learning practice in institutions or organisations. It refers to Action Cycle 1, Case Studies 1 + 2.

(b) Evaluative analysis is employed in an 'action learning' vehicle to apply the wild research learnings in an a designed, analytical activity.

This route infrastructures the participatory learning knowledge generated within the research project in an expanded validation approach. In effect, seeding the impact to create future growth in knowledge and learning. It specifically refers to Action Cycle 2 only.

Activity and findings within all the Case Studies were

informally analysed as part of the participatory research process within the live projects where they were situated. Therefore, the analysis in this chapter draws out key directions, actions, opportunities as well as learnings which build on that on-going analytical process.

Reflective Review and Critique of Practice

ACTION CYCLE 1

5.3 Route (a) Positioning

In discussing the situated research, it is critical to remember that the learning, findings and analysis were influenced by the context of the live projects, clients and business.

At the time, the observations were success-driven measures and categorised as:

- **A.** Learnings from the project for studio, team, projects.
- B. Learnings from the project that fed into the project.
- C. Value/impact on the business.
- **D.** Knowledge & value generation and transfer.
- E. Barriers to design research [within the company].
- **F.** Impact of barriers to design research [on the project].

The project-time observations, and thematic findings from across Case Study 1 (Ch4.6) and Case Study 2 (Ch4.7) were executed in live projects, are collated, coded and detailed in Table 11.

Observations were generated in relation to the frame of work (Table 4, p. 54) and coded for evaluation according to Marsick and Watkins 'Characteristics of a learning organisation' (2003).

The observations were made during project-time, within live projects during fieldwork in 2017 and have not been revised or edited within this body of work - aside from cleaning-up the sentence structure. At the time, whilst working, related pressures around the projects left me discontented, and this lens will have had some influence in how I perceived the learning, impact and value of the research activities. Therefore, in consideration of this, the coding has not being weighted, or used to indicate measured patterns within the research conducted. Within the context of this review, the coding is indicative of where the observations and research align and was used to understand thematic patterns that produce a set of 'talking points' to discuss in relation to infrastructuring

participatory learning in the workplace.

As the lens, through which the observations were made, may have led to bias, and in consideration of the review being conducted three years later, in a different context, the research within Studies 1 and 2 is described in a distinct language. Table 11 sets out the findings as 'learnings and opportunities', and describes the coding as 'characteristics', intended to shape clarity around how the research was interpreted. Table 14 sets out the 'learnings & opportunities' as catalogued by participatory approaches [discussed in Ch2.2], and those are identified by key words.

The analysis does not discuss this body of research in terms of conclusions, findings or even as data. An empathetic, naturalistic language is applied which reflects the subjectivity of the observations, and, critically, the experiential nature of the research activities. This enables accurate positioning of discursive analysis in this chapter.

Case Study 1 activities were within an early stage, live, research project, therefore do not include observations E - F. Case Study 2 activities were undertaken across a longer period in a mid-stage project therefore include all observations, from A to F, with an emphasis on E and F, because the nature of the live project presented scope to explore those in more depth .

5.4 Patterns Within the Learnings - opportunity categorisation

Analysing the learnings in the context of 2020/21, brought value to re-viewing the content. Learnings from the activities are viewed as opportunities for development, not as final conclusions.

Categorising the learnings (from 2017) generated by Studies 1 and 2, in line with the lenses discussed in the Contextual Review, provided an indication of key areas for discussion. Sense-making was an underlying or primary force behind the majority of opportunities, which could have been an effect of the activities being research-led communication Things. Mutual-learning, and the 'reflection in action' aspect of Situated Design also featured strongly, which is understandable, given the focus on 'shared' learning and knowledge generation of the Things. Dialogue tools and boundary objects have not come out as primary categories of the learnings, whilst being the delivery vehicle for many of the Things. It was interesting to find that 'leadership as knowledge broker' did not appear as a core category for the learning-opportunities, yet the lack of, was a motivation (and a block) for many of the activities in the Things.

Table 14 (p. 142) details the summary insights from these observations. Table 15 (p. 144) details all the observations and their categorisations.

5.5 Headlines

5.5.1 Sense-making

If the primary, or underlying opportunities represented by the learnings (Table 12, p. 132) fall under Sense-making, then it is relevant to re-consider what constitutes a Sense-making tool, where they are used within designing and how they can be applied within the design process.

These tools potentially reveal a deeper understanding, and within the context of this body of research, understanding, pertains to sharing or growing knowledge, together, across teams, and in a participatory way. Whilst Sense-making ordinarily describes individual tools to help make sense of information, from this research, it is proposed that they be considered as an approach to generating knowledge when working within complex problem spaces. Sense-making is required at the beginning to understand language, knowledge and perspectives within the multidisciplinary teams. Sense-making is required throughout project-time (Huybrechts, 2014) to support the flow, the sharing and the application of knowledge and learning across the team - it underpins the development of what I described as 'project way-finding'. Sense-making is required at the close of a project/phase to develop understanding of learning, knowledge, and ways of working that could be transferred to the next team or project. As demonstrated in Studies 1 and 2, the same tools or approaches, can be applied across the design process of projects simply by altering the programme of activity/questioning/ discussion around them.

Structures for improved communication are needed throughout the designing process, to support learning and knowledge sharing. Sense-making shapes that structure.

5.5.2 Mutual-learning

This characteristic is largely assumed to be present within design - due to the empathetic, human-centred ethos - and within multidisciplinary project teams (because everybody is united in solving for one problem) but, in the context of this body of research, it often wasn't apparent. And often it was not apparent because there was no scaffolding to support it. Instead, in the fieldwork, it became a driver for the interventions and research activities.

Within the categorisation of the learnings (Table 12), Mutual-learning predominantly appears alongside Sensemaking; the two characteristics operated in tandem. Participatory learning, within this context, relied on one to generate the other. This thinking supported the approach to iterative sequencing of activities within Studies 1 and 2 - not everything happened within one learning vehicle, but across the span of participatory learning activities.

The opportunities that fall under the Mutual-learning headline can be categorised as being about behavioural change, language, value and knowledge. If those key words form a cornerstone for developing Mutual-learning supports, then the fieldwork indicates that any learning framework focus on generating achievement, realisation, understanding, encouragement and questioning.

5.5.3 Reflection-in-action, as part of Situated Design

This specific aspect of Situated Design could describe much of the participation across Studies 1 and 2, for example, the interactive tools/props that were used within interviews and meetings (Study 1.II) and the prototype interactive system model (Study 1.III). It could be said that Case Study 1 was, generally, more about Reflection-in-action than Case Study 2, because it aimed to establish a common baseline of understanding & knowledge to build a project upon. That naturally required reflective activity, specifically, a 'thinking whilst doing' mindset. Case Study 2 was predominantly about sharing knowledge within the context of an established project, hence, the reflection was often a separate activity to the participatory learning - though naturally, mutual learning and sense-making involve aspects of reflection.

In Case Study 1, the activity and props that prompted reflection-in-action, were informal, fast, and spontaneous, which influenced the way participants responded and the way the Things developed. In Case Study 2, the tools and props were being applied (many having been tested in Case Study 1) therefore the delivery around them was more structured and controlled - and outcomes oriented toward learning goals, more than reflective, developmental take-aways.

5.5.4 Leadership as Knowledge Broker

A minority of the identified learnings-opportunities fall under this category, however, this was a driver for the activities within Studies 1 and 2, and indeed the direction of this body of research.

Whilst there was possible bias in terms of the creation of observations and learnings in 2017, viewed from the 2020/21 perspective, the research showed that there was potential for leadership to have supported the research activities: in terms of embedding them into the design project approach, supporting them in the context of multi-pillar discussions around the value of design, and promoting them as possible ways-of-working.

Throughout the fieldwork, project leadership and design leadership were experienced as a periphery, intermittent and inconsistent support across the projects where Studies 1 and 2 were situated. There was no translation of learning from one project into another, primarily because there was no cummulative opportunity or platform to

share it. In the same way that design is presumed to be empathetic and that designing therefore naturally supports learning development, it may be incorrectly incorrect to presume that design leadership proactively shapes and leads knowledge development practices.

5.6 Creating Value

Invariably, value is measured in terms of impact, gains and change affected from an outcome or product. In this project, it is discussed from the perspective of growing transformation, following Thackara's outline of change as a 'phase shift' (Thackara, 2015).

5.6.1 Dialogue Tools

The use of tangible dialogue tools was invaluable to both the learning and knowledge created within the projecttime of this research, and was critical to the dialogues that were formed around shaping that knowledge.

In reference to the role of boundary objects within Knowledge Management (KM), Kanal et al (2019) describe there being three dimensions of boundary objects, stating that researchers predominantly discuss using an interpretive flexibility dimension. Critically, they point to the fact that not every object is a boundary object - scale and scope in particular contexts can determine this - therefore they suggest that in discussions of objects they should be classed as 'designated' or 'in use', and only applied where they can be actively used to allow the participants to access new knowledge that otherwise would otherwise have been inaccessible.

The effectiveness of a boundary object relies on the familiar; all actors involved must have some familiarity with the form in order for the object to resonate with disparate audiences. Boundary objects are those which carry "different meanings in different social worlds, but their structure is common enough to more than one world to make them recognizable, a means of translation" (Bowker & Star 2000).

Recommendations for understanding the role of objects within participatory learning are:

- Boundary Objects embody Mediators in a shared experience.
- Boundary Objects build Platforms for negotiating, knowing and managing complexity.
- Boundary Objects act as Facilitators for language and knowledge development.
- Learning is a Boundary Object for effective design thinking and doing.

5.6.2 Principles

Discussion of the fieldwork learnings focused on

opportunity, and these were pulled forward into insights, which built a set of 'talking points' for shaping further dialogues, and learning, around Design Learning (DL). Those have grown into principles that, in turn, support thinking toward a Design Learning Framework (DLF).

Phases of learning, as defined within the personal inventories exercise (Ch4.3) also informed these principles.

- 1. Practicing grows learning. Design leadership and directors rise through design studios into management positions, supporting learning and knowledge development from a managerial perspective without awareness of the pedagogical scaffolding needed to encourage growth through practicing.
- 2. Sharing effectively is reliant on support structures. Props are needed around which these processes can be anchored, and where outcomes, learnings, and understanding, can be attached. This requires time and space within projects, and practice. And that requires understanding from leaders on projects.
- 3. Observing develops deep understanding. Within peer activities, observation skills like 'active listening' are critical to learning through acting & speaking. Not everybody knows how to observe and listen, or act and speak, within multi-disciplinary contexts, therefore approaches to shaping shared language and shared behaviours can lead to shared thinking (moving beyond co-creation).
- 4. Questioning, through action, shapes collective direction. Bringing the team together through communication challenges, linked to objects, creates purpose for informal dialogues around a topic and permission to question, debate, investigate, and thereby learn together.
- **5.** Involving means more than collaborating. Bringing everyone around a project into the dialogue, in a way that is equitable, in a way that communicates how the discussion will shape the project, encourages openness and generosity in the questioning and shared learning.

Evaluative Analysis Route (b)

ACTION CYCLE 2

5.7 Route (b) Positioning

This analysis route uses Case Study 4, a design module, as a step toward discussing what infrastructure a design learning culture needs to grow and to become resilient.

Critically, this route for analysing the research is an

opportunity to evaluate the relevance of the learning and knowledge generated within Cycle 1, moving toward understanding its dependence on context. In the translation from a private sector design setting to the Design School, an expanded view of the research project is generated, one that opens-up the possibility for designled analysis.

The Restorative Learning Thing, Study 4, embodied the MRes project-learning and created a prototype framework situated within the Studio+ space at NCAD, Dublin, Ireland. It was in progress at publication, and therefore the language used to evaluate its contribution is distinctly formative.

Within Cycle 1, the research activities were conducted across multiple projects, as interlinked case studies within live, client project scenarios. There was not scope to build the learnings into a stand-alone project to test the research approaches in a singular, controlled environment. Study 4 presented an opportunity to design a project that brought together the key ways-of-working, reflections on my learning, as well as the project-time learning of participants, to iterate and test it in a new context, in the Design School. This learning Thing used digital platforms/tools such as Miro, Google Classroom, Dropmark and Zoom.

5.8 Fieldwork Analysis Approach

Prior to commencing Cycle 2, the Wellbeing Wheel tool (Study 3) was used to aid my reflective and refractive design process (described in Appendix A).

Study 4 aimed to put the Headlines and the evaluation of value, into action, with particular focus on how they might translate effectively to a remote experience that used digital or intangible props and tools.

This approach to disseminating the learnings from this pedagogical experience focused on the opportunities identified for further development – the Headlines and Stories from Cycle 1 (Ch5.5). And within this, the success or needs of those ways-of-working, when applied to the Design School learning context.

The Characteristics of a Learning Organisation (Marsick and Watkins, 2003) were used as a driver for activity and analysis throughout this Restorative Learning Thing. Having reviewed and coded Cycle 1 in reference to their characteristics (Table 14 and 15), gaps for development were identified and incorporated into the brief created for using Study 4.

Using this Case Study as an analysis vehicle enabled investigation of how Participatory Learning approaches may relate to radical pedagogy in a Higher Education context (Table 1, Aim C) whilst also allowing for an analytical exploration of the symbiotic relationship between my role as an educator and my role developing Participatory Research within a design studio (Table 1,

Aim D). It touched on all the research sub-questions, but primarily addressed Question 4 in that it probed whether stimulating, uncertain, learning environments exist within organisations and institutions.

5.9 Patterns within the Learnings

The headlines discussed earlier in this Chapter were used to make sense of the formative impact of the Restorative Learning Thing (Study 4), and thereby, the impact of the research project itself. Bringing together input and validation from the NCAD Heads of Design (Table 12) added critical perspective on the research undertaken. Combined with the learners 'reflection/reaction' activity (sampler shown on p. 106), this helped shape the experienced value of the study.

Future value recommendations from Study 4 intuitively tied to key words that John Thackara and I highlighted in our closing conversation (extracts on p. 109-119). Potential project impact routes, can be captured as being:

- Connecting playful, informal and conversational communication enhanced the learning experience by making it accessible to all. The learning material attempted to generate a common language infrastructure, promoting accessibility through familiarity.
- Experiencing providing a visually-led infrastructure (to both the designing and the learning progress) that felt tangible, was critical to the impact of new, multidisciplinary and virtual learning. Rooting learning in a physically experienced exercise anchored it to something real, which was important to the success of the virtual delivery.
- Collaborating co-working, discussing and cocreative thinking are not necessarily things that every learner can do easily, therefore support structures and prompts are needed to scaffold the process of working together, in new ways, and with new people.
- Iterating creating a learning structure that follows the learner (in the first iteration) encourages it to be responsive to needs, and therefore, through an evolving approach to development, a restorative experience. Basing a learning structure on actual experience of learning is critical to success.
- Adapting a fluid approach to the learning structure, and direction, allowed for opportunities to address blocks that came up, or readiness/ ability to progress with the programme. Generating weekly briefs, issued during the programme created pace, but also the ability to re-focus, recap or redress elements of the learning experience.

5.10 Opportunity Identification and Stories for Change

Some of the stories from Cycle 1, summarised in Table 14, became more critical in this Case Study in Cycle 2, as shown in Table 12. They presented multiple characteristics, however, they have been categorised according to where they have the most potential for future learning impact and subsequent development.

Based on the feedback and input (Table 12), key stories to take forward into future research are those connected to sense-making and reflection-in-action opportunities. Formative insights centre on support. Support for knowledge sharing within non-physical team spaces, for growing and developing language to share with, and clear, flexible structuring of this so that it can be adapted and navigated by users independently.

5.10.1 Impact Statements and Validation

Not all stages of the 'in the wild' projects within the Case Studies, presented in this body of research, allowed for direct evaluation of research impact.

I conducted a 'reflection/reaction' activity with the wider project team following a Dissemination Workshop (Study 2.II) in Cycle 1 which demonstrated the positive impact my interventions had on the participants individually, and collectively.

Whilst the feedback did not provide specific data to directly inform future developments, it did indicate an appetite for participatory, co-learning learning activities within a multidisciplinary team. Table 12, details this participant input against the impact statements, which were taken forward into two impact claims (Figures 16 and 17) for Cycle 1.

As Cycle 2, Study 4, was in progress at the time of submission, both value and impact were formatively termed. Based on the 'Reflection/Reaction' questionnaire that learners completed (Study 4, p. 106), combined with input from the Heads of Department, one initial impact claim has been made (Figure 15).

5.11 Chapter Conclusion

This chapter has sought to analyse the fieldwork undertaken during a multi-staged and stranded research journey. Key learnings and insights were generated through coding and evaluating the fieldwork, and its constituent case studies and design learning 'Things'. This chapter closes with the Impact Claims (Cycle 1 and 2) and Tables with all research fieldwork analysis.

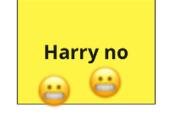
Evaluating the headlines, stories, recommendations and principles, from a Value perspective, provided the platform for positioning this body of work for future

research. The learnings helped scaffold the opportunity for infrastructuring and institutioning Design Learning (DL) in the learning-place, and work-place. These possibilities are discussed in the concluding chapter.

Conversational guides participal respond to, react explore change for themselv arning ex

anguage nts to to, and









Cycle 2, Study 4: Restorative Learning Thing Opportunities and Insights

Opportunity Insights + Validation

Α	Leadership as Knowledge Broker			
1	Framing the project direction through strategic language, influenced the perspective of learners By creating a topic, and a progressive approach to learning about it (that used language which implies change, openness and flexibility) learners were encouraged to create and behave in a change-led, open, fluid way.	this approach introduces a process and tool kit to help the learner respond, react and explore the potential for changing viewpoints through the use of thought and language.		
2	Creating a real-world, experience-based start to the design journey grounded it Learners began the programme by undertaking a physical mapping experience individually. This gave each participant a common experience that they translated from their own perspectives, in turn it created something tangible to anchor group and digital work. Starting with something familiar, and real to the learners provided a safe place to start, they felt comfortable and confident therefore were open to the new ways of learning that followed.	SR: Online learning has brought challenges in terms of the initiation phase of studio projects and the ability to successfully engage students with any new area of learning. The approach outlined aligns with my own understanding of best practice in terms of framing the project in a space that is understandable but also supports students to engage with new concepts.		
3	Re-imagining the role of a facilitator for an online studio gave the programme an identity The experience of remote learning can be isolating and become a block for learning but at the same time, learning in a pandemic lockdown created pressure on individuals schedules. Each week the brief was accompanied by an audio walkthroughthis was specifically conversational and unscripted, as it would be in the studio or a workshop. It provided what felt like personal input, thoughts and direction for each participant to interpret as they wished. Critically, this recorded audio was effective because learners could pause, replay, rewind and repeat it as often as needed. 'Live' facilitation across a day wouldn't allow them the same flexibility, nor would it have given them control of when and how they used input	JPD: A tricky one, in my own practice pre-covid I was very much an educator who used the facilitator module, where briefs, projects and classroom interaction were approached as 'arenas' of inquiry. Setting parameters (unbeknownst to the students) to allow them to explore individual topics or tasks. In an online module this is much more difficult, as the ability to 'lose' a student is much greater. Facial expression, body posture responses are often impossible to read. The ability to inject and steer learning is at a loss. In saying this new modes of learning rather than trying to replicate what we did in previous years is needed. Essentially we are now in a testing phrase of blended learning and will likely take some years to develop modes of delivery that will best accommodate a variety of learning styles. AOK: I agree the experience of remote learning can be isolating and become a block for learning especially for mixed ability and PONS students. The audio walkthrough and conversations style with visiting lectures was a very valuable addition to the project and allowed for an approachable personal style of delivery that students could relate to and play back. The audio built from week to week which facilitated asynchronous learning.		

UNIVERSAL KEY - ANALYSIS CHAPTER

Characteristic

Item

Opportunity Headline & Story

Create continuous learning Opportunities:	Promote inquiry and dialogue:	Encourage collaboration and team learning:	Create systems to capture and share learning:	Connect the organisation to its environment:	Provide strategic leadership for learning:
that people can learn on the job; opportunities are provided for		Work is designed to use groups to access different modes of thinking; groups are expected to learn together and work together; collaboration is valued by the culture and rewarded.	systems to share learning are created and integrated with work;	effect of their work on the entire enterprise; people scan the	Leaders model, champion, and support learning; leadership uses learning strategically for business results.

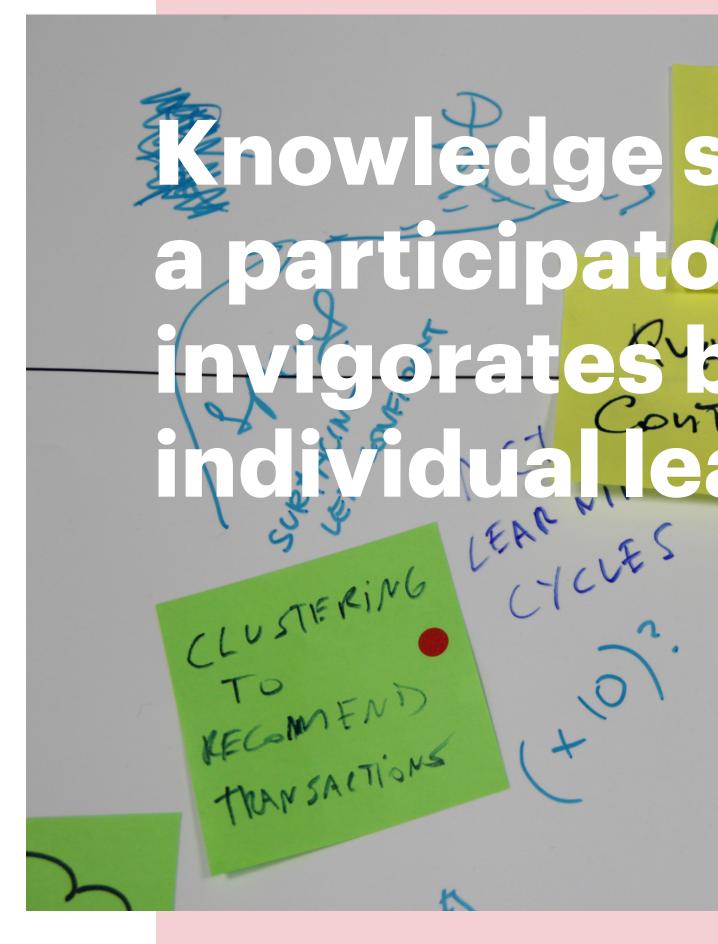
Observations in all Tables in the Analysis Chapter are coded using Characteristics of a Learning Organisation (Marsick and Watkins, 2003). Any observations/input are related to a characteristic, or an opportunity/need for it. This key details the characteristics used. and colour system.

gap/missing characteristic

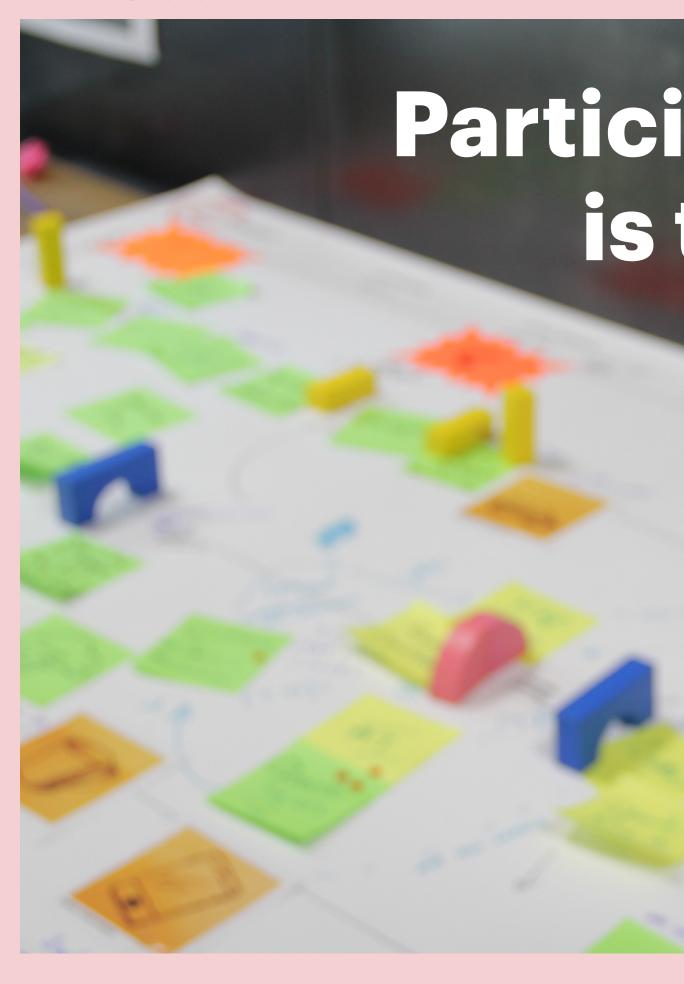
identified characteristic

Characteristic	Item	Opportunity Headline & Story	Opportunity Insights + Validation
	Α	Leadership as knowledge broker (cont.)	
	4	Discussing topics with guests, instead of inviting guest lectures made expert knowledge accessible and relatable. Entirely remote delivery, without in-person experience was countered by constructing different ways of bringing expert knowledge to the learners. Following an informal interview structure, conducted as a two-person zoom session, guest speakers were part of interlinked conversations about key topics. The set encouraged depth of thinking around areas that directly supported the learning direction.	DM: Having to employ remote delivery did not hinder the level of support the student received but rather increased it. Both the lecturer and guest lecture were able to support the individual student via two-person Zoom meetings to ensure the content/topics and ideas were more fully explored together, as a co-creative team. AOK: This approach was trialled in the last academic year and worked well for students. The co-curated style allowed for in depth thinking, teasing out of ideas, and focused Q&A. One of challenges we face with online delivery is retaining students' attention, the conversational style in this project was compelling and delved into specific areas through an informal structure rather than a longer lecture that often disengages students.
	В	Sense-making	
	1	Building a common language for all materials, learning, and input made new learning scalable for each participant. Scaling the programme was not the priority in this iteration but scaling each learner's ability to navigate new kinds of thinking and learning, to be confident in generating knowledge was critical. Using consistent terminology, and finding a language system that was simple yet progressive provided a coded structure for exploring learning.	JPD: Language and the introduction of 'new' language is extremely important to help students develop a broad design lexicon which is paramount in transition from student to professional. Footnotes for the introduction of terminology can be useful for students who may struggle to understand and/or are not comfortable asking questions. Also students who have PONs are often not considered in this area. Accompanying footnotes promote inclusive and non-judgemental participation and understanding in learning. AOK: The students came from a variety of courses and had experienced different forms of design thinking application to date. The project challenged the students to work in a common language. This was really important for the students to develop their meta cognitive skills and communication skills. Miro as a tool seems to be pivotal in the generation of this common language, it allows a simple intuitive platform to focus on co-creating and collaborating. The students were able to work in a more flexible way that progressed weekly
	2	Speaking to a cross-disciplinary group required multimedia tools and prompts. Learners were coming together from across the Design School for the first time, to work in a cross-disciplinary cohort, with different VAKTS learning styles and needs. Materials to support the learning were curated across a range of text-based, audio, video and visual content. Combined with verbal 'tutoring' on Google meet-ups, the groups received feedback in a range of forms chat streams on their virtual studio Miro boards, comments pinned to boards & work, audio notes, and visual/text references dropped onto boards.	AOK: The variety of teaching tools used for learning and feedback were appropriate for the group and is consistent with the types of feedback given to other year groups, apart from audio notes which are very beneficial similar to the audio sound clips. Some students may struggle without formal feedback especially mixed ability and PONS students who may find the variety of approaches overtly challenging.
	3	Designing templates that acted as interactive boundary objects [within group-work] captured the knowledge generated. Creating templates for groups to work in, together, on Miro provided a structure for their conversations, and shaped the development of knowledge, sharing and interacting in the same way as a boundary object might have done in real experiences. The templates were especially positive because they visually captured the images, texts and input for group members to see and reflect on during the process of the working sessions. They created equity and a common start-point for all groups to diverge from. These tools were designed based on gaps that had been identified during the learning in an attempt to create opportunity from a knowledge gap. These templates also made leading simple because conversations and developments were anchored in an 'object' on the board - increased transparency of interaction, thinking and doing.	SR: Miro has been adopted across this project and put to good use. Templates and guided learning within Miro allow groups of learners to be guided through what amounts to a very open learning space but given structure, links and information along the way. This approach of pre-structuring should also stimulate engagement and support students to input. I'm interested to see how a remote input experience has affected who engages with which content? How does this affect the learning experience of extroverts v introverts?

	Characteristic Item Opportunity Headline & Story		Opportunity Headline & Story	Opportunity Insights + Validation		
-		С	Reflection-in-action as part of Situated Design			
		1	Designing a rhythm across each day, weeks and months allowed for different phases of learning. Applying the notion of learning phases to this programme encouraged its learners to move between generation, reflection, knowledge input and sharing across the studio day, and through the weeks. This offset the one-dimensionality of remote digital learning. It created space for learners to absorb and understand actions or thinking, between their generating activities, something that young learners may not do intuitively.	DM: Exploring new ways of working can be challenging for learners. Finding mechanisms to develop more meaningful thought to enable more creative practice takes time. In that sense, the staggered weekly class sessions appear to have provided the students with more time for reflective practice. Staccato bursts of energy propel the students from one stage to the next over time. SR - It's clear that each weekly teaching day brought a variety of modes of teaching and learning that scaled in and out from individual to group work, from led to self directed. All whilst working with a range of digital tools. However, the challenge in this space now is that despite the variety of learning phases everything still largely remains connected to the screen and the limited options this presents. Physical actions can be achieved but are now done by the individual rather than the group. With the only option to share this content being mediated through the screen.		
		Peeding in to digital studio boards created meaningful exchanges and stronger relationships with a remote cohort. Inputting on work in the digital workplace allowed informal exchanges and commentary on specific objects, items, points and for it to remain visible after the session. This created greater impact and resonance with learners, and traceability for submission or subsequent sessions.		SR: Delivering taught content remotely is challenging but the project seems to have successfully leveraged a number of online tools to invite and secure engagement at an early stage (audio roadmaps, printed material, Miro, expert presentations etc.) The digital studio boards seem to have provided an anchor point for the projects and facilitated a transparent learning experience for students. They also act as a clear guide for lecturers to understand engagement and class interaction. AOK: as per B1, Miro as a tool seems to be pivotal in the generation of a common language in the project. It allowed for a simple intuitive platform to focus on co-creating and collaborating. The students were able to work in a fluid and flexible way that progressed weekly. This pedagogical approach was beneficial and encouraged students to build an effective design approach.		
	0.00	0,41	020828282828			
		D	Mutual-learning			
		1	Commoning the programme planning and design activity encouraged peer learning, reflective thinking and trust through transparent working approaches. Miro boards were kept open so groups could look around at the work. In the studio board all groups worked alongside each other, on common activities/canvasses, so it created informal peer-learning really easily. When feedback/input notes went up, all students had visibility and could see what others were being told - transparency of working methods, relationships etc. and also could use other groups notes or suggestions if appropriate to them	DM : Knowledge sharing through the use of Miro boards appears to have worked extremely well. No student gets left being by their peer group. They work individually and collectively influencing one another as they go. I am not very familiar with Miro but can see how useful it can be to generate and develop diverse ideas.		
		2	Opening up conversations about group-work making it visible, accessible and showing the development of 'feedback thinking' was positive. Bringing in a speaker to be part of the 'in-board' feedback, in a conversational style in the chat stream was a breakthrough - it was fast and easy (informal) for the speaker to do, we were able to talk on a call whilst doing it and the students loved the rich feedback that came out of our conversation in the chat, they got a lot more from it	DM : The use of frequent real-time feedback loops is high effective in providing students individually and collectively with the information they need to develop their work, This is not always possible in the studio. Therefore, the remote learning model employed here works particularly well.		









User Validation Impact Statement

They said the participatory workshop was... (extract)

"engaging, energetic, collaborative."

"I'm more aligned with the rest of the team."

"Fascinating because it was a very unusual way to see the full scope of the project."

"It was a chance to collaborate on how we see the project going, as a group."

"Very insightful. A different way of approaching the ZBS problem - the visual solution framework works!"

"Very good, it helped facilitate ideation and alignment."

"Inspirational, it focuses us to look at the problem from a different angle."

Research activities that engage a team actively in building collaboration, alignment, and common perspective, creates a lasting change in their ways-ofworking together.

They said they learned... (extract)

"How to divide a problem into understandable and explainable tasks."

"more about the beneficiary and the user."

"That there's huge value in attacking the messy bits."

"Every business process involved, possible side-effects and ways to address them."

"How other people see the project, potential solutions, key areas to test."

"How the rest of the team see users interacting with the platform, more technical depth on specific parts of the tool."

"Refreshing the whole workflow from a high level and different angle. I learnt many business insights especially from the strategy team."

Sharing knowledge within a participatory experience invigorates both, team, and individual learning

They suggested the participatory workshop should... (extract)

"Occur earlier in the project lifetime. Also, splitting it and running it more regularly on smaller project aspects could help the team."

"Happen earlier in the E&V phase, possibly in 'lighter' detail with a more detailed follow-up later."

"Occur more frequently."

"Be repeated."

"Continue! With lunch/pastries!"

"Occur earlier"

"Be part of all projects at the Explore & Validate phase."

Regular participatory activities can positively impact team working, wellbeing and therefore the projects, by providing a 'break-out' from routine

Impact Validation (from project leader)

Suzanne has done a remarkable job of bringing design research methods to the ZBSC project. She transformed the project from being just an Al-blackbox to a UX-centric workflow. Suzanne engaged with the stakeholders to win their votes of confidence in the design-research methodology, and gained the trust of the wider team to take care of the inter-disciplinary priorities as well.

Suzanne brought her wealth of experience to ensure that the project is truly multi-disciplinary. With much flair, despite the daunting complexity involved, she absorbed the inputs and outputs from the Design Sprint, the AI methodology of the previous project and the dependencies of the existing systems and tools. She thus explored the dreaded 'As Is' process including its pains and dependencies and validated the 'To Be' process that should provide a great user-experience and will be very UI-enabled. Her style of research methods made the tasks of exploration and validation more fun and not just logics and statistics for everyone involved.

Impact Action Points

- Although the research activity had been bold and yielded strong visual, textual and narrative findings, fitting those into established communication formats was difficult.
- The final communication piece Journey Map was met with positive feedback by the Delivery Lead, international stakeholders
 and team but senior design leadership thought it was not appropriate (too much text and narrative) and should have been
 simplified to visuals.
- The research process and experience was not tangible to design leadership not participating in the research, even with compelling documentation using visual, text-based and service design tools.
- By taking a fresh and open approach to design research, the dominant pillar, data analytics, understood and engaged in design for
 the first time in the project. The synergy created between team members during the workshop carried through into a change of
 working behaviour in the studio space

Overall Conclusion

By including everybody in the generation of findings, and giving the full team opportunity to experience the design research process themselves as participants - as something playful, flexible and discussions based on equality - new value as well as progress was created. It demonstrated that project value can be measured in ways other than financial, or successful solutions; a valuable project generates synergy between disciplines, people and thinking.

Table 13. Cycle 1 Impact Statements and validation

UNIVERSAL KEY

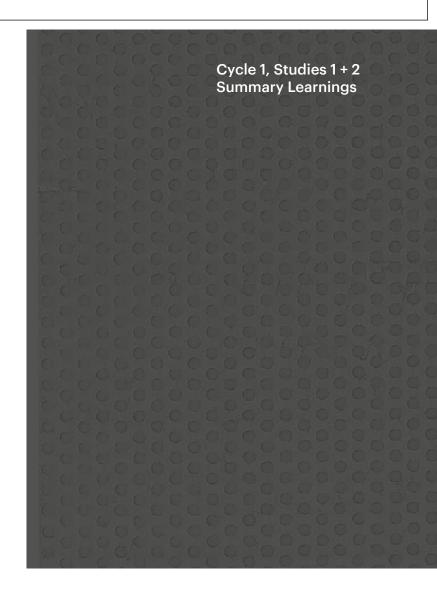
Create continuous learning Opportunities:	Promote inquiry and dialogue:	Encourage collaboration and team learning:	Create systems to capture and share learning:	Connect the organisation to its environment:	Provide strategic leadership for learning:
that people can learn on the job; opportunities are provided for	capacity to listen and inquire into the views of others; the culture is changed to support questioning, feedback, and experimentation	Work is designed to use groups to access different modes of thinking; groups are expected to learn together and work together; collaboration is valued by the culture and rewarded.	Both high- and low-technology systems to share learning are created and integrated with work; access is provided; systems are maintained.	People are helped to see the effect of their work on the entire enterprise; people scan the environment and use information to adjust work practices; the organisation is linked to its communities.	Leaders model, champion, and support learning; leadership uses learning strategically for business results.

Observations in all Tables in the Analysis Chapter are coded using Characteristics of a Learning Organisation (Marsick and Watkins, 2003). Any observations/input are related to a characteristic, or an opportunity/need for it. This key details the characteristics used. and colour system.

gap/missing characteristic identified characteristic

At the time, the evaluation was success-driven and categorised as:

- A. Learnings from the project holistic, studio/team/projects.
- **B.** Learnings from the project fed into project.
- C. Value/impact on the business.
- **D.** Knowledge & value generation and transfer.
- E. Barriers to design research [within the company].
- F. Impact of barriers to design research [on the project].



Characteristic	Thing	Learnings - Opportunity	Category	Key words
959	205	020000000000000000000000000000000000000	5000000	02010/0
	A 1 (I)	Opportunity for a set of specific props e.g. wooden blocks with universal values or actions to become a kit for any projects in the future - would save time assigning or deciding on a typology, and generate/test an approach across studio	Boundary objects + sense-making	Universal values kit a typology across studio
	C 2 (I)	In combination, these smaller changes in behaviour and attitude generated greater, stronger research findings which gave more information to software engineering and data analysis sides of the team, and allowed the project to achieve its goal.	Mutual learning + sense- making	Changes in behaviour attitude generation achieving goals
•	D 2	Through the participatory interviews and conversations in the Warsaw workshop, participants (accountants) realised how design could bring value to their processes, and the stakeholders saw how it brought that value to the project - it took away the unknowns of what design does	Mutual learning + situated design 'reflection-in-action'	Realisation value processes unknowns removed
	A 1 (III)	Conversation tools that provide an instant 'feedback' to the user can help move the play or dialogue forward quickly, therefore can be best used for participatory dissemination of ideas, thinking and moving to a co-creation stage (as opposed to ideation stage) with stakeholders	Dialogue tools + sense-making	Conversation tools instant feedback movement dissemination
	B 1 (II)	Expectations of design and tools is that they will be hi-fidelity, but actually, that's not always needed	Situated design 'reflection- in-action' + leadership as knowledge broker	Expectation design tools hi- fidelity v's low-fidelity needs assessed measured response
	B1(I)	The difference in language and technical knowledge would remain a gap - a collective, basic understanding was arrived at during the activity, but the gap had been vast, so it would be critical to try to have continuous 'project way-finding' meet-ups throughout.	Mutual learning + discursive design Leadership as knowledge broker	Language + knowledge collective understanding continuous project way- finding
	B 2	Working with blocks and visuals on paper encouraged participants to place items down, discuss, move, and change things around in conversation with each other and with the interviewers. Participants had a sense of control, flexibility and most importantly, informality.	Boundary objects + sense- making + mutual learning	Physical working encouragement discuss, move, change around conversation sensing control flexible/informal
	C 2 (II)	Focussing the full end-to-end journey, putting themselves in the shoes of the users, but at the same time bringing their knowledge of what the product can do to enhance the current process, generated fast, co-created learning, that was invaluable.	Mutual learning + sense- making	End-to-end journey embodying experience knowledge enhancing current process speed co-created
	B1(III)	A physical thing that everybody focuses on, that evidences the dialogues, directions etc. could become a valuable asset in developing responses to complex problems	sense-making + discursive design	Physical/real evidencing dialogue direction developing responses complexity
	A 1 (II)	Tactility is an important quality in a tool to aid conversation	Tangible dialogue tools	Touch tacit knowledge quality tool conversation aid
	D1(III)	Enhancing discussions about security breaches in a system only needed a basic level of interactivity to bring sensory awareness into the interaction and conversations taking place around the objects - action-reward logic of interaction	Situated design 'reflection- in-action' + Sense-making	Enhancing discussions systems interactivity sensory awareness interaction conversations around objects
	C1(III)	The final tool was not realised, but the prototyped elements had the effect of actively filling gaps in conversation that often cause a block in knowledge generation	Situated design 'reflection-in- action' + sense-making	Tool active filling gaps conversations shared knowledge generation
••	D 1 (I)	The knowledge generated primarily falls into a category I'd informally describe as 'project way-finding' - where it focuses on technical terminology, understanding of systems, technical processes or purposes. Through the fun of it and the physical involvement, the Body Storming approach, very real questions and realisations occurred.	Mutual learning + sense- making	Knowledge generation project way-finding understanding systems technical terminology processes & purposes physical involvement body storming questioning & realising
	C1(I)	Created greater awareness of how this could shape new thinking on bringing teams together effectively, and the need in the business for this approach	Leadership as knowledge broker	Creating awareness shaping new thinking bringing together effective teams alginging with the business
	C 1(II)	There seemed to be a perception [at senior management level] that this kind of communication and learning was for knowledge transfer explicitly between team and client, and that internal learning and narratives were not in need of support structures	Discursive design + leadership as knowledge broker	Perceptions communication & learning knowledge transfer teams & clients internal learning narratives support structures
	A 2	Managing the motivations and bias of a pillar-specific project leader (from the pillar dominant in the team and product) added unnecessary complexity at critical points in the project e.g.	Leadership as knowledge broker	Managing motivation & bias expanding knowledge of leadership managing transition critical points
	D1(II)	All participants were genuinely excited about the format and the fast activity - it seemed to provide a break-out opportunity from their work/project focus	Sense-making	Participation exciting speed break-out opportunity re-focus

Measure	Thing	Characteristics	Observations of the Measure	Learnings - Opportunity
	9	62		and Charles and Charles
0.6				
A	1 (1)		Time is needed - before a team starts work - to hold an alignment session where gaps in knowledge, language and vision can be understood and addressed.	Opportunity for a set of specific props e.g. wooden blocks with universal values or actions to become a kit for any projects
			Strong 'project way-finding' is critical for team success.	in the future - would save time assigning or deciding on a
			The use of props in a discussion, could be simple, spontaneous and not require formal planning, training or definitions - contrary to how they've been used previously.	typology, and generate/test an approach across studio.
	1 (II)		A rough, clearly unfinished, imperfect prop that can easily be changed, and physically altered during a conversation creates real creativity in thinking as well as dialogue.	Tactility is an important quality in a tool to aid conversation.
			In the context of a conversation using the object to demonstrate meaning actually allowed non-creative participants to talk and think creatively e.g. data analysts tend to talk in terms of immovable facts or realities, but in this conversation they asked questions about system processes and used more hypothetical terminology and structures.	•
607	000	2000	a Carolina Carolina Caro	244000
	1 (II)		The sensory aspect to tools suggests a more polished, digitised level of finish, which, to a non-design user, could be a beneficial aspect - it would make lo-fi tools more convincing, compelling to use.	Conversation tools that provide an instant 'feedback' to the user can help move the play or dialogue forward quickly,
		•	Being able to use multiple objects together as a map or system adds a spatial dimension to the problem solving discussions which also requires participants to stand and move about - the physical involvement aspect of interacting would be more compelling to a non-design participant.	therefore can be best used for participatory dissemination of ideas, thinking and moving to a co-creation stage (as opposed to ideation stage) with stakeholders.
	2	• •	Getting access to the users took more time/effort than it should and that impacted on the design team focus.	Managing the motivations and bias of a pillar-specific project leader (from the pillar dominant
		•	The importance of gaining user insight was not necessarily valued or understood by all pillars - project lead and stakeholders had to be convinced of the need to speak to a range of users (as well as the project stakeholders).	in the team and product) added unnecessary complexity at critical points in the project.
			Communicating the value and impact of the design research should have been a priority – this would have helped the DL understand better what it was doing on the project having started at the same time as analytics.	
2		•	It was difficult for design research to have the impact it could, on their development of the algorithm – their development was faster than our research and design.	•
			development of the algorithm - their development was faster than our	07.07.02.0
В	1 (1)		development of the algorithm - their development was faster than our	The difference in language and technical knowledge would remain a gap - a collective, basic understanding was arrived at during the activity, but the gap had been vast, so it
В	1(1)		development of the algorithm – their development was faster than our research and design. Coming together around a building, modelling purpose was positive - despite struggling to relate or understand each others perspectives and knowledge, we had no disparity and created [what seemed to be then, and afterwards in project-time] far greater knowledge than in a	technical knowledge would remain a gap - a collective, basic understanding was arrived at during the activity,
В	1(I)		development of the algorithm – their development was faster than our research and design. Coming together around a building, modelling purpose was positive - despite struggling to relate or understand each others perspectives and knowledge, we had no disparity and created [what seemed to be then, and afterwards in project-time] far greater knowledge than in a conventional meeting. Design experience does not include enough understanding of technical, systems or engineering processes - it would be important to acknowledge this up-front, and to ensure there were enough creative technologists	technical knowledge would remain a gap - a collective, basic understanding was arrived at during the activity, but the gap had been vast, so it would be critical to try to have continuous 'project way-finding'

Measure	Thing	Characteristics	Observations of the measure	Learnings - Opportunity
15 F	2 5	A OPD W	atain for or or or or or or	10101010
B (cont)	1 (III)		This tool wasn't fully realised or developed within the project, but the learning that was developed influenced how I and colleagues advocated for models/props to support engaging interaction within developing dialogues around complex problems. It directly influenced the thinking I developed for Thing 2.	A physical thing that everybody focuses on, that evidences the dialogues, directions etc. could become a valuable asset in developing responses to complex problems.
0 10		01010		
	2		The graphic lines were used to narrate the workflow and experience at each stage in the journey – when choosing the line, participants intuitively described why it was chosen, with examples of experiences that led them to that particular choice. A simple graphic visual elicited more detail, depth, quicker than asking a set of questions would have.	Working with blocks and visuals on paper encouraged participants to place items down, discuss, move, and change things around in conversation with each other
			Working with the visuals as prompts stopped the participants feeling self-conscious in the relatively alien environment of an interview – their attention was focused on picking the visual, and in group scenarios, users debated amongst themselves about what was the right choice. They forgot almost entirely that it was an interview that was being recorded and photographed.	and with the interviewers. Participants had a sense of control, flexibility and most importantly, informality.
			Having the toolkit and 'maps' on the table naturally forced participants to remove laptops and phones to the side – which meant we did not have to 'set the scene' for how we would work in the session.	
IOIC	120	HOLON		THE PARTY OF
С	1 (I)		Criticality of creating common ground and alignment around language, technical processes and knowledge at the very start of a project changed all the communication between team members which rippled out to ways-of-working as well as the work.	Created greater awareness of how this could shape new thinking on bringing teams together effectively, and the need in the business for this approach.
	1 (II)		When the off-site director returned and saw the playback of how we'd run the meeting, the tool and positive feedback from the wider team, it was dismissed as being too arty, and effectively was seen as not being a good use of time. The impact of this 'thing' was that the team was moved away from using participatory tools out with a workshop setting with clients.	There seemed to be a perception [at senior management level] that this kind of communication and learning was for knowledge transfer explicitly between team and client, and that internal learning and narratives were not in need of support structures.
of part of	-	i i fall		A TO TO THE
	1 (III)		By acting and talking, through the interaction with connected everyday objects, people didn't focus on differences or antagonisms, instead they talked about linking, connecting and the ways objects interacted which influenced they way they behaved/talked - connecting and linking as individuals as well as with the objects.	The final tool was not realised, but the prototyped elements had the effect of actively filling gaps in conversation that often cause a block in knowledge generation.
1770		A CHES		
	2 (1)		Being able to work with a range of people involved in the work process we were solving for was beneficial to the project learning because we got more detail, and different versions of the story we had been told, so we understood how the problem mapped across the range of users of the process & system. Those nuances and variations shed light on some of the assumptions that had been made by the team and changed the direction of the solutions.	In combination, these smaller changes in behaviour and attitude generated greater, stronger research findings which gave more information to software engineering and data analysis sides of the team, and allowed the project to achieve
			Being able to work with the stakeholders, in person, in their environment where they were comfortable encouraged them to communicate differently, more opening and therefore generated stronger research.	its goal.
			By actively being part of the design research process, the most reluctant and negative stakeholder behaved differently and became more accepting of the design way-of-working.	•

Measure	Thing	Characteristics	Observations of the Measure	Learnings - Opportunity
				у группин у
C (cont)			By participating in the process, the full team owned their design learning – there was no need to tell them what design does, they were doing it themselves.	Collectively discussing the full end-to-end journey, putting themselves in the shoes of the users, but at the same time
		••	After the session a short 'reflection' questionnaire was circulated that asked participants to describe how the workshop was and why, what they learned, the changes they might make in their way of working on the project and suggestions for the development of the workshop. *add in obs about their responses.	bringing their knowledge of what the product can do to enhance the current process, generated fast, co-created learning, that was invaluable.
600	1600	0000	a a a a a a a a a a a a a a a a a a a	-0000000
D	1 (I)	•	In the modelling activity the real value was the generation of conversations that took place. Tacit knowledge was built between team members through: Discussions about what block represented what aspect of the system or infrastructure. Questions from others in the group about how said blocks might connect, why they were positioned where they were Debate about what different aspects of the model were called and why.	The knowledge generated primarily falls into a category I'd informally describe as 'project way-finding' - where it focuses on technical terminology, understanding of systems, technical processes or purposes. Through the fun of it and the
-			The high spirited debates and arguments that took place while tables tumbled, cups got crushed and assets were stolen, encouraged the team to act out the roles of system attacker and defender, intuitively.	physical involvement, the Body Storming approach, very real questions and realisations occurred.
			The value of this activity was in general knowledge building, bur primarily, developing the camaraderie and social skills of the team	• •
60	4 6	0000		000000
	1 (II)		To make knowledge more accessible to all, we created a series of visual diagrams of the process - we simplified an attack to 3-step diagram using semi-circles, triangle and straight line.	All participants were genuinely excited about the format and the fast activity - it seemed to provide a break-out opportunity
			Initially the clay bowl & marbles created hilarity because it was so lo-fi and the conversation was about cyber security but quickly the engineers, creative technologist and project leader began prodding the bowl.	from their work/project focus.
		••	The creative technologist was describing an attack by moving the bowl with his finger, talking about the way the assets moved together the more he added, but moved independently when there were fewer - suggested that perhaps instead of isolating and protecting the valued assets, we should add more, something, we discovered was actually how they approached securing systems.	
			The bowl became adapted/re-modelled as people discussed ways to secure the system. people talked and re-made the bowl simultaneously -acting and dialogue were simultaneous.	
			The level of spontaneous, fun, creative responses (from across all domains) was unexpected.	
			The ideas of what security constitutes, what it looks like, from those with no formal knowledge/experience in cyber security, was unexpected.	
			All participants appeared to think and act simultaneously - they articulated their thought process as they were moving objects and creating their 'secure' scenario.	•
000	0	4000	AT DIOTOTOTOTOTOTOTO	0101010
	1 (III)	•	connecting lo-fi dialogue tools to sounds or lights, immediately gave the user a sense of action and consequences without having to imagine that (as had been the case with previous conversation tools, props used with the team)	Enhancing discussions about security breaches in a system only needed a basic level of interactivity to bring sensory awareness into the interaction and conversations taking place around the objects - action-reward logic of interaction

Measure	Thing	Characteristics	Observations of the Measure	Learnings - Opportunity
030	40	01075	Merelelelelelelele	02020202
D (cont)	2		Because we spoke to more users, we were able to build a nuanced journey, and understand the emotional engagement/effects at critical points in the process, which we could then factor into the interaction development aspects of the tool.	Through the participatory interviews and conversations in the Warsaw workshop, participants (accountants)
			Because the participants dismissed much of the interview/conversation process for being silly graphics/symbols and childrens toys, they behaved and spoke more freely - the props encouraged participants to be themselves and be less inhibited about talking through painpoints, or being critical of line managers, clients etc.	realised how design could bring value to their processes, and the stakeholders saw how it brought that value to the project - it took away the unknowns of what design does.
e e	2 (II)		Through the workshop session to disseminate research findings, the whole project team generated insights and learning so they felt empowered by that activity.	
			The team had cross-disciplinary conversations for the first time and actually had time/space to develop ideas together, not just solve problems in the ongoing development process.	
4			The workshop time allowed all the team to talk, informally, therefore informal, tacit knowledge exchange was increased.	
13 13 14	المراد	0000	Taletolalianalia	
E	2		(A)There were numerous interpersonal issues due to management style, sexist behaviour, difficult stakeholders and pressures on the project - largely, these were connected to the fact that this was an internal project for the parent company.	
			(B) Thereafter, ironically, the barriers to research impact relate to communication within the design studio. As with other projects, the appointed director was hands-off and rarely involved in day-to-day matters, which is why many issues escalated so quickly. Despite requests to be more present to help manage recognised problem areas, and being more present, they continued to spiral. The Director also seemed to have an inherent lack of value for research which prioritised the experience of participants, in order to build stronger findings, instead of building findings into simplified stakeholder friendly outputs faster. It felt like a constant push and persuasion to convince the design director of the value within what we were doing despite the team, the Delivery Lead, and the global research group being very audible in their support.	
			(C) This project was not an R&D project or problem, the stakeholders who were based globally worked in an area of the business that was under pressure - they needed a product, they did not care how or why, they just wanted their problem solved and it was brought to The Dock because there were no internal costs involved with the work being done there.	
a Va	ال يمواد	アナウィア	SOTOTOTOTOTOTO	
F	2		(A) Interestingly, some of these issues became much more manageable after running the dissemination workshop: the Delivery Lead (from data analytics) took part in the workshop day, not only experiencing it for himself, but also seeing and hearing how his team responded to the activities, helped make Design real.	
			(B) It was such a difficult project in general, that I felt too embattled to step back and think about ways that I could communicate or express the research needs better. I did not feel empowered to stand behind the work we were doing, and I did not feel confident enough to defend it within the design studio.	
			(C) This led to a very elemental daily battle to be allowed time to fully develop a solution with bigger impact and vision, rather than giving them the simple version that would have solved all their problems instantly.	•

6.

SUSTAINABLE BASELINES

a conclusion

- 6.1 Design Learning Framework
- 6.2 The Designer Researcher
- 6.3 Design Leadership as Knowledge Broker
- 6.4 Design Learning Culture
- 6.5 Design Learning Ladder
- 6.6 Designing a Learning Trim Tab
- 6.7 Close

This chapter captures the research story and the journey it's taken by setting out three conclusions, and one recomendation, for future development. In describing these, the chapter outlines the research aims and objectives that were achieved, and presents the primary learnings generated.

6.1 Designing Learning Framework

The primary conclusion from the research study is that Design Learning (DL) can be greatly enhanced through the development of a conceptual learning framework, and dialogue tools - co-created through a participatory design methodology - which supports the institutioning of DL, as the foundation of a learning-led culture in any organisation.

The need uncovered within this project is for Design Learning to be reimagined as a domain and culture; to move from it being either a step in a process, or a personal takeaway, of everyday activity. Satisfying this need would encourage the further development and introduction of non-generative tools, techniques and thinking as Design Learning Things (DLT's) that could continue to grow a restorative learning approach.

As shown by the fieldwork studies, the infrastructuring of DL can be greatly enhanced by expanding the role of reflection, within designing, supporting actors and communities of learning to develop robust communities of interest (CoI) through practice.

The opportunity presented with this research project is one for shaping that Design Learning Framework (DLF) to support multidisciplinary, team-based designing and learning. Rooted in communication methods and framed by Participatory Design techniques, the DLF is fluid structure to support design learning.

Both the opportunity and the need can be met by institutioning DL within organisations where multidisciplinary teams work together.

For that to happen, leadership must move beyond managing, building, or innovating the business and begin to perform as Knowledge Brokers. Without brokering,

DL and supporting knowledge sharing, organisations will struggle to address all the challenges of a post-pandemic, post-anthropocene world.

In that allocentric place, Design Research needs to become a mode for shaping, facilitating, interpreting, guiding and intervening into, through and for design. For DL cultures to become resilient, Design Research could move toward behavioural and relationship wellbeing, and ways-of- working.

DL could be Buckminster Fuller's 'trim tab', the agent of change that Antonelli hoped for in her Broken Nature essay (2019). It could be the restorative path teams walk to address the wicked problems and complexities around design.

6.2 The Designer Researcher

Reflecting upon the research journey, the process of conducting the research benefited from my ability to simultaneously act as a design researcher and design educator. There is a broad consensus that design knowledge is created through both experience and action (Overbeeke & Hummels, 2012), that this empirical knowledge can be difficult to communicate (Heskett, 2001) and is largely intuitive (Bartneck and Rauterberg, 2007; cited Overbeeke & Hummels, 2012).

This form of unspoken knowledge is widely referred to as tacit knowledge, and there is general agreement that this is the type of knowledge most closely connected with the design process (Schön, 1983; Mareis, 2012). Mareis states that 'tacit knowledge is not merely a "natural" phenomenon but is created in a social and discursive sense' (2012, p. 61).

Researchers, such as Ranulph Glanville, have argued

that "design cannot be separated from research" and that "research is a particular, restricted form of design" (Glanville 2015, p. 13). There is an inherent tension between design and research as design is "aimed at application or the methodical development and implementations for a particular new solution in the world", and research is "aimed at generalisation or the development of new knowledge, generalisations that are shared in (academic) discourse and that can be used by others on a range of different situations." (Stappers & Sleeswijk Visser, 2014, p. 848).

In many cases the boundaries are blurred between the roles of design researcher and designer within design teams. Bart Hengeveld describes himself as a 'designer-researcher', whose role is "creator of scaffolding material" (Hengeveld, 2011, p. 84). His work in this role is "not only aimed at improving the design, but also on gaining first-person experience as a 'designer for diversity" (ibid, 2011, p. 106). This first person perspective is at odds with traditional research "where the researcher is the objective observer. Being one and the same person enables the designer-researcher to easily switch from a first to a third person perspective and vice versa." (Overbeeke & Hummels, 2012, p. 306).

Mark Roxburgh, in his essay exploring the design process of a written thesis, when describing his own research approach, states that "in conventional research terms I made knowledge of things and in design terms I made things of knowledge" (Roxburgh, M. in ed. Rodgers and Yee, 2015. p. 361). This resonated with the research approach taken in this project, thesis and the Things I designed.

My adoption of a autoethnography as a technique to anchor the research journey helped establish a designled mode of reflection and refraction that shaped the body of research presented as this Thesis.

6.3 Design Leadership as Knowledge Broker

A third conclusion of the research study is that knowledge generation must be supported by knowledge brokers on the ground, but especially at leadership level, this would ensure that the Things (shaping design learning) are not only successful, but transfers across a studio, company, organisation and sector. The role of a broker could be characterised as that of facilitator, supporter and strategic communicator.

Leadership plays a critical mediation role in the adoption and application of design learning approaches, both in its generation and its transfer of knowledge. With that, leaders can broker an understanding of the real value of design learning within teams' ways-of-working and wellbeing (Cumulus, 2020).

With the power to make information available to members of particular Col's and influence direction by shaping the flow of information, Design Leaders have responsibility for the impact of Design Learning. Leadership-as-Knowledge Broker is a persona that's missing from the widely referenced Singapore Design Council model of Design roles - currently it only identifies Design Specialists, Design Integrators, Design Multipliers and Designpreneurs (2019).

6.4 Design Learning Culture

The final conclusion of the research study, and primary recommendation, is the importance of developing a framework for measuring Design Learning. Measuring the impact of design remains elusive. During the past decade, much has been written about the strategic value that design, service design and design thinking can add to organisations. Various reports have established a positive effect of design on project and company, such as profitability (The Design Council, 2008) and return on investment (Milton et al, 2016). The Danish Design Centre created the widely adopted Design Ladder (Danish Design Centre, 2001) framework for evaluating the maturity of design within organisations, arguing that the strategic adoption of design results in greater impact.

While the current metrics being used - such as the Danish Design Ladder - within organisations, may suffice in legitimising increased organisational investments in design, they lack any explicit focus on the role of Design Learning in ensuring a mature design culture. The discrepancy between existing measures and organisational needs becomes more pronounced as design adopts a strategic agenda.

During the last five-years, undertaking this research project, the need for companies and educational institutions to develop a strategic policy of institutioning Design Learning has been highlighted.

During the project I have been able to reflect upon my development as a design educator, researcher and practitioner. To collate and reflect upon the anecdotal impacts the project, and its constituent elements, have had on colleagues, host organisations, clients, stakeholders and students. This iterative process has provided feedback on the efficacy of my research efforts and how it has been able to instigate and support modest transformation within organisations.

However, to ensure that design learning becomes recognised, across the sector, as a crucial cultural component, more nuanced measures are needed to inform the state of learning within organisations to help track impact, outcomes and progress.

6.5 Design Learning Ladder

A first step towards measuring impact, and the success, or not, of infrastructuring institutional change might be the adoption of a new Design Learning ladder, which could form the basis of future research.

Reflecting upon my time designing and researching within a multinational design studio, I can see that the organisation was stuck at the lower steps of the ladder. Whilst the embryonic framework and tools I developed helped myself and colleagues move up to the third step, without a means of quantifying the impact of such activities, it was frustratingly easy to slip back down the metaphorical ladder.

Having learnt from the research activities undertaken within Action Cycle 1, I was able to develop a series of new tools and techniques within Study 4 in a Design School context. Through a process of self-reflection, co-creation and iteration. Demonstrated in the valuable impact on learning within the design school, it indicates the potential to make positive change within the strategic goals of an organisation.

The Study 4 project was recognised as a successful pedagogical and methodological enhancement of the NCAD Studio+ year, and the model has now been adopted for future years within the design school and the wider college. It has also acted as a pilot for an ambitious transdisciplinary platform of micro- credentialed educational programmes for practitioners within the creative sector.

Design Learning Ladder

Step 1	Non-Design Learning - Design Learning is not supported systematically.
Step 2	Superficial Design Learning - Design Learning is used to reflect upon work undertaken, but not inform future work.
Step 3	Design Learning as Process - Design Learning is an integrated element in the development process, feeding back and feeding forward.
Step 4	Design Learning as Strategy – Design Learning is a key strategic element within the organisation.

Figure 17. Design Learning Ladder, adapted from the Design Ladder (Danish Design Centre, 2001))

6.6 Designing a Learning Trim Tab

I will build upon the research platform that this study has provided in a number of ways. From developing new design learning Things, building scaffolding for pedagogical practices, to disseminating and publishing the insights and learnings.

6.6.1 The Future Talks - Research Conversations

To expand the notion of how this research project can be validated, how greater impact can be shaped and the value communicated, I initiated the creation of a final Thing within this MRes. It is a Reflective Discussion Thing that evolved from the conversation between myself and John Thackara (Appendix D). This activity is a provocation for how sectoral change is discussed (by selected forum members on behalf of government research, behind closed doors), and service designed until there are only generalised points to disseminate.

With this Discursive Thing, I will build dialogues with people who have both valuable knowledge, and can influence value generation around the topic of reimagining design learning as a DLF.

6.6.2 Manifesto for Change

Prompted by panel discussions held throughout 2020 about the future of design learning, such as 'The New Normal' series chaired by Gjoko Muratovski (2020) and in particular the 'The Changing Needs of Design Education and Research' discussion hosted by Cumulus Connects (Cumulus, 2020) I wrote an article as a call-to-arms for the Communication Design sector. This article, 'Wating for Good' will be published (by the 100 Archive, Ireland), in 2021, as part of a series I'm creating about the changestory in Design Learning.

6.6.3 Lecturer in Creative Pedagogy

I have been appointed in a role with the Creative Futures Academy, a government funded, four year academic initiative being delivered in partnership with University College Dublin (UCD), Institute of Art, Design and Technology (IADT) and the National College of Art and Design (NCAD) in Ireland. The role offers an opportunity to research and develop the thinking within this Thesis, and pilot change-led learning models.

6.7 Close

I would argue that the issues identified at the beginning of this study continue to be under-explored in contemporary design learning research and practice. I would also put forward the case that the approaches presented within this study make a timely pedagogical, and practice based, contribution to contemporary discourse on how best to create a learning culture that meets the needs of learners within design studios and education.

Further longitudinal research, in particular, on the impact of strategic design learning within organisations is acutely needed to illuminate the key design learning mechanisms, effects, and successful practices required to ensure sustainable and mature cultures and communities of learning.

ight.

estination.

This thesis, itself, has attempted to re-frame design learning through no learning process of writing, reflecting and communicating, within its become a second to change their design learning is and looks like. It is an exercise in uncertainty, in, an

I don't know if they will get this, too much? Do you think they'll have a sense of humour at the end of this 'reading journey'?!



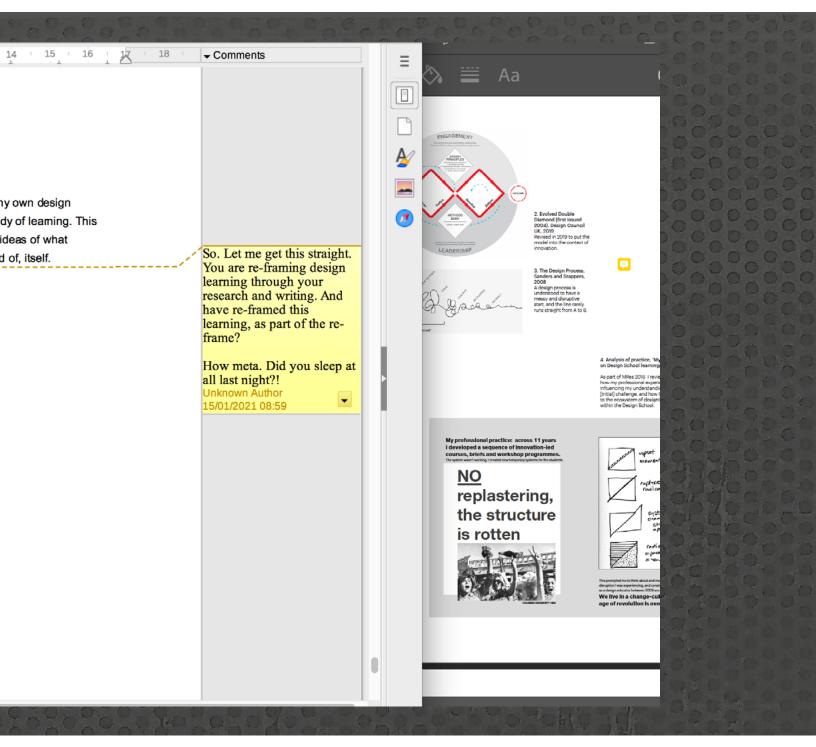


Figure. 24. Re-framing design learning, within design learning

REFERENCES

100 Archive, 2020. 100 Archive. Available: http://www.100archive.com (Accessed 20 November 2020).

Ackerman, C.E. 2020. *Life Coaching Tools*. Available: https://positivepsychology.com/life-coaching-tools/ (Accessed 7 November 2020).

Adams, T.E., 2006. Seeking father: Relationally reframing a troubled love story. *Qualitative Inquiry*, 12(4), pp.704-723.

Antonelli, P. and Potter, C., 2019. Design in the Future. *Journal of Futures Studies*, 23(4), pp.101-104.

Antonelli, P., 2019. Broken Nature: Design Takes on Human Survival (Triennale De Milano). Rizzoli Electa.

Archer, L.B., 1965. Systematic Method for Designers, Council of Industrial Design.

Arias, E., Eden, H., Fischer, G., Gorman, A., and Scharff, E., 2000. Transcending the individual human mind—creating shared understanding through collaborative design. *ACM Transactions on Computer-Human Interaction*.TOCHI, 7(1), pp. 84-113.

Argyris, C. and Schön, D.A., 1997. Organizational learning: A theory of action perspective. Reis, (77/78), pp.345-348.

Bang, A. L., 2010. *Emotional Value of Applied Textiles*. PhD Thesis, Design School Kolding.

Barnes, C. and Melles, G., 2007. Managing interdisciplinarity: a discussion of the contextual review in design research. *International Association of Societies of Design Research (IASDR) Conference*.

Barrett, E. and Bolt, B., 2007. Practice as research: Approaches to creative arts enquiry. IB Tauris & Co Ltd.

Berardi, F., 2013. Autonomy and General Intellect. Contestations: Learning from Critical Experiments in Education. Bedford Press.

Björgvinsson, E., Ehn, P. and Hillgren, P.A., 2010, November. Participatory design and "democratizing innovation". *Proceedings of the 11th Biennial participatory design conference*, pp. 41-50.

Bochner, A.P., 2016. Coming to narrative: A personal history of paradigm change in the human sciences. Routledge.

Bodewes, N. 2016. Tools for Therapy.

Boelen, J., 2018. Design as Learning: A School of Schools Reader. Valiz

Boer, L. and Donovan, J., 2012, June. Provotypes for participatory innovation. *Proceedings of the designing interactive systems conference* pp. 388-397.

Boud, D. and Solomon, N., 2001. Work-based learning: a new higher education?. McGraw-Hill Education (UK).

Bowker, G.C. and Star, S.L., 2000. Sorting things out: Classification and its consequences. MIT press.

Boym, C, 2010, Teaching in a Time of Uncertainty, *Design Observer*. Available: fromhttp://designobserver.com/feature/teaching-in-a-time-of-uncertainty/14378/ (Accessed on 6 September 2016]

Brown, A.L., 1992. Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *The journal of the learning sciences*, 2(2), pp.141-178

Buchanan, R., 1992. Wicked problems in design thinking. *Design Issues*, 8(2), pp.5-21.

Chabot, J., 2013. Reflections on Art Education. Re-Inventing the Art School 21st Century. WDKA.

Collins, A., 1992. Toward a design science of education. *New directions in educational technology*, pp. 15-22. Springer, Berlin, Heidelberg.

Colomina, B., Kotsioris, E., Galan, I. and Meister, A., 2015. The Radical Pedagogies Project. *Learning Network*, 45.

Coughlan, P., Suri, J.F. and Canales, K., 2007. Prototypes as (design) tools for behavioral and organizational change: A design-based approach to help organizations change work behaviors. *The journal of applied behavioral science*, 43(1), pp.122-134.

Cousins, G. 2009. Researching Learning in Higher Education. Routledge.

Cross, N., 1999. Design research: A disciplined conversation. *Design issues*, 15(2), pp.5-10.

Cumulus, 2020. The Changing Needs of Design Education and Research. Available at: https://cumulusconnects.org/events/event/changing-needs/ (Accessed 15 December 2020).

Curedale, R., 2018. Service design: Process & methods. Design Community College.

Danish Design Center, 2020. *Design Ladder*. http://danskdesigncenter.dk/en/design-ladder-four-steps-design-use (Accessed 3 January 2021).

Dant, T., 1999. Material culture in the social world. McGraw-Hill Education (UK).

Danvers, J., 2003. Towards a radical pedagogy: Provisional notes on learning and teaching in art & design. *International Journal of Art & Design Education*, 22(1), pp.47-57.

Davies, H. and Turpin, E. 2015. Art & Death: Life between the Fifth Assessment and Sixth Extinction in Art. *The Anthropocene: Encounters Among Aesthetics*, ed. Davies, H and Turpin, E. Open Universities Press.

Davis, B., & Sumara, D. J., 2006. Complexity and education: Inquiries into learning, teaching, and research. Psychology Press.

DBEI, 2020. Together for Design: Digital, Product and Strategic Design Skills of the Future. DBEI

Denis, J. L., Langley, A., & Rouleau, L., 2010. The practice of leadership in the messy world of organizations. *Leadership*, 6(1), pp. 67-88.

de Vet, A., ed. 2020. Design Dedication - Adaptive Mentalities in Design Education. Valiz.

Dervin, B., Foreman-Wernet, L. and Lauterbach, E., 2003. Sensemaking methodology reader: Selected writings of Brenda Dervin. Hampton Pr.

Design Council, 2007. The Value of Design Factfinder Report. Design Council.

Design Singapore Council, 2019. *Design Education Review Committee Report*. Available: https://www.designsingapore.org/resources/design-education-review-committee-report.html (Accessed 2 October 2020).

Design-Based Research Collective, 2003. Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher*, 32(1), pp.5-8.

Dewey, J., 1959. The child and the curriculum (No. 5). Chicago: University of Chicago press.

Dezeen. 2016. *Tools for Therapy* in https://www.dezeen.com/2016/11/04/tools-for-therapy-nicolette-bodewes-tactile-object-psychotherapy-dutch-design-week-2016/

Didion, J., 2007. The year of magical thinking. Vintage.

Dixon, B.S., 2020. Dewey and Design: A Pragmatist Perspective for Design Research. Springer Nature.

Dorst, K., 2015. Frame innovation: Create new thinking by design. MIT press.

Dunne, A. and Raby, F., 2001. Design Noir. Birkhauser.

Dunne, A., 1999. Hertzian Tales. MIT Press.

Ehn, P., 1988. Work-oriented design of computer artifacts (Doctoral dissertation, Arbetslivscentrum).

Ellis, C., 2004. The ethnographic I: A methodological novel about autoethnography. Rowman Altamira.

Ellis, C., Adams, T.E. and Bochner, A.P., 2011. Autoethnography: an overview. *Historical social research/Historische sozialforschung*, pp.273-290.

Elkin, L., 2017. Flâneuse: Women Walk the City in Paris, New York, Tokyo, Venice, and London. Farrar, Straus and Giroux.

Eno, B. and Schmidt, P., 1975. Oblique strategies. Opal.

Escobar, A., 2018. Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Findeli, A., 2001. Rethinking design education for the 21st century: Theoretical, methodological, and ethical discussion. *Design Issues*, 17(1), pp.5-17.

Foth, M. and Axup, J., 2006. Participatory design and action research: Identical twins or synergetic pair? Expanding Boundaries in Design: Proceedings Ninth Participatory Design Conference 2006 (Vol 2), pp. 93-96. Computer Professionals for Social Responsibility. Foucault, M., 1981. The order of discourse. Untying the text: A post-structuralist reader, 51, p.78.

Frank, A. W., 1995. The wounded storyteller. University of Chicago Press.

Frayling, C., 1993. Research in Art and Design, Royal College of Art Papers, 1:1.

Friedman, K., 2008. Research into, by and for design. *Journal of Visual Art Practice*, 7(2), pp.153-160.\

Furniss, L., 2015. Beyond Discipline: Design Practice and Design Education in the 21st Century. Strategic Creativity Research Lab.

Gadgil, S., 2016, Back To School, *Creative Review* (September 2016), pp.32 – 36.

Garwin, D.A., 1993. Building a learning organization. *Harvard Business Review*, 71(4), pp.73-91.

Gaver, W.W., Beaver, J. and Benford, S., 2003, April. Ambiguity as a resource for design. *Proceedings of the SIGCHI conference on Human factors in computing systems*, pp. 233-240.

Gladwell, M., 2002. The Tipping Point how Little Things Can Make a Big Difference. Back Bay Books. 2002.

Glanville, R., 2015. The sometimes uncomfortable marriages of design and research. *The Routledge companion to design research*, p.9.

Goldschmidt, W., 1977. Anthropology and the Coming Crisis: An Autoethnographic Appraisal, October 2009, *American Anthropologist*, 79(2), pp.293 – 308.

Goodall, B. H. L., 2001. Writing the new Ethnography. AltaMira Press.

Goodall, H.L., 2006. A need to know: The clandestine history of a CIA family. Left Coast Press.

Gray, C. and Malins, J., 2016. Visualizing research: A guide to the research process in art and design. Routledge.

Groten, A. Design Friction in Laranjo, F. eds., 2019. Modes of Criticism 4 – Radical Pedagogy, *Onomatopee* 145.2, Brabant.

Hadfield, J., 2006. Teacher education and trainee learning style. *RELC Journal*, 37(3), pp.367-386.

Hancock, T. and Bezold, C., 1994. Possible futures, preferable futures. The Healthcare Forum Journal Vol. 37, No. 2, pp. 23-29.

Hanington, B. and Martin, B., 2012. *Universal methods of design: 100 ways to research complex problems, develop innovative ideas, and design effective solutions*. Rockport Publishers.

Hayano, D. M., 1979. Auto-Ethnography: Paradigms, Problems, and Prospects, *Human Organization*, 38(1) pp.99-104.

Hengeveld, B.J., 2011. Designing LinguaBytes: a tangible language learning system for non-or hardly speaking toddlers. Available: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.471.3579&rep=rep 1&type=pdf (Accessed 10 October 2020).

Heskett, J., 2001. Past, present, and future in design for industry. *Design issues*, 17(1), pp.18-26.

Hettler, B., 1976. The six dimensions of wellness. National Wellness Institute (www.nwi.org).

Hillgren, P.A., Seravalli, A. and Emilson, A., 2011. Prototyping and infrastructuring in design for social innovation. *CoDesign*, 7(3-4), pp.169-183.

Huybrechts, L., Storni, C., Lee, Y., Schepers, S., Schoffelen, J. and Dreessen, K., 2014. *Participation is risky. Approaches to joint creative processes* (Vol. 13). Valiz.

Huybrechts, L., Benesch, H., & Geib, J., 2017. Institutioning: Participatory design, co-design and the public realm. *CoDesign*, 13(3), pp. 148-159.

IDEO, 2003. Method Cards: 51 ways to inspire design. IDEO.

IDEO (2009). The Human-Centred Design Toolkit. IDEO

IDEO, 2012. Design Thinking for Educators. IDEO.

IDEO, 2015. HCD Design Kit. IDEO.

IDRV – Institute of Design Research Vienna, 2014. Tools for the Design Revolution, Verlag Niggli.

Ivison, T. and Vandeputte, T., 2013. Contestations: Learning from Critical Experiments in Education. Bedford Press.

Jackson, N. J., 2011. Learning for a complex world: A lifewide concept of learning, education and personal development. Authorhouse.

John Christopher, J., 1972. Design Methods: seeds of human futures. John Wiley & Sons.

Jones, S.R, Torres, V. and Armino, J. 2006. Negotiating the Complexities of Qualitative Research in Higher Education – Fundamental Elements and Issues. Routledge.

Jorgenson, J., 2002. Engineering selves: Negotiating gender and identity in technical work. *Management Communication Quarterly*, 15(3), pp.350-380.

Kanwal, S., Baptista Nunes, M., Arif, M., Hui, C., and Madden A. D., 2019. Application of Boundary Objects in Knowledge Management Research: A Review. *Electronic Journal of Knowledge Management*, 17(2), pp. 100-113.

Karasti, H., 2014, October. Infrastructuring in participatory design. *Proceedings of the 13th Participatory Design Conference: Research Papers-Volume 1* (pp. 141-150).

Kavanagh, S., 2020. *Learning Arches*. Available: https://teachingexchange.arts.ac.uk/latc/2017/assets/files/kavanaghlearning-arches.pdf

Kensing, F. and Greenbaum, J., 2013. Heritage: Having a say. Routledge international handbook of participatory design, pp. 21-36. Routledge.

Kimbell, L., 2014. 'Some futures for art and design institutions'. Ukadia. Available: from https://ukadia.ac.uk/wp-content/uploads/2014/03/Lucy-Kimbell-transcript-260214.pdf (Accessed on 20 March 2016

Koskinen, I., Zimmerman, J., Binder, T., Redstrom, J. and Wensveen, S., 2011. Design research through practice: From the lab, field, and showroom. Elsevier.

Kouoh, K., 2019. Never Despair, Your Miracle is around the Cornet: The Multiple Forms of Designing the Social. *Broken Nature: Design Takes on Human Survival* (Triennale De Milano). Rizzoli Electa.

Lamott, A., 1995. Bird by bird: Some instructions on writing and life. Anchor.

Latour, B., 2008. A cautious Prometheus? A few steps toward a philosophy of design (with special attention to Peter Sloterdijk). In Proceedings of the 2008 annual international conference of the Design History Society, pp. 2-10.

Laurel, B., 2004. Design Research: Methods and Perspectives. MIT Press.

Lave, J., & Wenger, E., 1991. Situated learning: Legitimate peripheral participation. Cambridge university press.

Lewrick, M., Link, P. and Leifer, L., 2018. The design thinking playbook: Mindful digital transformation of teams, products, services, businesses and ecosystems. John Wiley & Sons. Löwgren, J. and Stolterman, E., 2004. Thoughtful interaction design: A design perspective on information technology. MIT Press.

Lucas, R. 2016. Research Methods for Architecture. Laurence King.

Luck, R., 2018. What is it that makes participation in design participatory design? *Design Studies*, 59, pp.1-8.

Lupton, E., 2017. Design is storytelling. Cooper-Hewitt Museum.

LVWP, 2016. Philips Co-Create Toolkit. https://lvwp.nl/PHILIPS-Cocreate-Toolkit (Accessed 4 August 2020)

Mareis, C., 2012. The epistemology of the unspoken: On the concept of tacit knowledge in contemporary design research. *Design Issues*, 28(2), pp.61-71.

Marsick, V.J. and Watkins, K.E., 2003. Demonstrating the value of an organization's learning culture: the dimensions of the learning organization questionnaire. *Advances in developing human resources*, 5(2), pp.132-151.

Mau, B. 2020. Bruce Mau: MC24: Bruce Mau's 24 Principles for Designing Massive Change in your Life and Work. Phaidon.

McDonough, W. and Braungart, M., 2002. Remaking the way we make things: Cradle to cradle. North Point Press, p.104.

Michel, R., 2019. Integrative Design: The Outlines of a Concept. *Integrative Design: Essays and Projects on Design Research*, p.7.

Miles, M.B. and Huberman, A.M., 1994. Qualitative data analysis: An expanded sourcebook. Sage.

Milton, A. and Rodgers, P. 2013. Research Methods for Product

Design. Laurence King.

Milton, A., Hennessy, K. and Donnelly, R., eds., 2016. Irish Design 2015 - Making Design Matter, DCCol.

Miro, 2020. Miro. https://miro.com (Accessed 4 January 2021).

Møller, T., Ravnløkke, L., & Bang, A. L., 2016. Tangible Dialogue Tools: Mediating Between Non-verbal Users and Everyday Experts.

Montuori, A., 2005. Literature review as creative inquiry: Reframing scholarship as a creative process. *Journal of transformative education*, 3(4), pp.374-393.

Mootee, I., 2013. Design thinking for strategic innovation: What they can't teach you at business or design school. John Wiley & Sons.

Muratovski, G. 2020. Don Norman: The Future of Design Education, Available: https://www.youtube.com/watch?v=b-U6gyTZyoQ&list=PLBc7sGyArxaZ3u6kxCN0qVvvDT9TcVnQM&index=5 (Accessed 2 January 2021).

Muratovski, G., 2015. Research for designers: A guide to methods and practice. Sage.

NCAD, 2020a. *Studio+*. Available: https://www.ncad.ie/students/studio-and-visual-culture/ (Accessed 4 January 2021).

NCAD, 2020b. Creative Futures Academy. Available: https://www.ncad.ie/students/studio-and-visual-culture/ (Accessed 4 January 2021).

Nelson, R. ed. 2013. Practice as Research in the Arts – Principles, Protocols, Pedagogies, Resistances. Palgrave Macmillan. Norman, D., 2020. Writing as Design, Design as Writing. Available: https://jnd.org/chapter_17_writing_as_design_design_as_writing/(Accessed 18 Nov 2020).

OED., 2016. Oxford English Dictionary. OED.

Ouwens, I., Camuti, F. and Stevens. B. Eds. 2020. No School Manifesto: A Movement of Creative Education. Valiz.

Overbeeke, K. and Hummels, C., 2012. Industrial Design. *The Encyclopedia of Human-Computer Interaction*, 2nd ed. [online] Interaction Design Foundation. Available at: https://www.interactiondesign.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed (Accessed 12 December 2020).

Owens, J. (2019) 10 Principles of Life Centered Design: How We May Begin to Design for a Future of Inclusivity. https://medium.com/the-sentient-files/10-principles-of-life-centered-design-3c5f543414f3 (Accessed 10 August 2020).

Pace, S., 2012. Writing the Self Into Research: Using Grounded Theory Analytic Strategies in Autoethnography. *TEXT special issue: Creativity: Cognitive, Social and Cultural Perspectives.*

Petti, A., 2015. Decolonising Knowledge. Volume 45 Learning. Archis.

Poe, E.A., 1840. (1996). The Man of the Crowd. Complete Stories and Poems of Edgar Allen Poe.

Powers, M.N., 2016. Self-regulated design learning: A foundation and framework for teaching and learning design. Routledge.

Pyzdek, T. and Keller, P., 2018. Six sigma handbook. McGraw-Hill Education.

Rawsthorne, A. 2018. Design as an Attitude, JRP.

Renfro, C., 2009, Undesigning the new art school. Art school propositions for the 21st century. MIT Press.

Richards, S., 2017. Content Design. Content Design London.

Richter, C. and Allert, H., 2017. Design as critical engagement in and for education. *EDeR. Educational Design Research*, 1(1).

Rittel, H.W. and Webber, M.M., 1973. Dilemmas in a general theory of planning. *Policy sciences*, 4(2), pp.155-169.

Rodgers, P. and Bremner, C. eds., 2019. Design School: After Boundaries and Disciplines. Vernon Press.

Roxburgh, M., 2015. Depiction as theory and writing by practice: the design process of a written thesis. *The Routledge Companion to Design Research*. Routledge.

Sanders, E.B.N. and Stappers, P.J., 2008. Co-creation and the new landscapes of design. *Co-design*, 4(1), pp.5-18.

Sanders, E.B.N. and Stappers, P.J., 2012. Convivial Toolbox -Generative Research for the Front End of Design. BIS.

Sanders, E.B.N., 2002. From user-centered to participatory design approaches. *Design and the social sciences*, pp. 18-25. CRC Press.

Sanders, E.B.N., Brandt, E. and Binder, T., 2010, November. A framework for organizing the tools and techniques of participatory design. *Proceedings of the 11th biennial participatory design conference*, pp. 195-198.

Sanders, E.B.N., 2020. Make Tools. https://maketools.com (Accessed 3 August 2020).

Sanoff, H., 1990. Participatory design: Theory & techniques. Henry Sanoff.

Schön, D. and Bennett, J., 1996. Reflective conversation with materials. *Bringing design to software*, pp. 171-189.

Schön, D.A., 1987. Educating the reflective practitioner. Basic Books.

Schon, D.A.1983. The reflective practitioner: How professionals think in action. Basic Books.

Schuler, D. and Namioka, A. eds., 1993. *Participatory design: Principles and practices*. CRC Press.

Sholette, G., 2013. Counting on your collective silence: Notes on activist art as collaborative practice.

Shulman, L.S., 2005. Signature pedagogies in the professions. *Daedalus*, 134(3), pp.52-59.

Simonsen, J. and Robertson, T. eds., 2012. Routledge international handbook of participatory design. Routledge.

Simonsen, J. ed., 2014. Situated design methods. MIT Press.

Smith, R. C., & Iversen, O. S., 2018. Participatory design for sustainable social change. *Design Studies*, 59, pp. 9-36.

Soloway, E., Guzdial, M. and Hay, K.E., 1994. Learner-centered design: The challenge for HCI in the 21st century. *Interactions*, 1(2), pp.36-48.

Soloway, E., Jackson, S.L., Klein, J., Quintana, C., Reed, J., Spitulnik, J., Stratford, S.J., Studer, S., Eng, J. and Scala, N., 1996, April.

Learning theory in practice: Case studies of learner-centered design. *Proceedings of the SIGCHI conference on Human factors in computing systems*, pp. 189-196.

Stappers, P.J., Sleeswijk Visser, F. and Keller, A.I., 2014. The role of prototypes and frameworks for structuring explorations by research through design. *The Routledge Companion to Design Research*. Taylor & Francis, p.848.

Stickdorn, M., Hormess, M.E., Lawrence, A. and Schneider, J., 2018. *This is service design doing: applying service design thinking in the real world.* O'Reilly Media, Inc.

Stolterman, E., 2008. The nature of design practice and implications for interaction design research. *International Journal of Design*, 2(1).

Susman, G.I. and Evered, R.D., 1978. An assessment of the scientific merits of action research. *Administrative science quarterly*, pp.582-603.

Swann, C., 2002. Action research and the practice of design. *Design issues*, 18(1), pp.49-61.

Swann, C., 2002. Nellie is dead. Art, Design & Communication in Higher Education, 1(1), pp.50-53.

Thackara, J., 2011. Into the Open. Open Design Now, BIS publishers.

Thackara, J., 2015. How to thrive in the next economy. Thames & Hudson.

Tharp, B.M. and Tharp, S.M., 2013. Discursive design basics: Mode and audience. Nordes, 1(5).

Tharp, B.M. and Tharp, S.M., 2018. Discursive Design: Critical, Speculative, and Alternative Things. MIT Press.

Tickner, L., 2008. Hornsey 1968: the art school revolution. Frances Lincoln Itd.

Tovey, M., ed., 2015. Design Pedagogy, Developments in Art and Design Education. Gower.

Troxler, P., 2013. The Need for Open Design. Re-Inventing the Art School 21st Century. WDKA.

Van Abel, B., Evers, L., Klassen, R. and Troxler, P. eds., 2011. *Open Design Now.* BIS Publishers.

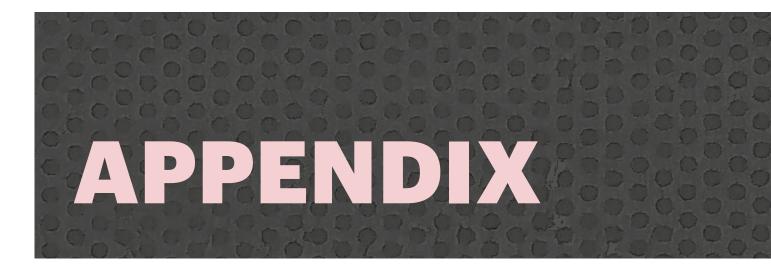
Vidokle, A. 2006. Exhibition as a School in a Divided City, Notes for an Art School. *Manifesta 6*.

Yee, J., Jefferies, E. and Michlewski, K., 2017. *Transformations: 7 roles to drive change by design*. BIS Publishers.

Yin, R.K., 2009. How to do better case studies. The SAGE handbook of applied social research methods, 2, pp.254-282.

Zamenopoulos, T. and Alexiou, K., 2007. Towards an anticipatory view of design. *Design Studies*, 28(4), pp.411-436.

Zengelis, E., 2015. 'A revolutionary suggestion'. *Volume 45 Learning*. Archis.



Appendix A

UNEARTHING NEW a reflective refracted journey

This is an edited story of my research journey, outlining the discursive nature, and the steps taken during the study to map and frame the experience. One of those steps was to produce a reflective journal, this edited text captures the learning aspects of the journey and highlights some of the tools I applied to personally document, reflect and process the experiences in and around the research project as it moved across the years.

1. A City of Research

A reflexive model of design starts from the premise that design is an inherently social activity embedded and mediated by the situation it arises from, and aims to change. Design, from this perspective is not just an intellectual process, but a process embedded in, and shaped by, the world in which it takes place (Schön & Bennett, 1996).

In my world, I have approached each stage in my personal & professional learning and development like a flaneur in a new city. Learning from walking the streets, noticing details, picking up on textures, sounds and asking questions as I follow where my feet take me. Novelist Lauren Elkin notes that a flaneur is "attuned to the chords that vibrate through a city", a flaneur "knows without knowing" (Elkin 2015). As a design researcher and educator, I respond to what I uncover, see and sense, I don't necessarily follow the set path.

Undertaking research within this immersive and intuitive approach, I explored each street that opened up within my research journey, I turned down alleys, peered through gateways and followed where the research and learning took me. I'm uncertain what literary character might make the best analogy, I suspect I fit Edgar Allen Poe's elusive character in the crowd, neither following or being followed (The Man of the Crowd, Edgar Allan Poe, 1840), zig-zagging down bustling laneways, circling around a square repeatedly, weaving through a bazaar, always looking and watching.

Architecture and cities have always been a focus in my design practice, and the idea of being a flaneur in my learning as well as my life & work makes a lot of sense. As such the idea of this research project thesis mapping the journey of researching, as a route through the construction of my MRes, makes sense. seemed like a sensible approach to help readers to orientate themselves through the evolving landscape of this project

2.2 The Architecture of Learning

This 'city of research', through the explorations and iterations, created incubated spaces for me to understand my research trajectory. Taking a holistic view, I can clearly identify phases in the journey, cycles and routes around those. Through the lens of a reflective practitioner, I can trace the roads, scaffolding and architecture that support my current perspective.

Reflective practice is a way of shaping continuous learning [for individuals or groups] where paradigms - patterns, theories, assumptions and frameworks - can be identified and the way they influence behaviour or practice can be better understood. Practicing reflection is a stage between action and adapting within Participatory Design, but I have used reflection, actively, as a communication tool, as well as embedded within the research activities themselves.

In that sense, my practice as a researcher and educator is reflexive: I develop strategic systems, devices and ways of using reflection actively, within processes to create insights.

2. Understanding Perspective

The shift from focusing on creating a new model for the Design School, to considering a supplementary social & participatory learning space for the Design School, then pivoting to investigate situating this new supplementary learning space in the private sector, was significant.

Through my experience of trying to deliver participatory frameworks for thinking, designing and working in multidisciplinary teams, in Cycle 1, I realised that the real need is for embedded design learning. A supplementary space, alongside, or a design learning focus is not needed.

Ironically, what unfolded within design education in 2020 was the opportunity for the original supplementary space to be attached to a Design School - allowing Covid-19 policies to positively, radically impact teaching and

learning, for the future. In Cycle 2, I delivered a thematic research programme that applied learning from this research project (as a vehicle for active analysis) whilst writing the thesis. Something I'd cited as an ambition for the MRes when I first applied to undertake a research degree in 2015.

Like the ageing gentleman followed by Poe in 'man of the crowd', I've circuitously looped around the city and come back onto the main thoroughfare, to find a milieu very different from before.

3. A Hero's Journey

It took until late 2020 to distill my understanding of this research journey as one shift, one pivot and a return. That clarity was only reached by mapping what I'd produced, experienced and learned, to a series of adapted life coaching tools.

I progressively charted the journey on a 'wellbeing wheel' tool (during 2016 and in Cycle 1) that was adapted to organise the project themes, directions, questions, experience etc. at each turn (Figure 18 and 19). This mapping process allowed me to make sense of conceptually veering from the research start-point. In mapping it, I realised that the journey brought me back to the start-point, at the end.

However, it wasn't until I investigated the role of emotion, perception and cognition in design (Lupton, 2017) that I was prompted to map the experience against the 'Hero's Journey', as a form of research storytelling (Figure 20). The relationship between what happened and when, the boundaries between phases, and the focus in my research became transparent.

The introduction essay to Broken Nature (Antonelli, 2019) set's out mankind's relationship with nature and the world, Paola Antonelli discusses the idea that if boundaries are seen, not as confinements but as interfaces that reflect and signify meaningful reactions inside, to the outside, then that could be empowering.

In the 'Hero's Journey' mapping exercise (Figure 21), at the interface between the familiar and unknown, I experienced that moment of meaningfulness. That point in my journey, that boundary, where I moved into the complete unknown, allowed my internal needs, and reactions to become perceptible for the first time. By understanding my bonds and connections to bigger, universal systems, gave me cognition of scale, connection, and changed circumstances.

In talking about mankind's relationship with nature and the world, in the introduction to Broken Nature, Paulo Antonelli (2019) sets out the idea that if boundaries are seen, not as confinements but as interfaces that reflect and signify meaningful reactions inside, to the outside, then that could be empowering. At the interface between the familiar and unknown, I experienced that moment of revelation. That point in my journey, that boundary,

where I moved into the complete unknown, allowed my internal needs, and reactions to become perceptible for the first time. By understanding my bonds and connections to bigger, universal systems - growing a tiny human, being situated in an ancient forest, my practice being in a different context - gave me cognition of scale, connection, and changing circumstances. It was restorative.

That was 2018 & 2019. Then there was 2020. Deciding to exit with an MRes, instead of completing a PhD and channelling other work into my professional research/teaching practice created a clearer path. According to the Hero's Journey map, 2020-21 is my reward year. Clarity, then, must be that reward.

4. Journey Map

A move away from linear to circular mapping makes sense when talking about design, and design learning within the context of the pandemic era.

When visually breaking the Wellbeing Wheel and Hero's Journey maps apart created a series of curves for each phase of the research. Reflecting on events and moments- that-matter (Figure 22) I realised that the phases intersected, it wasn't a linear progression. The resultant project journey map, as a reflective tool, enabled me to consider the range of potential exit points I've had with this project against the frame of 'Possible Futures, Preferable Futures' model (Hancock, Bezold 1994) (Figure 23).

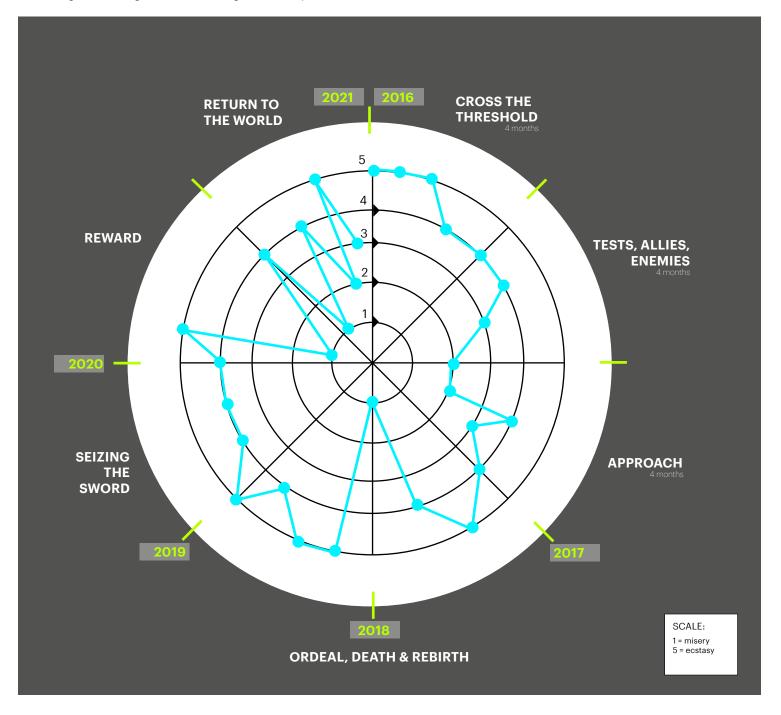
It felt like an emotionally engaged way of mapping this research project. It amplified the importance of junctions where multiple paths cross. It encouraged examination of critical interfaces in my personal learning, direction change, and what prompts were around decisions. It also allowed me to understand the expanded view and scope of this thesis as translated into a Learning Network Map (Figure 24).

As Tharp & Tharp cite "if design is going to begin closing the gap between its present and a greater future, the typical designer needs to stretch a little more intellectually" (Bardzell et al, Tharp & Tharp 2018). The Learning Network Map builds upon the Kaos Pilots 'Learning Arches' (Kavanagh, 2020) to develop a visual language for this research project. They're one of many organisations consciously developing a kit of formulas that can be applied to understand reflect on ourselves, our learning and the systems around us.

5. Framing my Research

The soft boundary between Speculative, Discursive and Critical design is widely acknowledged but they can be defined as sitting collectively under a banner of conceptual, provocative design created for the purpose of allowing an audience to imagine a future.

The fieldwork undertaken within this research project

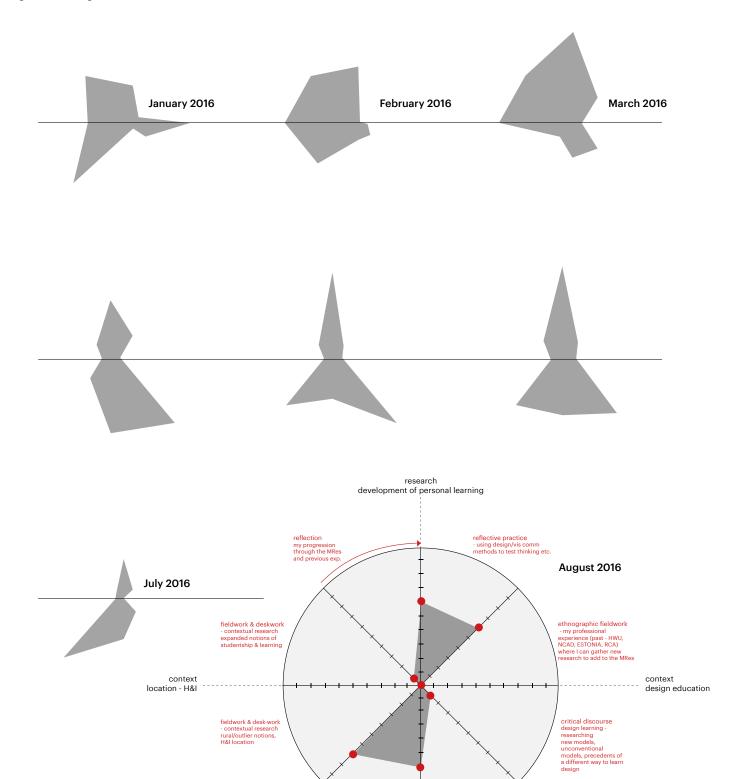


FROM MISERY TO ECSTACY

All stories run a line ranging from misery to ecstacy according to Kurt Vonnegut (Lupton, 2017). This map refers to the wheels I did during 2016, my initial unedited reflection journal, and my 2017 data, mapped against the Hero's Journey.

I had adapted the 'wheel of life' coaching tool to aid my own reflection during the MRes - and also prototyped it in 2017 (Chapter 4) as a Wellbeing Wheel tool. I'm using it here as a way to map, and understand, the flow of my journey between 2016 and 2020/21.

I developed and applied this simple tool to support my work because it allowed experiences and emotions to be lightly measured, thereby creating quantifiable reflection for my own use. I also found that it forced me to be more analytical in my reflexive practice as a design researcher.



action research - MRes project & design development

research project (topic) investigation

literature review reviewing & analysing critial writing/papers on the state of design education relied on the creation of tangible dialogue tools and the adoption of participatory design approaches in order to test and generate future ways of working. Its purpose was not to offer a glimpse into a future, or envisage a future for discussion or contemplation. It was testing future ways of working and learning. That thinking, and those actions, are rooted specifically in Discursive Design. The artefacts, activities, structures, and social context of participatory practice sit in a Discursive Design realm because they foster reflection and discussion within the context of the activity, and about the activity (Tharp & Tharp p.24).

Following Foucault (1981) - the idea that 'discourse' is considered as systems of thought or knowledge - my participatory practice, within the context of a design learning ecosystem, is discursive.

The nature of my position within this design realm, is that of a provocateur, an activist, an engaged educator and a critic. I embody a 'design interventionist' mindset, and think and work in an expanded field of design learning, aligned to Tharp & Tharp's model of Discursive Designers.

6. Landing the Arc

Everybody understands a straight line 'from A to B' but stories, experiences and influences are not linear, there is always a narrative arc (Gustav Freytag, Lupton 2017). There are highs and lows, there are stories within stories, there is a beginning, middle and end. This thesis attempts to chart a route through this research story by discussing its arcs, cycles, phases and the 'Things' created along the way, across the beginning, middle and end.

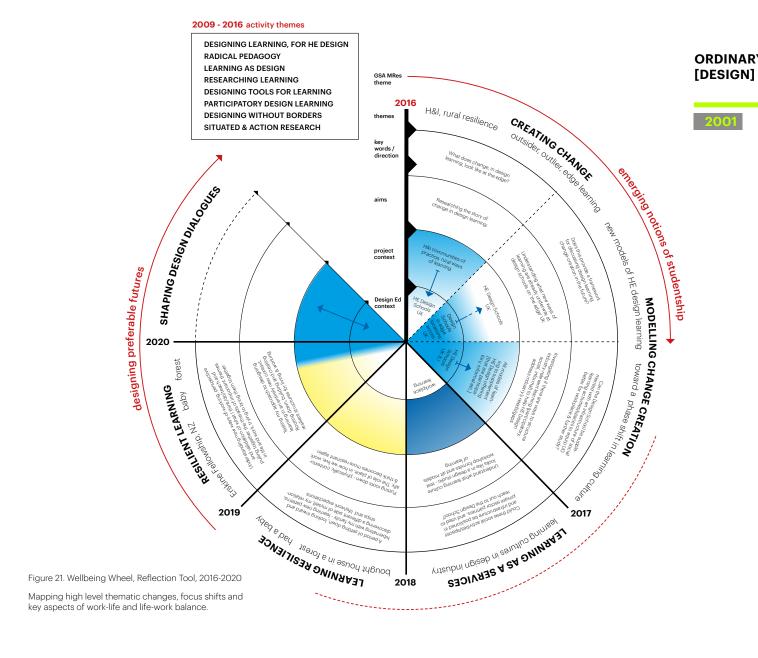
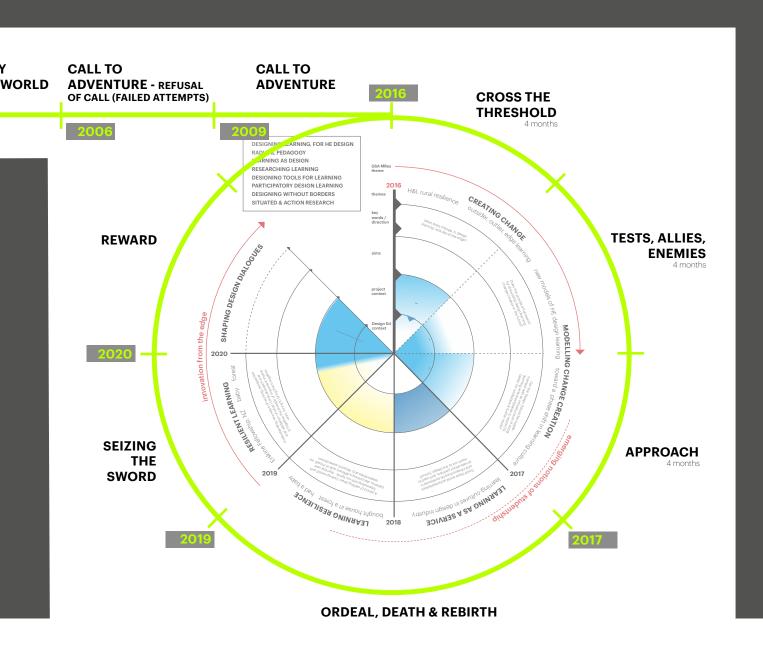


Figure 22. The Hero's Journey, 2020

For me, on my journey I realised that starting the MRes was not the 'call to adventure', that happened when I first started lecturing in 2009. When I started the MRes in 2016 I crossed the threshold from the ordinary world to the 'special world', but it wasn't until I stepped away from studies as a PhD candidate to work in the private sector, then leave that job, have a baby and buy a house in a forest, that I 'seized the sword'. In other words, the point on the journey when I realised what I had to do, why I had to do it, and how to do it, was when I stepped away from security, familiarity, and took on an entirely different role [as a mother]. It was then that I identified my challenge.



moments that matter

2016

- Winter school at Forres meeting others, group from cologne, immersive experience in remote loc.
- interviews with industry/sectoral leaders
- · moving back to Edinburgh loft
- beginning writing by doing an annotated bibliography for the first time - loved the style of writing and quoting text
 - getting married

- lack of structure in supervision
- lack of clearly defined project scope - from me, but also supervisors
- living between 2 different cities relationship
- trying and failing to move back to UK (neither of us could get jobs)
- isolated in Edinburgh missed out of being part of the studio group

2017

- being offered a role in Dublin with Fjord
- Being able to do things faster and see results/impact
- working in teams with likeminded people
- thinking and generating ideas, then actioning them
- travelling
- made friends in Dublin
- independence
- thought we bought a house
- found out I was pregnant again

2018

- left my job, felt a hu sense of freedom to again
- found a house in a f offer accepted
- travelled back to Ita holiday
- had a beautiful bab experience
- hibernated in the for baby and made our
- got offered a joint for with husband at Un Canterbury, NZ

- found out I was pregnant when I
- started the job had a miscarriage
 new discipline director had an aggressive leadership style - didn't like me or what I was doing
- change in management left me without support and I became isolated from management, colleagues began leaving
- didn't buy the house
- left with no options other than to begin leaving the job

- struggled with hype throughout my preg
- the 'Repeal the 8th' campaigning for prodidn't want to go or
- couple of months o struggled with the i being at home with my husband worked Dublin
- suddenly felt like a not a creative/acad
 - worried about going side of the world!

- doing the annotated bibliography is a great way for me to write/think
- talking to 'thought leaders' is a helpful sounding board for my own thinking, then balanced with peer and/or user input
- where I live and how happy I am there influences my ability to produce good work
- I struggled to manage different planes of life amplifying at once
 finding the right supervisor and
- critical friend is important for me
 structure if I don't have it, am not given it, I NEED to take time to create it

- I thrive in a positive team environment, with supportive directors/senior managers
- I can manage personal/emotional stress alongside work stress when I need to
- I like challenges
- Although I work well on my own, being purposefully isolated leaves me feeling negative about the work I'm doing
- I am getting better at recognising when to hold and when to fold in the past I may have been less courageous about a tough decision

- Although it's difficul negative experience place where I feel fr allows me to do that
- I am susceptible to environment - if tha aggressive, confron retreat and isolate n
- my identity was bas I was capable of doi delivering in a work struggled over time identity
- I love stepping back focusing in
- I love nurturing and person learn!

2019

- fellowship at Canterbury and living in NZ was incredible, life changing
- working and teaching with my baby was incredibly powerful
- sister staying on to live with us, and help us with the house/ grounds and baby was lovely
- going away for 10 days on my own to a research retreat, and to spend time with friends in Netherlands
- connecting with neighbour and becoming friends
- creche 1-2 days a week

 started teaching again
 felt like the revised proposal for MRes really fitted

2020

- Covid19 after the first month of adjustment, life, work balance for all became really positive, lockdown was beautiful
- learned how to make great pizza bases!
- Louise staying and not going to London
- starting the conversation game with John
- getting introduced to people with a space
- meeting local roots organisations

eremisis
gnancy
vote and
o-life meant I
ut for the last
f pregnancy
solation of
my baby while
I and went to

ge relief and

orest and had

ly for a long

y and birth

rest with my

ellowship

versity of

house a home

enjoy life

nousewife and emic g to the other

- coming back to domestic reality after NZ
- husband got ill
- costs of working on the house ramped up
- financially stretched
- husbands work was consuming, difficult to prioritise my work needs
- felt tired, baby teething, colds, not eating (though sleeping lots)
- first 5wks of Covid19 parents, family & friends across the world and couldn't help
- husband's schedule for first 5wks of lockdown
- having to work in tiny windows in the evening, after cooking, before baby wakes is difficult and feels compromised - miss getting a full day to myself!

 the fellowship allowed me to recover my other identity, and still keep my new one

- experiences like the fellowship give me validation for what I do and increases my self-confidence
- I can still take risks
- I need to be able to work as well as nurture
- I need time that is mine in each day to feel more energised
- financial stress is something I struggle to handle and manage emotionally

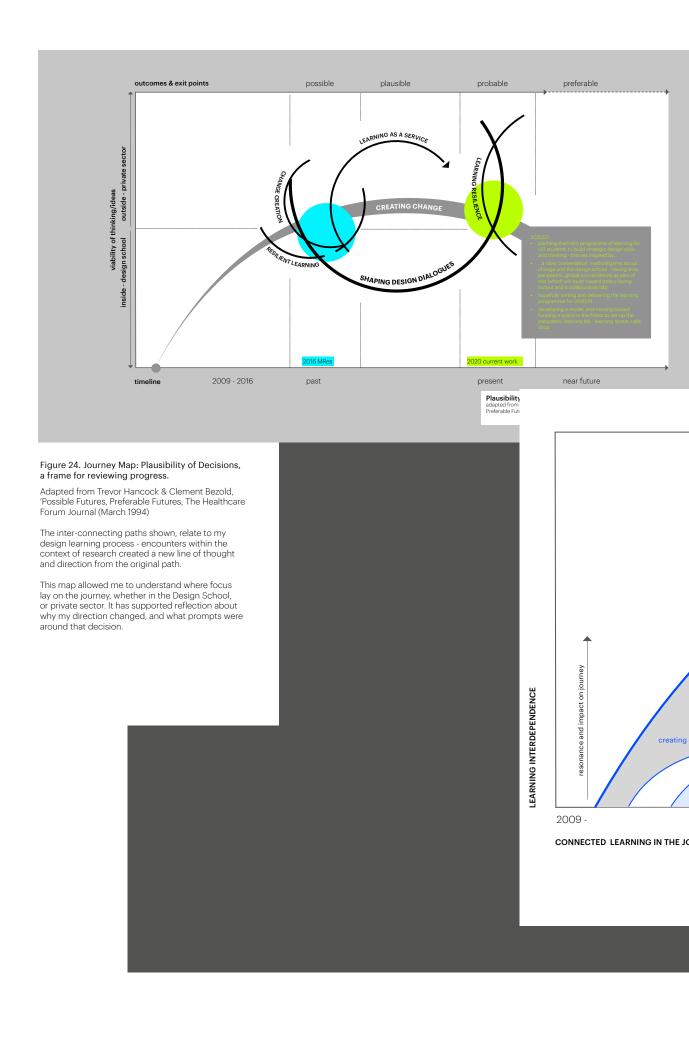
- having husband and sister WfH actually makes f/t childcare possible and less isolating
- being rooted in our space has been incredibly energising and positive - impact of space/place on wellbeing has inspired a refocus in my work
- negative things can create opportunities feel energised by the shifts that have taken place and the possibilities they've opened up connecting with our location,
- neighbours and small ecosystem here feels positive, and impacts on my work energy/thinking

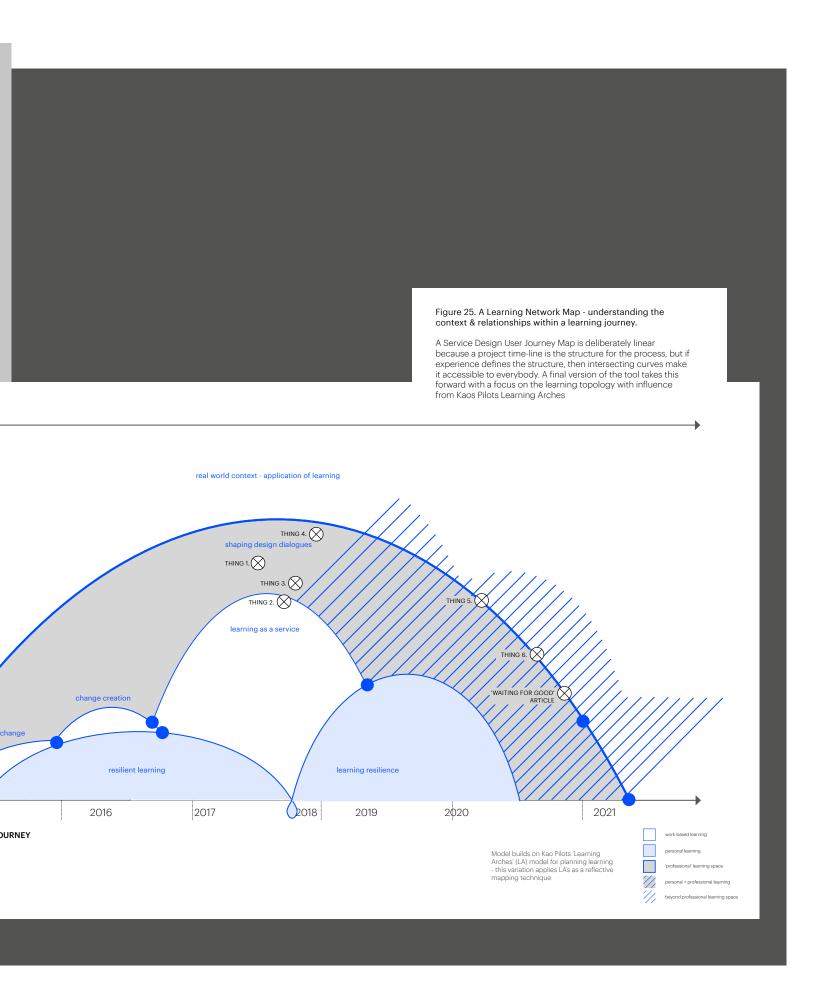
t to process
es, being in a
ee and strong
emy
t's negative,

tational, I nyself ed on what ng and capacity with the new

/away and

helping a little





Appendix B OPENING CONVERSATIONS with industry

In 2016 and 2017 I conducted a series of informal interviews to gain understanding of what industry and sectoral perspectives were on the future of design learning, in private sector practice and the Design School. It allowed me to test initial research questions, aims and objectives, I approached a number of leading institutional figures in the UK and Irish Design community to tap into their expertise, identify key themes, and create a compass for my research journey. Note these titles were correct at the time of interview, most have since changed.

John Mather 30th September 2016, conducted on Skype

John is the CEO of the Design Council, a former President of the Design Business Association, and an Adjunct Professor at Tongi University. John has been working for almost forty years in the brand and design industry, leading a number of marketing, brand and design consultancies in the UK and Internationally. His ongoing commitments include a Design Director role at the British Design Fund, as well as being a Governor at Falmouth University.

Toby Scott 5th September 2016, conducted on Skype

Toby is a former Director of the Design Council, and co-author of the Double Diamond model of the design process. He is a facilitator and Design Thinker with Knowinnovation where he specialises in large scale, collaborative, creative problem solving. Co-founder of FRAMELABS, he specialises in disruptive innovation, helping creating future value for commercial clients through 'hyper-collaboration'.

Karen Hennessy

23rd August 2016, conducted in person, Westbury Hotel, Dublin

Karen is the CEO of the Design and Crafts Council of Ireland and Vice President of the European Design Associations. She was the CEO of Irish Design 2015 - a major government-backed €5 million programme that established a platform for the continued development of design in Ireland. She is a passionate advocate for skills training and the Director of the Kilkenny and Carlow Education and Training Board.

George Boyle

26th January 2017, conducted in person, Radisson Blue Hotel, Dublin

George is the President of the Institute of Designers in Ireland. She is the founder of the Fumbally Exchange - a not-for-profit movement of creative and innovative professionals, runs a successful Architectural and Design agency, and is an Adjunct Professor at Trinity College Dublin.

Research Approach

I used the semi-structured interview protocol to conduct the interviews. Prior to the interviews, the participants were asked to sign a consent form, giving permission for me to tape-record the interview, and to use the findings subsequently. A brief introduction outlining the background and aim of my research was given to the interviewees. While this provided detailed information to the participants, it helped me get the interviewee to start talking and build a rapport. The questions were designed to be as broad as possible to enable the participant to lead the conversation to issues that they consider as important rather than being led toward talking about specific issues.

The interviews were transcribed to ensure that all nuances were captured. Comparable descriptions and common terminologies were identified. All observation summaries were categorised into themes (Miles & Huberman, 1994), helping provide a way of analysing the qualitative findings through a simple thematic coding process that reflected the research projects initial research questions.

Interview questions:

- 1. How do you feel design has evolved over the last decade, and what changes can we expect to see in the next decade?
- 2. What are the key drivers of these changes?
- 3. While many of these changes might be characterised as positive, are there any negatives?
- 4. How can your organisation/company/practice better meet these future challenges and opportunities?
- 5. What are the implications of these changes for design education?
- 6. Is design education meeting the future needs of the design sector and wider industry, society and culture?
- 7. Beyond the realm of formal design education, how can we create and support communities of design learning?
- 8. What practical recommendations would you make to support and enhance design education and learning?

Following are two sample transcripts of interviews, with Toby Scott, and John Mather.

B.1 John Mather - interview transcript (extract)

30th September 2016, conducted on Skype Suzanne Martin (SM) and John Mather (JM)

SM: [...] things that are happening around and I think to try and create something new in a vacuum is perhaps a little bit ridiculous. I think it does make sense to look at just an attempt that people are making towards new education, and there is a recent issue of creative review this month which has the DNAD New Blood are doing a 'shift programme' which is, basically, outreach into areas where people would have been bypassed by the slightly classist price and cost of education. They are trying to get people who don't have any formal higher education into employment. They are providing evening classes, a structure that crosses seven or eight weeks. The hope is that as people learn in groups - it will be live, real learning - it would be valuable for paid internships which would get them employment because they, D&AD, are taking the perspective that they [the participants] can't access higher education because these people simply cannot pay the fees or the time because they have someone to care for or.... So, there are all these little examples of people attempting to do things - but, what I am noticing is that these, largely, are not coming from the education sector. You don't see so many institutions taking the risk, going out, and doing something different - it's private companies or it's organisations, or it's people at the Design Academy, but the actual academic institutions are the ones who are reluctant to shift.

JM: I think we are so much on the same page, and that's potentially the reason why we started the Design Academy, because we could see that education was [JM introduces Sam Buccolo, from University of Technology Sydney]; [JM introduces Anne Boddington, from Kingston University]: she is evangelical about this, it's her 'big thing'. Her view is that the whole design education system needs to be turned on its head and started again and actually has been working in India on exactly this topic because there is a really interesting opportunity in India because there are so many new design schools that there is an opportunity to start afresh there in the way you probably couldn't do here in the UK. There is the CII [Confederation of Indian Industry] which she was speaking about. [JM introduces Mike Knowls, from Rishihood University]

SM: I think that's really interesting, and the idea that it's very difficult to make a fresh start is one of the things that keeps coming up: how do you make a fresh start? You can't demolish institutions, you can't knock them down, and to rebuild them is a lot of investment and there just isn't the infrastructure, so to have a country or a place to start from fresh is quite unprecedented.

JM: One of the interesting things that's coming out of the Design Academy, the first year was incredibly successful - and it took a little while for it to get off the ground, I don't remember how many it was, six schools or however many it was that we run - but this year they're coming at us in hoards because the word has spread. At the Design Academy we evaluate everything that we do, and one of the interesting pieces of feedback is that a lot of the schools, or teaching staff are asking 'this is fantastic, is there any way we can do the design academy for the lecturers as well?' This is one of my favourite themes, because I like to think that I am reasonably close to the design industry on the coat-tails in many respects, and I am getting exposed to stuff that not many people in the design industry generally get exposed to. I have trouble keeping up - so how does somebody in Sunderland or somewhere else actually keep up? They get the occasional visiting lecturer - and they tend to be the ones who are older who have time on their hands.

SM: ...and they're not exactly the cutting-edge of whatever is happening.

JM: No, The people who actually are at the cutting edge are not the ones who are actually doing it! So one of the solutions might be that there is no CPD, or professional development, within the design industry - unlike virtually any other industry, where you have to continuously update yourself on what's going on. There could be something linked in there, where you get the design school actually being the people doing the 'CPD' and there is a mutuality with the design industry. The other challenge, of course, is that - I'm sure you saw the Design Economy report from last year [Source] we all tend to fall into the trap of the design industry as design agencies and what that report compellingly tells is that actually less than a third of designers sit within design agencies, most designers sit within industry or within other servicing, retail, or whatever - so how do you capture those people as well?

They probably get more 'CPD' than people in the design industry.

SM: Yes, but it's maybe not so design relevant, but they probably do get ongoing support to upscale and stay updated, and aware of things, but yes you're quite right that there isn't anything within the design sector.

JM: In many ways, they're probably more likely to be able to gather the collaborative skills that people are talking about designers needing to have in the future. They're actually working in organisations where they are having to work on a daily basis with other disciplines.

SM: Yes, they have had to leave the glass house; they are actually out in industry, in a range of sectors, working with a diverse range of cultures as well as disciplines having to constantly adapt so, yes, they are very well placed for the future. I think there is a report that came out [Source - PWC?] that said 65% of children today are going to be working in jobs that we don't know, we can't define yet. Which is an incredible statistic that everyone is throwing about, like: 'wow 65%, that's the future, we don't even know it!'. [brief break] It's not necessarily the CPD that I was interested in, but it is something between the design school, the institution, and the workplace. What I am keen to do is trying to find out what is useful learning? What is actually useful learning to the people who would want to use it?

Instead of rolling out - Glasgow School of art is probably one example of this, where they have many 'mini-models' that they're putting into the Highlands and Islands, so they have their main mothership, their main institution, that they're almost replicating that in a smaller scale. But still: it's in a listed building, in a very heritage based site, it's out of town, it's very exclusive, it's not for the people and the community, and they have almost replicated their city urban model in a rural location in trying to create this 'hub' to grow knowledge in the Highlands and Islands but they're parachuting in the knowledge, they're not growing it. They're not necessarily providing all the skills and learning that local people may need. It's good that they're trying to do that, but it still doesn't help the local community learn viable design and life skills through design. I feel like there are so many gaps in that space out with the institution [and that's maybe where my work will move going forward. I am pleased we are on the same page.]

To go back to this report, and in trying to elicit further information from it, I suppose you will all to aware that design has evolved in the last decade and its impact has been felt, and I guess it's very easy to talk about the future as 'yes, in the future, our children will work 65% in jobs we haven't yet identified' but in the next decade, can you picture what might be happening within the design sector? Within design education?

JM: That's a really tricky one. I have said this before, and I've said this publicly, there could be a 'carpe diem moment' where in ten years time if your company doesn't have a chief design officer, it'll be like not having a chief marketing officer. There could be a [inaudible] design placed at the heart of every design organisation. You only have to look at Apple, and all of the stuff that is coming out of the Harvard University's or whatever - what is happening in America will come across the ocean. There are huge acceptances and understandings for the need for design in how they help these companies succeed. The storyboard that is on the west coast, in the investment community, is that, if you don't have a designer on the board then it will be very hard for the organisation and you are less likely to get funding. There is a real movement that they actually have designers, where the CEO is or the equivalent. So that is my prediction: there will be a key design officer-type role that is as important - not more important - than the marketing role within the organisation.

What that means, is that I think there needs to be a real shake up within the education sector. I do think there needs to be some process of re-training of the existing teaching staff and I think the Design Academy idea translated for staff could well be something that happens, but it needs to be something that happens on a much bigger scale. In a sense, our jobs as a design council is to get these things off the ground, not to set them up and run them - we should be moving onto the next thing. What you need is an institution who will actually take that up and recognise that it's valuable and important. One of the other things that is quite telling is that literally every MBA course now is clambering to have 'design thinking' or 'strategic design' as part of the mix, so there is this recognition that strategic design is another management tool that needs to be taken account of, and brought into the equation. [I'm not answering your question]

SM: I'm getting little glimpses of it - embedding design in the heart of organisations, and company,

B.2 Toby Scott - interview transcript (extract)

5th September 2016, conducted on Skype Suzanne Martin (SM) and Toby Scott (TS)

TS: We had a day yesterday doing ESB...it's so relevant to what you're talking about. Here is ESB, a big Irish company, slow as you like, saying 'We've got to do design thinking' and I always feel that as soon as a large company starts doing that, then you know it's the beginning of the end. You know because it's the... It's the tail end... You've gone from early adoption and into mass adoption.

SM: ...And know we've reached saturation point

TS ... And now saturation, yes, and you've got to a point where it's sort of meaningless. So, it's very lovely it's very nice to be chatting to them about doing things like that, we're doing some interesting workshops, saturation you've got the word absolutely right. It feels, it just, it feels a bit last century suddenly.

SM: But it is maybe quite encouraging, and this is something that came up in conversations I've had informally as well as in the interviews I've already done, isn't it quite good that design thinking has almost now fully become part of the language in business and enterprise? Maybe to the point that it has no longer got the meaning and residents that it maybe first had when it was coming out but it is quite positive that people are talking about design thinking and beer using it-Even if not in the way that we would ideally want them to use it. But it seems like positive progress.

TS: Its got to be, It's got to be progress,... Exactly as you say... And perhaps the challenge then is within design. Only just dancing on the head of the proverbial pin. If you are getting up at one bottoms a little bit. If it's, well it's not really design thinking.

[Talks about a project he's working on and the people on the team he's working with...Super experienced highly professional colleagues within one company that I have in Now Innovation, and they will grasp design thinking and they will run with it, no design background at all and actually, frankly, they are 90% there, they understand the principles. It's fairly straightforward,They can run a really good session on that because they bring other skills from other areas. And actually it increasingly strikes me, that the definition is the big question.]

SM: Brief overview of my project background set out that I thought the MRes was an interesting way to approach the research, that it was a more appealing commercial model than the drift of a three year PhD. Toby laughs

TS:... Yes, and the time-scale...the very fact that you're talking about to change, in an environment that is changing so rapidly means that you'd spend three years doing something that might be out of date by the time you wrote it.

SM: [I iterate that this is often the case with PhD's, I question why we would sit in a room to do this research then. My process is in looking at a change - design education is broken, design education isn't working. A lot of negatives about design education and learning, nobody is talking about positives or moments that might lead to positive change and positive futures in learning. I move onto the beyond discipline reports - my context and understanding of it.]

She has spoken to key names, key players within London set, and gathered their opinion's such that design education isn't working and it needs to change -the executive summary catches that. I suppose I was looking at what is happening in the regions, in Ireland and other places that are not in London, where there may be changes happening but nobody is cataloguing them, nobody is actually asking 'what are you doing?', 'how are you trying to change?' And nobody is putting that together in a place for anybody to look at it, everybody is going along with the assumption that education is broken. That's what I'm looking at. I'm looking at change creation.

TS: Do you want to have a influence? Do you wanted to have impact your work that is?

SM: I want it to have impact. The workshop format I'm working on is not conventional, it's not what's been done before - that's where I could have impact. I'm creating a series of participatory events...the idea is that I'm gathering people together around dinner-table instead of the conference...to try and build influence through the dissemination of learning within those workshops...to talk about change creation. Having to make changes happen, being forced to make change - none of that is about how we build positive change creation in higher education...this all taps into what you do on an everyday basis - which is about embedding change and finding better ways to do that.

TS: That's a better description of what I do, then I have, I need to write that down... There are only two areas where I think I might be able to add a tiny bit of time period the first you know already, and the second one, you may guess that.

The first one is about that Metropolitan versus non-London, non-city centric thing. And its a historical perspective and it's already out of date, but hey. And the other one is - and this is where I can talk with authority and expertise - but it is a very narrow view which is my world, and that's a very particular world, but at least it gives a very narrow little focus - what design learning is from my perspective. So I suppose those are the two things that I thought would be useful.

SM: So your thin slice of the world that you operate in. How would you describe that? A brief overview of you and what you do?

TS: I think you described it perfectly; I tend to work with organisations that are going through change and so I'd say about 20 years ago companies are used to work with wanted to talk about project management, 'How do we make stuff happen' because they were really anxious as they had a project and they wanted to make it happen. Then about 15 years ago that's changed, everybody started to talk about innovation and you say "okay, that's great, you want to make new shit happen" and why is that, "well the world around us is changing really rapidly and we can't keep up". Okay then. About 10 years ago everybody started talking about design, and so, I said right that's fine, we can do that. And I suppose about five years ago everybody started talking about collaboration and that's been really interesting progression in my world.

So the project management aspect was 'how do you implement something and make stuff happen' but then suddenly people realised they were doing the wrong stuff. It was the movement from being effective to being more efficient, choosing to do the right thing. And that's when they started talking about innovation. And they talked about innovation, but it was still 'let's come up with a new product, a new proposal, a new thing', whatever it maybe - there was no real structure behind that and certainly there was very little understanding of the user.

And then along comes design, and at that time I was still working at the Design Council and that was the angle we were pushing hard, but I also had a private practice. It was the tipping point, when more organisations started talking directly about design and recognising that they may need to have a more user centred perspective. Obviously I grasped that and thought that 'yes, that's good' but it was fairly ephemeral, it was short lived, and so not withstanding the conversation we just had about ESB, people swiftly moved on to say "I've got that, I got the idea that it's about users, yeah, that's absolutely essential, I've got the idea that you need to integrate different types of thinking, I've got that there is a process there, let's move on, what's next?".

And so that's why I suppose, over the last three or five years, it's all been about collaboration. It's this sense that 'I've got really, really complex organisation, I need to do something', it's perhaps spread around the world, certainly around a large country and 'I really struggle to make stuff happen between people - I used to be able to be directive, I used to be able to say do this, this way, to these standards and I can't any longer'. And the reason they cant do it any longer is because they don't know what that thing is.

And what design had helped to do previously was to give some insight into what people wanted, so you can do appropriate user centred interviews, you could get insight, that was fantastic. But it didn't actually help you understand a little about what was required or what you need to do, or how to do it all at the same time.

SM: It's quite fascinating, because I would have thought that design...you're almost describing design as the thing that opened the door and then people needed something else to progress through that 'room' or 'space' that they were in. I almost would have imagined that they'd have understood design

Appendix C

LEARNING TOPOLOGY CONVERSATIONS Personal Inventories

In 2016 and 2017 I spoke to a range of practitioners, who work in the design industry - a self-employed practitioner, an employee at a small-medium strategic design agency, a creative in a multinational media company, a small retail business owner and somebody who worked in design/tech recruitment whilst running her own design business - to find out what they do to learn and the different ways learning manifests in their professional life. I wanted to capture what that looked like and use these Personal Inventories as a sampler for understanding themes and patterns that might run across the sector. I wanted to use this as an opportunity to 'crowd source' what learning looks like now (in 2016) to inform my understanding of Learning in a design studio as opposed to Design School.

1. Topology of Learning

One of the group, who had trained as an actor, realised that his learning habits related to his training - prep was mostly isolated, solitary, learning from provided material, off-stage was testing or working with others by putting the prep work into context or action, and on-stage was performative, collaborative and sharing equally amongst others on the stage. It's a lovely way to understand learning, and to make sense of how the others in the group, interviewed for the activity, responded to the questions.

2 Rehersals

Following this, in this Personal Inventory exercise, let's first consider the set of responses that relate to solitary, self-motivated but directed by [others] requirements, or a problem/question, preparatory learning, as 'rehearsals'. Everybody interviewed, used online forums, tutorials, newsletters, guides to help inform themselves before addressing the requirements/problem/question, though a couple of interviewees said they'd prefer to ask somebody, or actually to ask somebody in their area of specialism, for specific input, but that is not often available. The input gathered using these virtual methods is predominantly technical, technique-based and specific

process-led knowledge, with a background focus on generalised knowledge improvement if not addressing a specific problem/question. It's interesting that everybody tried to do this learning at work as part of work, there is a clear delineation between personal time and work learning.

3. Off-Stage

When considering another aspect of learning as being 'off-stage learning', to mean learning that happens with others where preparatory learning is tested or put into context, practice, action (perhaps in their environment), this is where interviewees varied depending on their design role and level. Common words that come up, across the group, are: observing, absorbing, collaborating, questioning, sharing. And these are used in connection with narratives about peer-to-peer working, or a feeling of equality in that process even if its with more senior colleagues - the process, or context where it happens, is felt to be level, friendly, communal to all no matter proximity to the business/problem/question. For all interviewed, in one way or another, relationships are critical to the effectiveness of applying their gathered/ generated learning.

In discussing the 'on-stage' learning practices (to mean the aspect of performing the learning, the collaborating, sharing amongst their teams or groups), the interviewees all talk about the people involved in, around, for the learning application. And again, sharing, collaborating, observing, are words that come up as well as some describing how they learn from those people, or even share learning with them to help their own growth.

4. Key take-aways from the Personal Inventories activity are:

- There are phases of learning rehearsal, off-stage, onstage, cool down
- Solitary and collaborative learning are critical, and dependent, but distinct
- Common language used observing, absorbing,

collaborating, questioning, sharing, informal, practicing, involving

- Learning is defined by experience childhood learning encounters, profession/kit restrictions, work setting and openness to learning
- A desire to do learning for work, at work, and it being acknowledged as part of working is important to the learning culture and habit
- Learning is defined using words like: constant accumulation, everyday, curiosity, personal growth, giving back, gathering, cataloguing, structured, new, interest, building connections
- Learning continues when they 'step away' and that this is a critical part of the learning process most undertook solitary activities that involved using motor-skills and full focus on a simple, repetitive, known physical tasks.

5. Participating in Design Dialogues

The role of Participatory Design, as a design learning mindset, adds incentive to change creation within the Design School.

Here in Ireland, President Michael D. Higgins warned that the capacity of third level education to provide a "moral space" for discussion is being eroded at a time of growing political populism. Mr Higgins, who was opening a celebration of Trinity College Dublin's 'College Historical Debating Society', stated that "universities are not there merely to produce students who are useful. They are there to produce citizens who are respectful of the rights of others to participate and also to be able to participate fully, drawing on a wide range of scholarship...".

Seeing Learning as a way to create useful citizens, who understand that everybody has the right to participate fully [in all that we encounter] requires a fuller understanding not only of participation, but how to participate.

Bringing forward some of the insights from the Personal Inventories exercise conducted in 2016, and focusing-in on key words that came up in the conversations - observing, absorbing, collaborating, questioning, sharing, practicing, involving - helped create an understanding of what 'good looks like' in terms of the learning experience (ref table 4).

Learning was defined as being about constant accumulation, the everyday, activities that inspired curiosity, personal growth, prompted them to give back, helped gathering, cataloguing, structuring of knowledge, and led to new knowledge, generating interest and building connections between groups.

Respondents described design learning in a participatory language, something relevant then, and still, now. Thinking about phases of learning activity (Ch5.2) in terms of acting creates an interesting structure for reviewing research undertaken within this MRes. There is a clear rhythm of moving in and away from activity, quiet

periods of reflection or thinking, then going back in to the activity again. This runs parallel to a Participatory Design structure.

6. Reflecting on the inventories

Looking back at these Inventories from a 2020 perspective, I can see that there has been a shift in learning at work and for work, the desire of young designers and design professionals wanting to learn informally, individually, and have time to absorb the knowledge as well as applying it within the work/ project/job context, has been acknowledge by the larger studios, companies and organisations in the sector.

The time, work/life balance has changed, and now with remote-working being the 'new normal' that only increases - though what has happened is that opportunities, abilities and ways of learning off-stage and on-stage have suffered dramatically.

There is still a gap in available technical, processled or technique based knowledge available within the workplace so they look outside and online to gain knowledge. Most learning is needs-based. The interviewees wanted to learn through working and to work to learn, as well as learning around work.

The 'cool down' time is critical in creating breakthrough learning perhaps this is something that could be incorporated within working hours - as some of the multinationals, tech-led large companies already do by including gyms etc. within the buildings, or using recreational activities as part of the working day.

7. Personal Inventory Interviews - summary findings

Phone or Skype interviews were conducted between December 2016 and February 2017, and recorded.

Q.1. What is your learning structure on an average week – where, what do you do in those spaces, with who

A. "in this job it's been intense growth – learning to solve a learning gap (not so much a gap, just that I am now working in quite a different environment so I have to learn quickly). Two above me, the team leader, teaches me one-to-one – because he understood her from the beginning, he's been able to intuitively provide the right visual aids and prompts to grow – this is very different from previous leadership experiences. Peer-led, top-down learning structure in current company is really well managed"

B. reads daily briefings at the start of the day – developments in tech, very much informal learning

via favourite platforms. Sometimes watches tutorials. Also conferences, boot-camps, 'how to guides'. "mostly from newsletters, so every morning I get a whole bunch of different ones, mainly from news platforms, but the best ones are Atlantic, Wired and Digiday. Those are the ones I subscribe to. So I always open up the articles that interest me – sometimes they're not relevant to work but a lot of them are relevant to work – and a lot of it is on the development in technology and measurement.". Time influences how she learns – if there's time then she looks and then goes in deeper, but if there is less time, she just skims over what is needed for the particular problem/ situation/area that she's looking to resolve/solve.

- C. Learns in different 'phases', active engagement, inactive, and consumption. Trained and worked as an actor so we discuss how this relates to off-stage, on-stage, rehearsing/learning lines on his own then being in front of an audience/camera. Consuming learning is the information you consume and a big part of actively learning skills. Inactive is the newsletters he subscribes to. Active is taking on a specific project to test or improve [himself]. He is supported to learn in work, previous job/role he had to do it on his own time. There's scope to grow/improve in current role and that's positive. Feels that this allows greater flexibility, it's an asset allows people to identify skills they're interested in and develop them. Sink or swim.
- D. She is mostly in the office dealing with personal shopping, growing the business, social media. Learning whilst doing the work. But also the neighbourhood, communication with different people, relationships learning about these has made her realise there's different types of engagement, and that this requires flexibility. They started a shopping service in January 2016 and it's growing rapidly. See's the physical shop as a gateway.
- E. Pre-shoot she learns by looking online, asking other photographers. Her general, personal learning involves reading papers, gathering stories, ideas, collating them, Ted Talks sometimes (for generating story concepts for personal work) as motivation. Because of the work she does, it's often visual research that's needed, so websites with images that can be unpicked to see how they're done and then practice it herself. Testing (shoots). Most practicing and testing is done in advance of the job/client work. If something doesn't work on the job, then there is a kind of practical 'problem solving to get around it' approach to learning.

Q.2. What kind of learning happens in those places e.g. talking, organising, planning

A. Observing, guidance from team leader on handling the job, watch and learn, leadership leading by example, forward-planning research that can feed into my other identity (as a fashion designer) e.g.

- **B.** Tries to only do this at work. Primarily she is absorbing information at work that's how she learns, or it might be in online chats/forums where she gets information/learning/knowledge she's looking for. Says she learns at the same time as getting input on a specific question/problem/area. Asks questions. Always looking for new knowledge in everything she does
- **C.** Sharing emails along the lines of "I saw this, you might enjoy it, or find it useful" to help others sporadically. Sharing, peer-to-peer, explaining how/ what/where/why, that process helps you and others see and learn. It's like Lego blocks, the learning.
- D. Sharing, collaborative, informal mentoring of the customers. The shopping service came out of an organic process of what they do on an everyday basis customers are almost relieved when it's a friendly, approachable service, it builds on the relationship. Events that create opportunities to chat, and share/grow learning together as a community [of users/buyers]. Collaboration was prompted by getting a new website shop, and thinking about their USP and what makes them different to make them stand out against bigger companies the smaller brands make them special and fill a gap in the market for certain things.

E. pre-shoot it's about learning technical aspects. Working WITH lighting, make-up, hair etc. to achieve the vision and understand what CAN be done. During the shoot she encourages all to work to get it right on camera and to not fix in post-production – no trickery. There is ongoing informal learning that builds over time/experience e.g. how to connect with the subjects or create emotion in the picture with subjects.

Q.3. Who would be involved in that process e.g. is it oneway learning from somebody else, peer-to-peer, self-led etc.

- A. All of the above. I mainly observe & listen to gain knowledge. The Team Leader, his personality really gels with mine uses an analogy of boxer Conor McGregor's boxing coach during an olympic bout, as being 'direct and to the point'. Of her team leader he'll let you arrive at the conclusion your way and in your own time, supporting you all the way. She is also observing how co-workers dress, where they shop, how they dress & style themselves for input into her other design business.
- **B.** peer-to-peer learning happens in the workplace it is structured in as part of the work week. There's no hierarchy at work, therefore no blame culture which really helps make learning, sharing and the 'peer-to-peer' way of learning much easier. It's an even platform. She'd love to have a person show her how to do something, in person, somebody right next to her online it's superficial so she finds herself having to re-watch tutorials/guides etc. as they don't stick. She

thinks the influence of her experience as a horse rider has led to this preferred way of learning – she initially 'learned' as a child by having one-to-one, in-person, coaching to help her become a rider, so that's what she associates with 'learning'

C. Tends to be on his own, wants to allocate time to learn within the week but there are limitations. Autonomous but being led allows you a break from responsibility. It's relationships, one-on-one, to understand the needs and abilities – to see if you can find a way to let people develop their own knowledge of what they are good at and what they need to grow.

D. customers, friends, people in the neighbourhood, community as the audience and them, the shop. Wide range of fluctuating people involved in learning at the events or in the shop. Also collaborating with partners, producers and brands. For her/their individual learning it would be primarily solo in the office.

E. everybody on set is involved in this shared learning that happens during a shoot.

Q.4. What do you think learning really means e.g. formal, informal, observation, serendipitous

A. If you're not learning about your environment and world everyday then how are you going to give anything back. It's about personal growth, so you have something to give [partners and friends]. You've got to push yourself to be the best person you can be...if you live your learning then you are just going to have a brilliant life and feel fulfilled. I feel sad for people that don't challenge or continue to push their [self] education.

B.constant accumulation of knowledge – questioning, asking...everyday learning. Curiosity. Seeking out reason.

C. Gathering information (consuming), Cataloguing (active). Personally, a programme of structured learning about aspects of the business that he's not involved in. Self-structured.

D. Learning is about new ways to network and collect people around something like a service, products or a space

E. It's about being interested, about building connections and she sees that directly relating to the work that is produced.

Q.5. Where do you go to switch off – often the greatest breakthroughs happen when we are not trying to think, so those spaces/places are often as critical.

A. Space and time on your own is essential. I don't really need any particular kind of space to do that, a

lunch-break is enough! And listening to music, as loud as possible, so you can lose yourself in the music. Actually I make playlists for each collection.

B. driving, riding – she knows that it is positive to step-away, and that this is part of learning, because that's when she has ideas and thinks creatively. When her motor-skills are engaged her creative thinking kicks in.

D. spatial freedom and lack of connection to places and people is what she needs to switch off and have ideas/recharge.

E. She needs to be shooting, it's the doing that's critical to her ideas/breakthroughs. But she has been 'doing' other creative making e,g, pottery which requires her entire attention and lets her come out with a sense of clarity. Going out for walks in the countryside, without a camera, that's the key thing, to not take a camera!

Appendix D

CLOSING CONVERSATION with John Thackara

Edge and Centre: a reflective discussion with John Thackara about ideas and change in design learning

John Thackara is a writer and curator, is active in social, ecological and relational design. He curated the celebrated Doors of Perception conference for 20 years, first in Amsterdam, later across India; he was commissioner of the UK social innovation biennial Dott 07, and the French design biennial City Eco Lab; and in 2019 curated the Urban-Rural expo in Shanghai. He is a senior fellow at the Royal College of Art, visiting professor at Tongji University in Shanghai, and curator of the Social Food Forum. His last book - How To Thrive In the Next Economy: Designing Tomorrow's World Today - has just been published in China.

3.1.4 Conversation extracts

May - June 2020, conducted via email following a prescribed structure

19/05/20 Suzanne (SM) to John (JT)

20/05/20 JT to SM Pic: Olivetti Ich typewriter

It was not just "an old Olivetti" but an Olivetti Ico from the 1930s which is much sought after - or so it says it says on eBay. It works beautifully, and is sitting behind me as I write.

I, too, had the idea of writing on it - slow writing, if you like - but I gave up that plan when Robert Neuwirth, a writer I admire, started posting images of his typewritten thoughts on Twitter. Sadly these thoughts are hard for me to grasp. Actually, I have no idea what he's on about. So I concluded, based on a sample of one, that slow tweeting is not necessarily a good idea.

I say 'sadly' because I know and admire Neuwirth's work from his book Shadow Cities which he wrote after living for four years in the poorest part of Nairobi. He's one of two or three writers who've best described how hundreds of millions of people in what we are pleased to call the global south - and they call 'home' - live busy and creative lives without the benefit of - or even knowing the words - innovation, progress, development, design....

Anyway, I don't know why Neuwirth has gone all artsy and theoretical, but I'm disappointed. He's back in New York, so maybe his twitter feed is a form of being struck dumb.

My point here is that one person's edge is another person's home and daily life reality. So although I may indeed have said I was "happy to discuss change first and ideas second" I did not intend that to mean "let's take design education as a given, and figure out how to change it".

On the contrary. It's precisely because its "infrastructure, systems, staffing, spaces etc. get in the way" that I long ago gave up on the idea of changing design education - at least, from within.

I did try. I've engaged with many universities and design schools over the years. I spent four years at the RCA, as director of research, with the support of the then Rector, advocating for change. But I failed completely.

For a while, I blamed the institutions as a whole, and self-obsessed faculty members in particular. Then I blamed myself, for being ineffective.

Finally, I learned from people wiser than me that institutions do not change because you tell them to do so, nor even when you show them how. They change - or not - when their context changes. So, for me, messing about at the edge is my way of intervening in the context - in the hope that the context will shift and, then, so will the institutions.

I think your focus on "those coming in to design education for the first time from high school" is interesting and wise. (Peter Krogh, in Aarhus, has embarked on a similar path in his architecture school, focusing on a new foundation programme).

And you are right, of course, that - right now - there is no great hunger among the big majority of those incoming students for unconventional learning. They want marketable skills - and a certificate - that will get them started in what has become a booming global industry. (The Ellen Macarthur Foundation reckons there are 190 million designers in the world).

My reaction to this is twofold. First, yes, you are right: most of them are not interested in my arcane edgy hippy sad stuff. But my second reaction is that I long ago concluded that reckon my potential collaborators and conversation partners are to be found among about 20 per cent of any group - including a group of students - and so I'm always on the look out for a representative of the (often silent) 20% - and try, where possible, to connect with that person.

27/05/20 JT to SM

Pic: map of bio-farm, Shanghai

I'm not sure how big a deal a change of venue will turn out to be. On the contrary: teachers and students alike may experience a sense of freedom if they are forced to camp out in temporary spaces - if they are ejected from their silos, in other words, rather than choosing to leave them.

Being nomadic could a brilliant way to expose design students to the 'storying of place' as Regenesys puts it. These next students can learn how to do bioregioning for real. A bioregion re-connects us with living systems, and each other, through the unique places where we live and work. Bioregioning, as a verb, means connecting with watersheds, foodsheds, fibersheds, and food systems on an ongoing basis. It's a practise more easily taught out in the world than in a design studio.

A number of creative tasks for artists and designers follow from this approach. Maps of a bioregion's ecological assets are needed: its geology and topography; its soils and watersheds; its agriculture and biodiversity. The collaborative monitoring of living systems also needs to be designed – from soil health, to air quality – and ways found to observe the interactions among them, and create feedback channels. New and artful forms of representation can be created to reveal energy and nutrient cycles, or biodiversity, or to show the different ways that money leaks, or not, from a local living economy depending on who owns the means of production.

A homeless design school can also be an engine of economic revival by showcasing locally-sourced materials, the skills needed to use them, and under-used spaces with the potential to be repurposed. Do you know about Make/Works? https://make.works/ Its founders used to be students at Glasgow School of Art. The drove around the back streets of Glasgow in a VW campervan. In Bilbao, government officials wax lyrical about the potential of neglected "tractor factories": places with skills and machines and histories and local connections that have been left behind by offshoring.

In time, design schools could evolve into cooperation platforms. A challenge for all change makers is the diversity of stakeholders who need to be connected and stewarded in order to get things done. Why not retool design schools as bridges and connectors that foster reciprocal relationships between diverse actors united in a common goal: the long-term health and vitality of their place?

Collaborating, Connecting, Iterating, Adapting, Experiencing



They say it takes a village to raise a child, well, it takes another one to support somebody on a research journey.

This thesis has been 5 years in the making, it presents just a thin slice of the larger body of research, work and practice from that period. I would never have followed this road, or produced the writing and thinking that I did, without the input of many incredible and intelligent people around me. I am very appreciative of the conversations that we had, the time that was taken to discuss design learning ideas and design learning futures with me.

I stand on the shoulders of a great many literary, industry and sectoral giants, but also those closer to home.

Thank you to my most favourite thing in the world, my little Matilda, for allowing me to disappear into my writing for months on end, when you'd much rather have had me to yourself. I couldn't have produced this thesis without the guidance and input of my patient and insightful husband Alex, nor the help of my amazing sister Louise (who was the best Auntie when I got lost in my words this year). And thank you to those friends who have cheered me on, along the route, and especially as I neared the finish line. This thesis would not be what it is without this village ... or without R1 Dance on BBC Sounds to keep me going in the long, final days of editing!

This thesis presents research into what participatory Design Learning looks like 'in the wild', in multidisciplinary settings, framed by a contextual review of design learning spaces and approaches - including the tools used to deliver, manage and grow learned knowledge. This then points toward a conceptual framework for creating resilient Design Learning cultures and the understanding needed to co-create them.

A practice-informed body of Action Research directs the discussions set out within this Thesis, and provides evidence of dialogue tools, processes and theory tested in both a private sector, and educational, settings.

This investigation of Design Learning has evolved, across a five-year process, as two Action Research cycles, four Case Studies and seven Things, conducted between 2016 and 2020, in Dublin, Ireland.

In conclusion this thesis highlights the critical role that institutioning and infrastructuring play when considering the impact, value and role of dialogue tools in establishing resilient learning as a culture, as a way-of-working and being in the world, not simply as a part of the design process.

During the study, the participatory Design Learning approach developed became increasingly important as the nature of the Design School, designing and design learning changed in the face of COVID-19 disruption and transformation throughout 2020 and into 2021.