

# Northumbria Research Link

Citation: Sedgewick, Faye Barbara Alice (2022) Architects, agency and the design process: creating supportive living environments for ageing. Doctoral thesis, Northumbria University.

This version was downloaded from Northumbria Research Link:  
<http://nrl.northumbria.ac.uk/id/eprint/49259/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

**Architects, Agency and the Design  
Process: Creating supportive living  
environments for ageing**

Faye B A Sedgewick

PhD

2022

**Architects, Agency and the Design  
Process: Creating supportive living  
environments for ageing**

Faye Barbara Alice Sedgewick

A thesis submitted in partial fulfilment  
of the requirement of the  
University of Northumbria at Newcastle  
for the degree of  
Doctor of Philosophy

Research undertaken in  
the Department of Architecture &  
Built Environment

January 2022

*Dedicated to Gillian and John Sedgewick,*

*My Parents.*

## **ABSTRACT**

Ageing, social inclusivity and loneliness present ever-evolving challenges for architects and designers of the built environment. Housing in particular, is influential to the health and wellbeing of older adults through functional ability, independence and social connectedness in everyday life. Shaping the future design of housing that responds to contemporary architectural needs of an ageing (older) population is a high priority.

Implicit ageism is evident within the built environment whereby the functional design of buildings continue to exclude the needs of older adults. Age-friendly environments have been identified as an inclusive approach to support healthy ageing. However, architects' perceptions and practical application of age-friendliness when designing continues to be unclear. This is exacerbated by the lack of understanding about architects' specific ways of knowing for socially responsible action during the design process.

Previous studies have focused on the interrelationship between health and housing, the age-friendly movement for ageing-in-place and the need for diverse housing options. Yet, there continues to be a lack of research into the influence of an architect's agency and the design process when creating these age-friendly environments. This shines a light on the need for insight into the experiences of architects designing age-friendly housing.

This thesis adopts a Constructivist Grounded Theory methodology that supports an inductive research strategy. Specifically, it makes an original contribution to knowledge as it uncovers in detail, the experiences of architects on the frontline of creating supportive living environments for ageing. Five key actions of: 1.) Commitment, 2.) Informed Position, 3.) Deep Interrogation, 4.) Visual Communication, and 5.) Knowledge Acquisition and Dissemination were found to influence an architect's agency and the design process within real world design practice. In addition, it develops a sketching research method that supports data analysis and the effective exchange of knowledge. This thesis will be of interest across architectural practice, policy-making and academia.

## CONTENTS

<b>ABSTRACT</b> .....	<b>iv</b>
<b>TABLE OF CONTENTS</b> .....	<b>v</b>
<b>LIST OF FIGURES</b> .....	<b>x</b>
<b>LIST OF ABBREVIATIONS</b> .....	<b>xiv</b>
<b>ACKNOWLEDGEMENTS</b> .....	<b>xv</b>
<b>DECLARATION</b> .....	<b>xvii</b>
<b>CH.1 INTRODUCTION</b> .....	<b>1</b>
1.1 Overview.....	2
1.2 Motivation, Scope and Gap in Current Knowledge.....	3
1.3 Research Question.....	6
1.4 Research Position and Objectives.....	7
1.5 Structure of Thesis and Rationale.....	8
<b>CH.2 RESEARCH CONTEXT</b> .....	<b>11</b>
2.1 Overview.....	12
2.2 Review 1: Housing and Ageing Well.....	13
2.2.1 Housing Policy: Influence and Implementation.....	13
2.2.2 Ageism: Function Follows Form.....	15
2.2.3 Ageing-in-Place: (De/At)tachment with Place.....	18
2.2.4 Review Summary.....	21
2.3 Review 2: Design For All.....	23
2.3.1 Inclusive Design: A Socially Orientated and Responsible Approach...	23
2.3.2 Age-friendly Design: Active Participation in Society.....	26
2.3.3 Intergenerational Approaches: Interventions and Environments.....	29
2.3.4 Review Summary.....	31
2.4 Review 3: The Architect's Process.....	32
2.4.1 Iterative Activity: Research, Proposition, Analysis and Revision.....	33
2.4.2 Socially Engaged Practice: Designing for the Common Good.....	35
2.4.3 Inclusion of Users: Collaborative Methods for Participatory Design....	37

2.4.4	Designerly Ways of Knowing: Unlocking Knowledge.....	39
2.4.5	Review Summary.....	40
<b>2.5</b>	<b>Review 4: Agency to Act.....</b>	<b>43</b>
2.5.1	Cognitive Influences: Functioning, Efficacy and Self-regulation.....	43
2.5.2	The Social Constellation: Multiple Views for Collective Practice.....	45
2.5.3	Ways of Thinking: Critically, Creatively and Collaboratively.....	46
2.5.4	Review Summary.....	49
<b>2.6</b>	<b>Chapter Summary.....</b>	<b>51</b>
<b>CH.3</b>	<b>METHODOLOGY.....</b>	<b>54</b>
<b>3.1</b>	<b>Overview.....</b>	<b>55</b>
<b>3.2</b>	<b>Research Philosophy .....</b>	<b>56</b>
<b>3.3</b>	<b>Research Approach and Research Design.....</b>	<b>59</b>
3.3.1	Research Approach.....	59
3.3.2	Research Design.....	60
3.3.3	Grounded Theory.....	62
<b>3.4</b>	<b>Geographical Location.....</b>	<b>67</b>
<b>3.5</b>	<b>Sampling.....</b>	<b>68</b>
3.5.1	Sample Strategy.....	68
3.5.2	Selection Criteria.....	71
3.5.3	Recruiting During the Covid-19 pandemic.....	73
<b>3.6</b>	<b>Semi-structured Interviews.....</b>	<b>74</b>
3.6.1	Open-ended Questions.....	75
3.6.2	Interviewing During the Covid-19 pandemic.....	77
3.6.3	Pilot Studies.....	78
3.6.4	Limitations of Selected Interview Method.....	79
<b>3.7</b>	<b>Carrying Out The Fieldwork.....</b>	<b>80</b>
3.7.1	Research Setting.....	80
3.7.2	Fieldwork Process.....	81
3.7.3	Memo Writing.....	81
3.7.4	Fieldwork During the Covid-19 pandemic.....	83

<b>3.8</b>	Data Analysis.....	<b>83</b>
3.8.1	Phase One: CAQDAS Dedoose.....	<b>85</b>
3.8.2	Phase Two: Sketching Research Method.....	<b>88</b>
<b>3.9</b>	Ethical Considerations.....	<b>90</b>
3.9.1	Lone Worker.....	<b>91</b>
3.9.2	Human Participants.....	<b>92</b>
3.9.3	Ethical Approval.....	<b>92</b>
3.9.4	Informed Consent.....	<b>93</b>
3.9.5	Ethics of Moving from Face-to-Face to Remote Online Fieldwork.....	<b>93</b>
<b>3.10</b>	Chapter Summary.....	<b>94</b>
<b>CH.4</b>	<b>ANALYSIS, FINDINGS AND DISCUSSION.....</b>	<b>95</b>
<b>4.1</b>	Overview.....	<b>96</b>
	<b>PART I: ARCHITECT'S PERSONA.....</b>	<b>97</b>
<b>4.2</b>	Setting the Scene.....	<b>98</b>
4.2.1	Participant Profiles and Perceptions of Ageing.....	<b>98</b>
4.2.2	Age-related Terminology.....	<b>98</b>
	<b>PART II: AGENCY AND THE DESIGN PROCESS.....</b>	<b>100</b>
<b>4.3</b>	Commitment.....	<b>101</b>
4.3.1	Perseverance: Being the Best Advocates for the User-clients.....	<b>103</b>
4.3.2	Investing Time into Problem-solving.....	<b>104</b>
4.3.3	Willingness to Lead: Design and Delivery.....	<b>106</b>
4.3.4	Establishing Good Relationships.....	<b>107</b>
4.3.5	Discussion.....	<b>109</b>
<b>4.4</b>	Informed Position.....	<b>115</b>
4.4.1	Knowing How to Make Sense of Knowledge.....	<b>117</b>
4.4.2	An Individual's Knowledge and Expertise.....	<b>118</b>
4.4.3	Research, Synthesis, Reflection: An Iterative Cycle.....	<b>119</b>
4.4.4	Discussion.....	<b>121</b>
<b>4.5</b>	Deep Interrogation.....	<b>126</b>
4.5.1	Creating a 'Safe Space' for Meaningful Conversations.....	<b>128</b>

4.5.2	Listening More and Speaking Less: Absorbing the Information.....	131
4.5.3	Perspective-taking: Putting Yourself in Their Shoes.....	132
4.5.4	Discussion.....	133
<b>4.6</b>	<b>Visual Communication.....</b>	<b>138</b>
4.6.1	Using Freehand Sketching: Quick, Simple and Conceptual.....	140
4.6.2	Using Computer-aided Design: Refined, Detailed and Precise.....	143
4.6.3	Developing a Workbook: A Diary of Unpolished Ideas.....	147
4.6.4	Discussion.....	149
<b>4.7</b>	<b>Knowledge Acquisition and Dissemination.....</b>	<b>154</b>
4.7.1	Active Showing: Precedent and Building Visits.....	156
4.7.2	Producing Design Options: Iterations of the Client Brief.....	159
4.7.3	Facilitating Co-design Sessions: Collaboration and Discussion.....	161
4.7.4	Developing Insights Beyond Guidance.....	165
4.7.5	Continuing Professional Development.....	167
4.7.6	Knowledge Transfer and Exchange: Active Dissemination.....	171
4.7.7	Discussion.....	173
<b>PART III: DESIGN REFLECTIONS OF LIVING ENVIRONMENTS FOR AGEING... 184</b>		
<b>4.8</b>	<b>Internal Functionality: Transitions, Appropriate Flexibility, Familiarity, Connection to the Outside.....</b>	<b>186</b>
<b>4.9</b>	<b>Delivering Affordances: Social Interaction, Connection with Nature and Different Types of Living Options.....</b>	<b>192</b>
<b>4.10</b>	<b>Intergenerational Design Paradigm: Communities, Neighbourhoods, Co-developments, the Home and Activities within.....</b>	<b>198</b>
<b>4.11</b>	<b>Future-proofing: Spatial Adaptation at a Later Stage.....</b>	<b>203</b>
<b>4.12</b>	<b>Discussion.....</b>	<b>208</b>
<b>4.13</b>	<b>Chapter Summary.....</b>	<b>216</b>
<b>CH.5 CONCLUSION AND RECOMMENDATIONS.....</b>		<b>218</b>
<b>5.1</b>	<b>Overview.....</b>	<b>219</b>
<b>5.2</b>	<b>Research Overview.....</b>	<b>220</b>
<b>5.3</b>	<b>Contribution to Knowledge.....</b>	<b>221</b>

5.3.1	Macro Level Knowledge Contribution.....	223
5.3.2	Micro Level Knowledge Contribution.....	226
<b>5.4</b>	<b>Limitations of this study.....</b>	<b>230</b>
5.4.1	Limitations in the Methodology.....	230
5.4.2	Limitations in Carrying-out the Fieldwork.....	231
<b>5.5</b>	<b>Recommendations for Future Research.....</b>	<b>232</b>
<b>5.6</b>	<b>Concluding Remarks.....</b>	<b>234</b>
<b>5.7</b>	<b>Chapter Summary.....</b>	<b>237</b>
	<b>APPENDICES.....</b>	<b>238</b>
	Appendix A: Research Philosophy.....	239
	Appendix B: Selection Criteria.....	241
	Appendix C: Open-ended Questions.....	242
	Appendix D: Transcript Sample.....	245
	Appendix E: Memo Bank.....	247
	Appendix F: Fieldwork During the COVID-19 Pandemic.....	248
	Appendix G: CAQDAS Dedoose.....	249
	Appendix H: Sketching Research Method.....	250
	Appendix I: Ethical Approval - Phase One.....	251
	Appendix J: Ethical Approval - Phase Two.....	252
	Appendix K: Research Participant Consent Form.....	254
	Appendix L: Information Sheet.....	255
	Appendix M: Recruitment Email.....	256
	<b>GLOSSARY.....</b>	<b>259</b>
	<b>BIBLIOGRAPHY.....</b>	<b>260</b>

## **LIST OF FIGURES**

### **CH.1 INTRODUCTION**

- Figure 1.0 Outline of the Introduction
- Figure 1.1 Recognition of the influence of the built environment on an individual's health and wellbeing
- Figure 1.2 Motivation, scope and knowledge gap that exists within the context of creating supportive living environments for ageing
- Figure 1.3 Thesis Outline

### **CH.2 RESEARCH CONTEXT**

- Figure 2.0 Outline of the Research Context
- Figure 2.1 Overview of existing research that explores the theme of 'Housing and Ageing Well'
- Figure 2.2 Summary of findings from the existing 'Housing and Ageing Well' discourse
- Figure 2.3 Overview of existing research that explores the theme of 'Design For All'
- Figure 2.4 The five key inclusive design principles adapted from CAGE (2008)
- Figure 2.5 The WHO's eight domains of an age-friendly urban life that can support the health and wellbeing of older adults (WHO, 2007)
- Figure 2.6 Summary of findings from the existing 'Design For All' discourse
- Figure 2.7 Overview of existing research that explores the theme of 'The Architect's Process'
- Figure 2.8 An architect's iterative activity adapted from Makstutis (2018)
- Figure 2.9 Summary of findings from the existing 'The Architect's Process' discourse
- Figure 2.10 Overview of existing research that explores the theme of 'Agency to Act'
- Figure 2.11 The four key determinants that influence human agency adapted from Bandura (2006)
- Figure 2.12 Twelve ways for architects to think critically adapted from Deutsch (2020)

- Figure 2.13 Summary of findings from the existing 'Agency to Act' discourse
- Figure 2.14 Summary of existing research that explores the themes of: 1.) Housing and Ageing Well, 2.) Design For All, 3.) The Architect's Process, and 4.) Agency to Act
- Figure 2.15 Identifying the gap in current knowledge

### **CH.3 METHODOLOGY**

- Figure 3.0 Outline of the Methodology
- Figure 3.1 Morgan & Smircich's continuum of research paradigms reproduced (Groat and Wang, 2002)
- Figure 3.2 Glimpses of the 'guts' of the methodology process
- Figure 3.3 Flexible and fixed design characteristics adapted from Leavy (2017)
- Figure 3.4 Research design framework
- Figure 3.5 Comparisons of Grounded Theory
- Figure 3.6 Alignment of participants' experiences to the RIBA Plan of Work stages
- Figure 3.7 Sampling strategy
- Figure 3.8 Ten principles of a good interview adapted from Kvale and Brinkmann (2008)
- Figure 3.9 Introducing yourself: a list of self-instructions adapted from Robson and McCartan (2016)
- Figure 3.10 Timeline identifying when pilot studies were conducted and why
- Figure 3.11 Ongoing engagement with analytic note-taking and reflectivity of the developing insights, analysis and meaning-making of the emerging data
- Figure 3.12 Twofold data analysis process comprising of CAQDAS and SRM
- Figure 3.13 Comparing NVIVO and Dedoose to understand the most appropriate for use within this research study
- Figure 3.14 Japanese format of concertina sketchbooks used for phase two of the data analysis process

### **CH.4 FINDINGS**

- Figure 4.0 Outline of the Discussion, Analysis and Findings
- Figure 4.1 'Architect's Persona' abstracted from the researcher's SRM

- Figure 4.2 Participant profiles and perceptions of ageing
- Figure 4.3 'Agency and the Design Process' abstracted from the researcher's SRM
- Figure 4.4 'Commitment' abstracted from the researcher's SRM
- Figure 4.5 Summary of the influence of an architect's commitment on their agency and design process
- Figure 4.6 'Informed Position' abstracted from the researcher's SRM
- Figure 4.7 Summary of the influence of an architect's informed position on their agency and design process
- Figure 4.8 'Deep Interrogation' abstracted from the researcher's SRM
- Figure 4.9 Summary of the influence of an architect's deep interrogation on their agency and design process
- Figure 4.10 'Visual Communication' abstracted from the researcher's SRM
- Figure 4.11 Summary of the influence of an architect's visual communication on their agency and design process
- Figure 4.12 'Knowledge Acquisition and Dissemination' abstracted from the researcher's SRM
- Figure 4.13 Summary of the influence of an architect's knowledge acquisition and dissemination on their agency and design process
- Figure 4.14 'Design Reflections' abstracted from the researcher's SRM
- Figure 4.15 Design characteristics that support internal functionality
- Figure 4.16 Correlation between the HAPPI principles and this study's design characteristics
- Figure 4.17 'Internal Functionality' abstracted from the researcher's SRM
- Figure 4.18 Design criteria that supports internal spaces to link to the outdoors
- Figure 4.19 'Delivering Affordances' abstracted from the researcher's SRM
- Figure 4.20 'Intergenerational Design Paradigm' abstracted from the researcher's SRM
- Figure 4.21 Design criteria that supports appropriate flexibility of internal spaces
- Figure 4.22 'Future-proofing' abstracted from the researcher's SRM
- Figure 4.23 Summary of empirical findings uncovered during this research study

## **CH.5 DISCUSSION & CONCLUSION**

- Figure 5.0 Outline of the Conclusion and Recommendations
- Figure 5.1 Overview of this study's contribution to knowledge
- Figure 5.2 Macro level contribution to knowledge this study makes
- Figure 5.3 Micro level contribution to knowledge this study makes
- Figure 5.4 The interrelationship between the key actions and design reflections during the RIBA Plan of Work for creating supportive living environments for ageing

## LIST OF ABBREVIATIONS

<b>3D</b>	Three-Dimensional
<b>BEPs</b>	Built Environment Professionals
<b>CAQDAS</b>	Computer-aided Qualitative Data Analysis Software
<b>CAD</b>	Computer-aided design
<b>COVID-19</b>	Coronavirus disease
<b>CGT</b>	Constructivist Grounded Theory
<b>HAPPI</b>	Housing our Ageing Population: Panel for Innovation
<b>KTE</b>	Knowledge Transfer and Exchange
<b>LGA</b>	The Local Government Association
<b>LTHS</b>	Lifetime Homes Standards
<b>NPPF</b>	The National Planning Policy Framework
<b>ONS</b>	Office for National Statistics
<b>PHE</b>	Public Health England
<b>RIBA</b>	The Royal Institute of British Architects
<b>SRM</b>	Sketching Research Method
<b>UK</b>	United Kingdom
<b>WHO</b>	The World Health Organisation

## **ACKNOWLEDGEMENTS**

Firstly, I would like to express my gratitude to the architects who gave up their time and energy to participate in this research, even when faced with the various difficulties as a result of the COVID-19 pandemic. Without their generosity, this research would not have been possible.

A very special thank you goes to Dr. Lesley McIntyre, my principal supervisor. From the first meeting in the 'Penthouse' to discuss my master's thesis back in 2017, to the collaborative research and design competition ventures that we have gone on to win! Your expert knowledge, experience and caring nature has played such an invaluable and positive role on my PhD journey. A journey that most likely would not have happened if it was not for your guidance, encouragement and faith in me - thank you for being such a great mentor, role-model and friend.

I would also like to extend a special thank you to Dr. Tara Hipwood, my second supervisor who like Lesley, went above and beyond to support this thesis and make my PhD journey a positive one. I really do appreciate the time, effort and guidance you both contributed - thank you is not enough. This PhD would not have been possible without all the sugar fuelled workshop sessions and three-way Teams meetings!

To the entire Architecture department at Northumbria University, who have now supported me throughout my higher education of undergraduate, postgraduate and doctorate!

Thank you to all my wonderful friends who have shown me so much love, support and understanding for missing the many birthdays, trips away and pre wedding celebrations. The thoughtful messages and calls cheering me on, and the treats really did mean a lot - I feel so incredibly lucky to have such a great bunch!

A special thank you goes to my grandparents Keith and Barbara, for their love, care packages that were posted (in the form of butterfly cakes) and Sunday FaceTime calls. You will now no longer have to ask me 'how many more months is it??'.

To my big brother Sam, thank you for the constant support, your never-ending love and words of encouragement. I could not have done this without your daily phone calls to tell me 'you're doing great!!!'. Thank you for being the best brother and friend.

Lovingly, thank you Jake. The other half who went through this PhD experience with me every step of the way. Your role as IT technical support, counsellor, chef, cleaner and weekly food-shopper kept me well looked after. Thank you for being so patient, kind and understanding, and for always providing the laughs at the end of each day.

Lastly, to my number one supporters and loving parents, Gillian and John Sedgewick. Thank you for making this and so much more possible. For your constant love, support and distilling the 'miss endeavour' spirit in to me. Your endless encouragement to pursue this thesis and understanding that I could not always take time off when you were back visiting the UK. Thank you for always being at the other end of the phone.

## **DECLARATION**

I declare that the work contained in this thesis has not been submitted for any other award and that is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this commentary has been approved. Approval has been sought and granted through the Researcher's submission to Northumbria University's Ethics Online System on 30/01/19.

Name: Faye Sedgewick

Date: 31/01/22

## **CHAPTER 1: INTRODUCTION**

### **1.1 Overview**

As illustrated in Figure 1.0, this chapter introduces the topic of housing for an ageing (older) population to which this study situates. This motivates and outlines the research scope of creating supportive living environments for ageing. Whilst there is a growing awareness of the need for the built environment to support healthy ageing, significant gaps remain in current knowledge (see Figure 1.2). As a result, this guides the rationale for this architectural study and poses the research question. In addition, this chapter provides an overview of the study aim and objectives, as well as the thesis structure (see Figure 1.3).

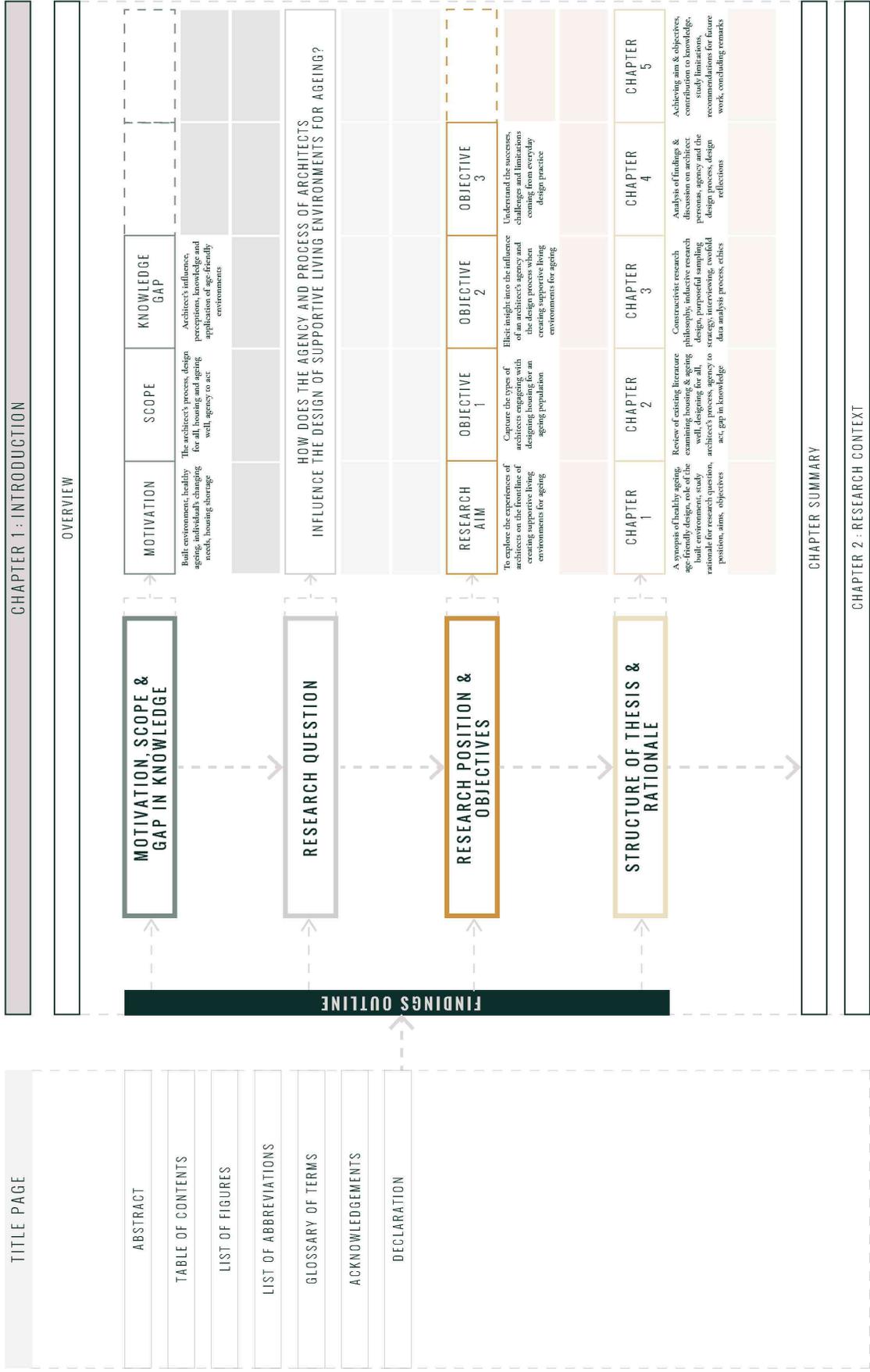


Figure 1.0 : Outline of the Introduction

## 1.2 Motivation, Scope and Gap in Current Knowledge

*"We shape our buildings; thereafter they shape us."*

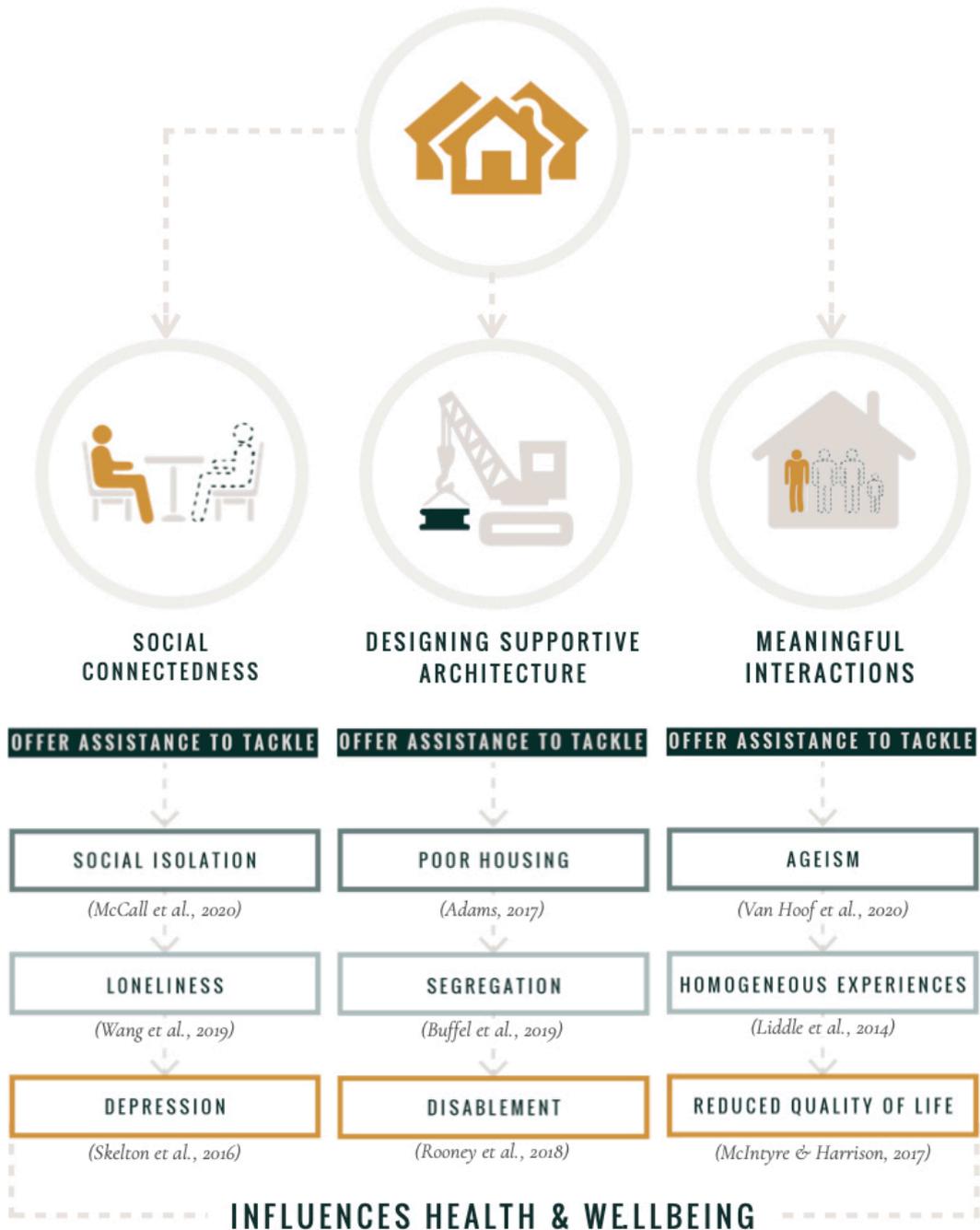
*(Sir Winston Churchill, 1943)*

Shaping the future design of housing which supports inclusivity, enhances life experience, promotes health and wellbeing of older adults is essential. The World Health Organisation (WHO, 2020a) stated that healthy ageing can be supported by creating environments which maintain functional ability and the opportunity to continue to do what individuals value across their life course. The Royal Institute of British Architects (RIBA, 2019c) asserted that this is a high priority for Built Environment Professionals (BEPs).

Over the last decade, there has been growing pressure for architectural practice to create and deliver housing opportunities for this rapidly ageing population. Public Health England (2019a) have expressed the importance that an individual's changing needs (such as the result of ageing) should not be a barrier to sustained or improved health and wellbeing, nor should it prevent individuals from continuing to carry out everyday activities. This creates new challenges for designers of the built environment and places greater emphasis on the importance of their design practice.

In the UK, there is a chronic housing shortage which has exacerbated due to older adults staying-put in unsuitable family-sized homes (RIBA, 2019a). This is a result of the lack of well-designed and non-segregated housing options available for later life which has been evidenced to impact the health and wellbeing of older adults (Nazroo, 2015; Thomson and Thomas; Adams, 2017; McIntyre and Harrison, 2017; House of Commons, 2018). The growing awareness of the need for the built environment to develop and implement more efficient strategies to support older adults is gaining traction across architecture, gerontology, health and social care disciplines.

# BUILT ENVIRONMENT

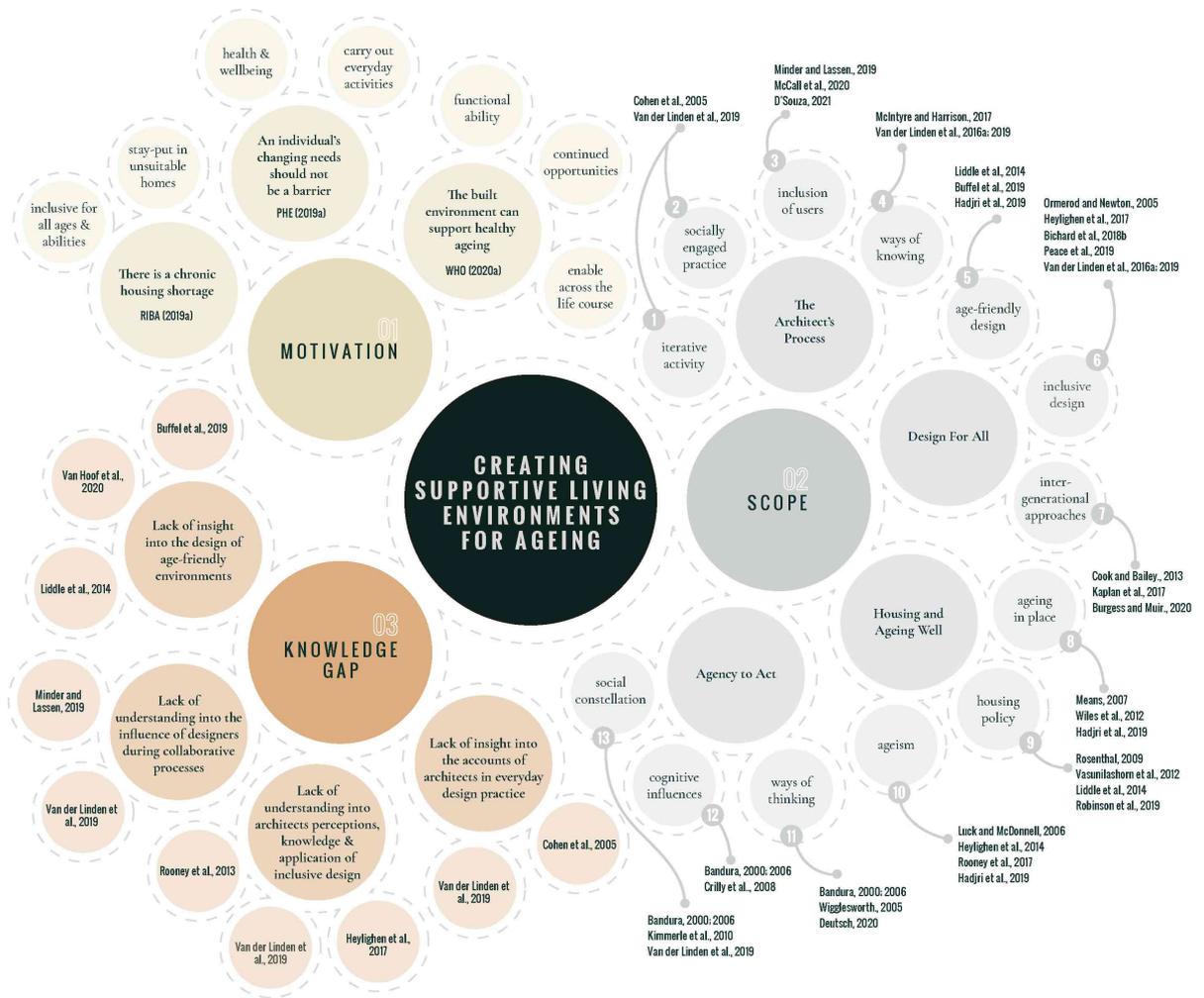


**Figure 1.1** : Recognition of the influence of the built environment on an individual's health and wellbeing

Within the built environment, there has been specific recognition that the physical environment influences an individual's health and wellbeing (see Figure 1.1). This acknowledgement has led much of the existing discourse to focus attention on the impact and causes of poor living environments which has now highlighted the need for understanding into specific ways to design supportive living environments.

In recent times, there has been growing emphasis on age-friendly design as an approach that can positively influence healthy ageing within the built environment (Park and Porteus, 2018; Centre for Ageing Better, 2019; APPG, 2019). As a result, the RIBA has called for architects to prioritise age-friendly design within mainstream living environments in order to tackle the housing crisis and seek to encourage innovative ways of supporting inclusive housing for all, regardless of age or ability (RIBA, 2019a). It is noted that whilst architects demonstrate increased engagement with age-friendly design, the examples have remained too few to meet the rapidly growing demand. This shines a light on the need for greater insight into the experiences of architects on the frontline of creating supportive living environments for ageing. In doing so, this can contribute specific insight within the contemporary evidence-base that surrounds the age-friendly movement and age-friendly implementation for active ageing-in-place (Buffel et al., 2019; Hadjri et al., 2019).

As illustrated in Figure 1.2, existing research has evidenced that there continues to be a significant lack of research studies into designing age-friendly environments. As a consequence, this has the potential to influence architects lack of engagement with age-friendly design. This established the motive of this study in order to support the architect's role in meeting the growing demand for healthy ageing within the built environment. This thesis goes on to provide a review of the existing evidence-base, in order to identify the challenges and successes associated with designing housing for healthy ageing. In addition, this qualitative study explores, understands and interprets nine architects' experiences of engaging with age-friendly design and describes the influence of their 'agency' and the 'design process' within the context of creating supportive living environments for ageing.



**Figure 1.2 :** Motivation, scope and the knowledge gap that exists within the context of creating supportive living environments for ageing

Whilst there is a growing awareness of the need for the built environment to support healthy ageing, significant gaps remain in current knowledge (see Figure 1.2). As a result, this guides the rationale for this architectural study and poses the research question as follows.

### 1.3 Research Question

How does the agency and process of architects influence the design of supportive living environments for ageing?

## **1.4 Research Position and Objectives**

Based upon the context outlined, this thesis aims to explore the experiences of architects on the frontline of creating supportive living environments for ageing. Specifically, this inquiry focuses on generating new insight into the influence of an architect's agency and the design process within real world design practice. Therefore, it is exploratory and richly descriptive in nature, adopting an inductive research approach to understand the context of architectural practice. The main objectives of this research are to:

1. Capture the types of architects engaging with designing housing for an ageing population.
2. Elicit insight into the influence of an architect's agency and the design process when creating supportive living environments for ageing.
3. Understand the successes, challenges and limitations coming from everyday design practice.

## **1.5 Structure of Thesis and Rationale**

*Architects, Agency and the Design Process:  
Creating supportive living environments for ageing.*

**Chapter 1** introduces the topic of housing for an ageing (older) population to which this study situates. This motivates and outlines the research scope of creating supportive living environments for ageing. Whilst there is a growing awareness of the need for the built environment to support healthy ageing, significant gaps remain in current knowledge. As a result, this guides the rationale for this architectural study and poses the research question. In addition, this chapter provides an overview of the study aim and objectives, as well as the thesis structure.

**Chapter 2** presents a review of existing literature on the role that living environments play on ageing. Distilled from examining this evidence-base, this chapter provides four thematic literature reviews to uncover the context of: 1.) Housing and Ageing Well, 2.) Design For All, 3.) The Architect's Process, and 4.) Agency to Act. The findings from these four reviews guide this research study as it outlines and defines the current gap in knowledge.

**Chapter 3** describes the constructivist research philosophy that informs this research study which develops the conceptual framework implemented. Aligning with this philosophy, it introduces the Constructivist Grounded Theory (CGT) methodology adopted for accomplishing the overall research aim and objectives, and to answer the research question. It describes the inductive research design strategy that is followed by the researcher when carrying-out the fieldwork (which includes the challenges of moving from face-to-face interviews to remote online interviews as a result of the COVID-19 pandemic). Finally, this chapter outlines the purposeful sampling strategy adopted and discusses the interviewing method for data collection. In addition, how the data was collected through audio recordings and analysed twofold, with consideration to any ethical issues that arose as a result of this research.

**Chapter 4** presents the analysis of empirical findings from the interviews carried out with nine architects. The first section offers insight into the 'Architect's Persona' which highlights their architectural background and perceptions of ageing. In addition, it shines a light on contested age-related terminology. The second section provides insights into the five categories of: 1.) Commitment, 2.) Informed Position, 3.) Deep Interrogation, 4.) Visual Communication, and 5.) Knowledge Acquisition and Dissemination, which were found to be the actions most influential to an architect's 'Agency' and the 'Design Process'. The third section offers 'Design Reflections' from the experts in practice — the experienced architects working in designing supportive living environments for ageing. Specifically, the successes, challenges and limitations of Internal Functionality, Delivering Affordances, Intergenerational Design Paradigm, and Future-proofing which were identified as the most prevalent design reflections

within the research context. A discussion of these empirical findings is provided with reference to the existing evidence-base (as stated in Chapter 2). This supports an holistic understanding of the interrelationship between an architect's agency and the design process.

**Chapter 5** concludes this research study. It presents new insight into an architect's agency and the design process when creating supportive living environments for ageing. This chapter presents the wider implications of the empirical findings of this research study in order to answer the research question — *'How does agency and process of architects influence the design of supportive living environments for ageing?'*. Moreover, it reflects on the overall research aim and objectives, and the extent to which they have been addressed. In addition, it summarises the contribution of knowledge the study makes to architectural research, practice, policy and education. Lastly, it concludes by highlighting the limitations of this study and the considerations for future research.

The full **Thesis Outline** is summarised in Figure 1.3.

ABSTRACT, LIST OF CONTENTS, TABLES, FIGURES, PREFACE, ACKNOWLEDGEMENTS AND DECLARATION																
THESIS OUTLINE	1.0	INTRODUCTION	1.1	MOTIVATION SCOPE & GAP IN KNOWLEDGE	1.2	RESEARCH QUESTION	1.3	RESEARCH POSITION & OBJECTIVES	1.4	STRUCTURE OF THESIS AND RATIONALE	1.5					
				Health & well-being of older adults in living environments.	How?	Experiences of architects on the frontline.	Chapter 1-5.									
	2.0	RESEARCH CONTEXT	2.1	HOUSING & AGEING WELL	2.2	DESIGN FOR ALL	2.3	THE ARCHITECTS PROCESS	2.4	AGENCY TO ACT	2.6					
				Housing policy, ageing, ageing in place.	Inclusive design, age-friendly design, intergenerational approaches.	Iterative activity, socially engaged practice, inclusion of users, designerly ways of knowing.	Cognitive influences, the social consultation, ways of thinking.	Housing and ageing well, designing supportive housing for ageing, architect's process, agency to act.								
	3.0	METHODOLOGY	3.1	RESEARCH PHILOSOPHY	3.2	RESEARCH APPROACH & DESIGN	3.3	SAMPLING	3.4	SEMI-STRUCTURED INTERVIEWS	3.5	DATA ANALYSIS	3.6	ETHICAL CONSIDERATIONS	3.7	SUMMARY
				Philosophical background, ontological & epistemological position.	Research approach, research design & grounded theory.	Sample strategy, geographical location, selection criteria, recruiting.	Open-ended questions, interviewing, pilot studies, limitations.	Research setting, fieldwork process, memo writing, fieldwork during the COVID-19 pandemic.	Phase One: CAODAS Dedoose. Phase Two: Sketching Research Method.	Low worker, human participants, ethical approval, informed consent, ethics of research, data analysis, ethical						
	4.0	DATA ANALYSIS	4.1	SETTING THE SCENE	4.2	COMMITMENT	4.3	INFORMED POSITION	4.4	DEEP INTERROGATION	4.5	KNOWLEDGE ACQUISITION & DISSEMINATION	4.6	DESIGN REFLECTIONS	4.7	SUMMARY
				Participant profiles, perceptions of ageing and age-related terminology.	Persistence, investing time into projects, individuals willing to participate, building good relationships.	Making sense of the knowledge to know; individual knowledge, synthesis, reflection research, synthesis, reflection	Creating a safe space for meaningful conversations, interviewing, pilot studies, limitations, perspective taking.	Freeland identifying, computers-aided design, developing a workbook.	Active showing, design options, starting design insights, knowledge transfer and exchange.	Internal functionality, delivering, analysis, internal feedback, future paradigm, future proofing	Architect persona's, agency and the design process, design environment for ageing					
	5.0	CONCLUSION	5.1	THESIS SUMMARY	5.2	CONTRIBUTION TO KNOWLEDGE	5.3	LIMITATIONS	5.4	FUTURE WORK	5.5	CONCLUDING REMARKS	5.6	SUMMARY	5.7	SUMMARY
				Key findings, reference to existing literature.	Methodological, practice, policy and educational contributions at a macro and micro level.	Methodological and carrying out the fieldwork limitations.	Recommendations for architectural practice, education & policy.	Concluding summary of how the research question was answered to contribute new insight.								
GLOSSARY, REFERENCES AND APPENDICES																

Figure 1.3 : Thesis Outline

## **CHAPTER 2: RESEARCH CONTEXT**

### **2.1 Overview**

This chapter presents a review of existing literature on the role that living environments play on ageing. Distilled from examining this evidence-base, this chapter provides four thematic literature reviews (see Figure 2.0). It is divided into the following:

- Review 1: Housing and Ageing Well
- Review 2: Designing For All
- Review 3: The Architect's Process
- Review 4: Agency to Act

Whilst this study is framed within the discipline of architecture, an interdisciplinary review of policy, practice and research literature is conducted which crosses into the disciplines of health and social care understanding. This relationship between the philosophies of these three disciplines is crucial as it supports the identification of gaps in current knowledge and builds a foundation to support this research. The existing findings from these four literature reviews guide this research study as it outlines and defines the current gap in knowledge.

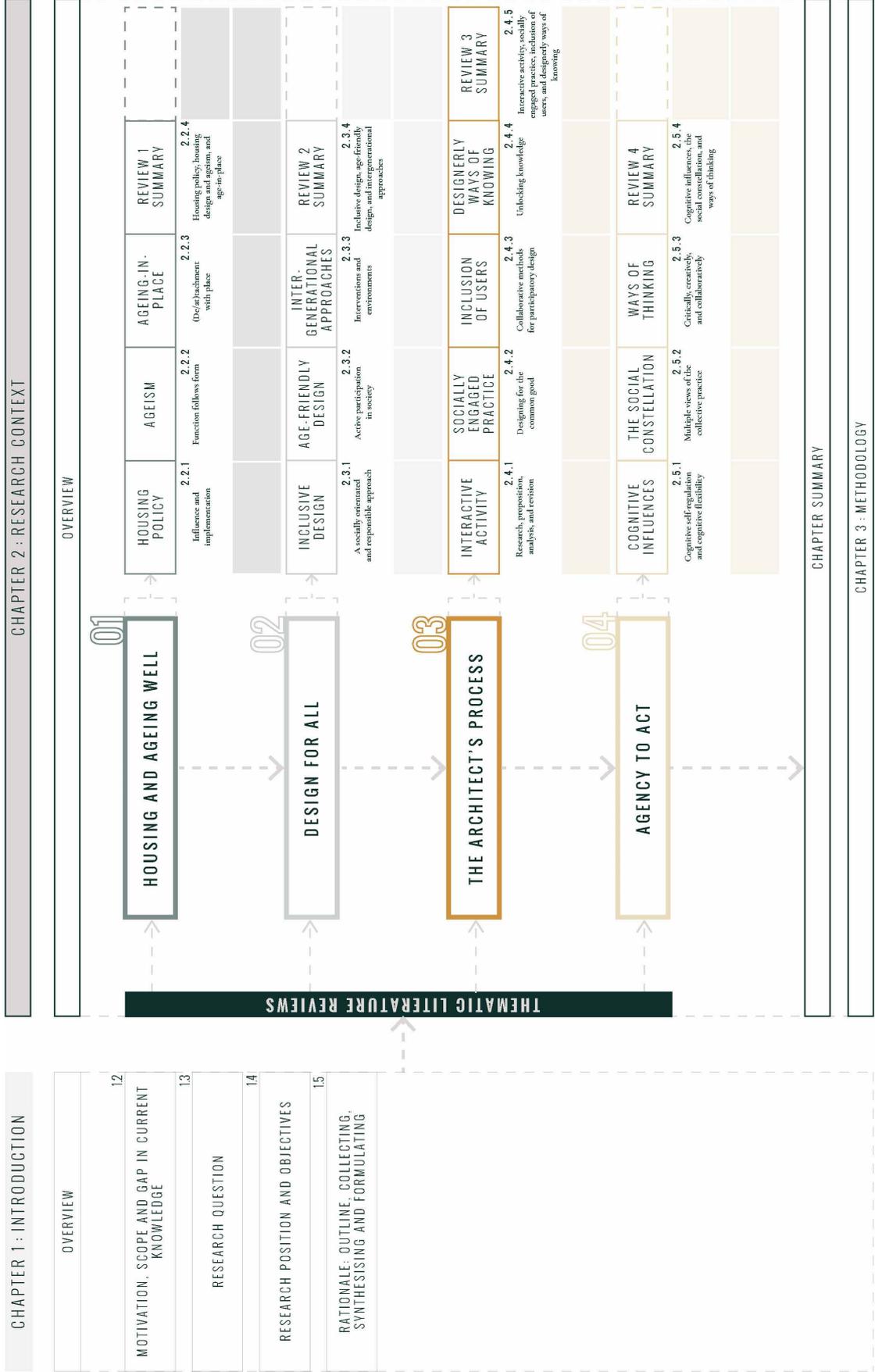
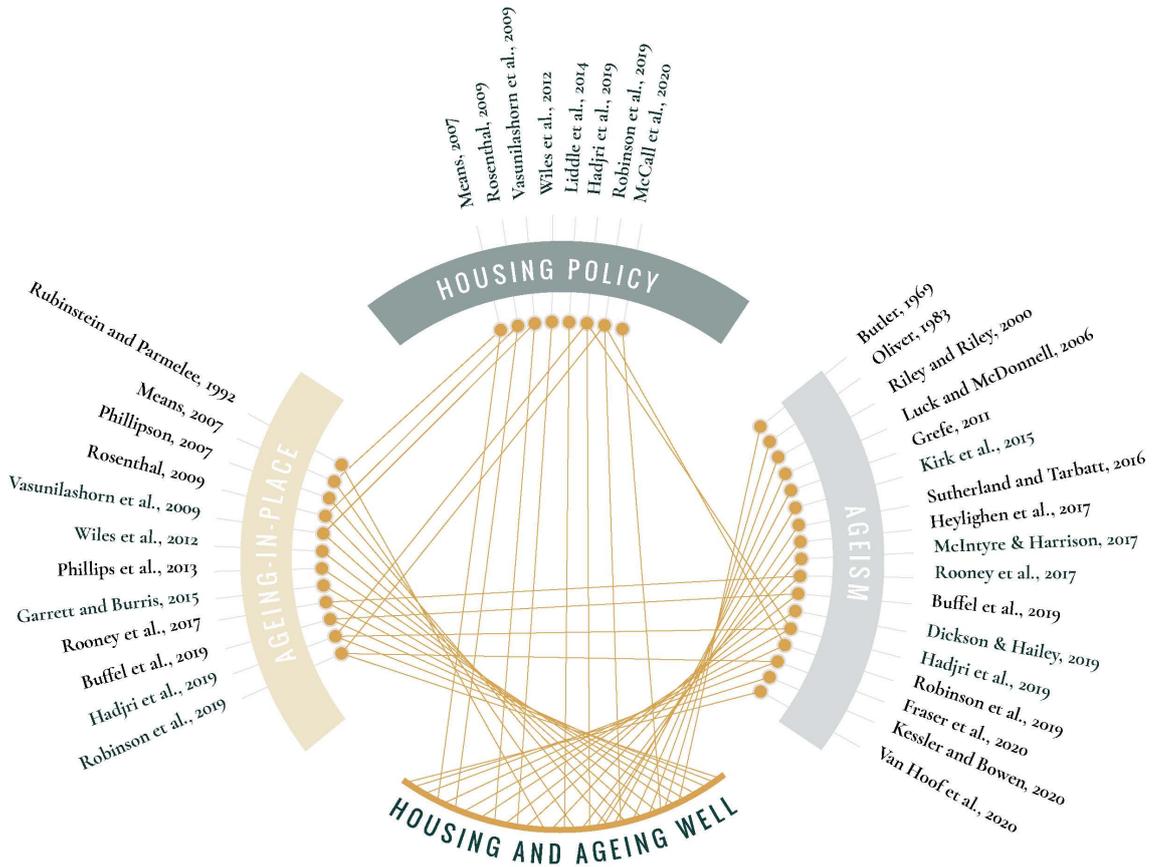


Figure 2.0 : Outline of the Research Context

## 2.2 Review 1: Housing and Ageing Well

This first review of literature evidenced that the theme of ‘Housing and Ageing Well’ had been well explored in existing research (see Figure 2.1). Within this existing discourse, emphasis was placed on three main sub-themes: 1.) Housing Policy, 2.) Ageism, and 3.) Ageing-in-Place.



**Figure 2.1** : Overview of existing research that explores the theme of ‘Housing and Ageing Well’

### 2.2.1 Housing Policy: Influence and Implementation

In the context of ‘housing policy’, particular attention has been given towards investigating the lack of implementing adequate housing for ageing-in-place (Means, 2007; Rosenthal, 2009; Vasunilashorn et al., 2009; Wiles et al., 2012; Liddle et al., 2014; Hadjri et al., 2019; Robinson et al., 2019; McCall et al., 2020). McCall et al. (2020) argued that the austerity caused by the post global economic crisis<sup>1</sup> in 2008,

<sup>1</sup> The ‘Great Recession’ caused by a financial crisis (low interest rates, easy credit, insufficient regulations, and subprime mortgages) worldwide which resulted in housing markets suffering and soaring unemployment (Helleiner, 2011).

coupled with the 'Brexit' referendum<sup>2</sup> in 2016 had increased the challenges and conflicts between resources provided to address the housing shortage.

Within the field of housing policy, there has been a wealth of growing research which has acted as the catalyst needed for policy makers to reprioritise funding in order to foster healthy ageing. In 2009, Vasunilashorn et al. stressed that to achieve healthy ageing, greater emphasis was needed to support older adults' desire to maintain independent away from institutionalised environments. However, they later stated that many barriers remained in the provision of alternative living environments due to limited funding and poor communication amongst the government agencies of health, housing, and services for older adults (Vasunilashorn et al., 2012). The influence of governance over the implementation of appropriate housing for ageing well is therefore identified as significant.

More recently, a 2019 study concerned with understanding the housing options for older adults in a 'reimagined housing system' identified a 'notable implementation gap' between the principles and priorities of housing policy within a North East case study (Robinson et al., 2019). They indicated that a hinderance to implementation was caused by the lack of 'multi-agency' collaborative approaches to planning for housing. This drew attention to a wider debate on the neoliberal transformation in housing politics. Robinson et al. (2019) identified that planning professionals were failing to consider the needs of older adults. Moreover, they highlighted that the lack of implementation was further fuelled by a disinterest within the housing market to deliver lifetime homes<sup>3</sup> or smaller 'downsizer'<sup>4</sup> properties. This study evidenced that

---

<sup>2</sup> A referendum that took place on the 23rd June 2016 which decided that the UK should leave the European Union (UK Parliament, 2022).

<sup>3</sup> The Lifetime Homes concept (based on inclusivity, accessibility, adaptability, sustainability, and good value) was developed by the Joseph Rowntree Foundation in 1991 which initiated a standard for the groundworks of houses to be flexible enough to be accessible and functional for all ages and abilities (Sopp and Wood, 2001).

<sup>4</sup> These are mainstream homes tailored to 50+ individuals that are looking to downsize whilst continue to remain within mixed-age communities. These downsizer homes seek to support independence and meet the needs of older adults in retirement (Sutherland and Tarbatt, 2016).

local authorities saw enforcing lifetime home standards into planning as a high risk that could drive away house builders from the area. This led to 'taking what they could get' with regard to new-build housing and thus, emphasising the continued focus on first-time buyers and not meeting the needs of older adults.

It was noted in Liddle et al.'s (2014) mixed-methods study that within local authority, there was a tendency to portray the 'age-friendly narrative' as one that aligned within 'age-segregated environments'. However, this may be a result of the lack of conceptual development related to 'age-friendliness' and the limited academic studies that have explored the age-friendly agenda (Liddle et. al., 2014). In light of this, they have argued for active-ageing to intensify within policy in order to shift away from the continued creation of 'homogenous age zones'.

Although there are difficulties for local authority to directly instruct 'age-friendliness', existing evidence has called for them to lead the way towards the necessary reform of harmonising governance and private choice at a community level (Rosenthal, 2009). Rosenthal (2009, pg. 19) stated that this could be achieved through a focused effort on land-use regulations and planning reform. Specifically, 'what they build and where they build it' in order to develop age-friendly communities that best matched the 'collective preferences and values' of the local communities (Rosenthal, 2009). They identified that through the acknowledgement of collective preferences and values, ageing well in appropriate housing could be achieved.

### **2.2.2 Ageism: Function Follows Form**

The term 'ageism' was developed by Butler (1969) to describe the systematic stereotyping and discrimination against individuals because they were older. Ageism has been identified as the subjective experience that is implied through the notion of the generation gap which has placed prejudice on growing old, disease, and disability (Butler, 1969). Age-stratification theorists have asserted that ageism has constituted from the social system between individuals, groups, and institutions (Riley and Riley, 2000). This correlates with the social model of disability coined by Oliver (1983)

which identified that whilst an individual may be impaired for a number of reasons, it is down to the systematic barriers, attitudes, and exclusion of society that make individuals disabled.

Two decades later, ageism is still evident across social constructs. Selbie and Dixon (PHE, 2019) have stated that the ongoing ageist perspectives and stereotyping within policy and practice has continued to advocate that older adults are not fit for work, incapable and lonely. They have called for a shift in perspective-taking to recognise and celebrate the success of 'one of society's greatest achievements' that has enabled these additional healthy later life years within society. More recently, biases against older adults has been further fuelled and put into the spotlight as a result of the COVID-19 pandemic. Coined as 'COVID-19 ageism', this has portrayed older adults as a vulnerable and homogenous group in need of protection, thus, having a profound negative affect on their mental health (Kessler and Bowen, 2020). Fraser et al. (2020) further contributed evidence that the COVID-19 pandemic had exacerbated ageist attitudes that portrayed older adults as helpless, frail, and co-morbid. They called for greater 'intergenerational solidarity' between the generations in order to support greater cohesion within society.

The built environment (such as living environments) can play a fundamental role in reducing societies ageist perspective-taking (Buffel et al., 2019). Mainstream housing (also termed general-needs housing) is the most prominent housing typology lived in by all<sup>5</sup>. Yet, the everyday lived experiences of individuals within these living environments differ drastically<sup>6</sup> (Sutherland and Tarbatt, 2016). The root-cause of these 'book-end' experiences is the fact that housing, developers, and volume

---

<sup>5</sup> The majority of older households (96%) continue to stay-put in unsuitable mainstream housing either by choice or necessity, as a result of a lack of appropriate housing options (House of Commons, 2018).

<sup>6</sup> Inadequate housing (such as poorly heated and insulated) exposes 10 million people to create, or worsen their health issues (PHE, 2019). In addition, 58% of all homes classified as non-decent possess a serious category one hazard such as, falls and excessive cold (Centre for Ageing Better, 2019d). It has been found that one in three older adults aged 65+ fall at least once a year at home, with half having more frequent falls (NHS, 2018). These associated issues are costing the NHS approximately £1.4 billion per annum (Roys et al., 2016).

builders have continued to focus their attention on meeting the needs of first-time buyers, families, and single professionals, subsequently excluding the needs of an ageing population (Robinson et al., 2019). This has been identified as one of the root-causes of an increase in age-segregated neighbourhoods (Grefe, 2011; Buffel et al., 2019). Heylighen et al. (2017) asserted that this hindered older adults' everyday activities and called for architects and other Built Environment Professionals (BEPs) to take into account the diverse challenges of population ageing.

To account for the challenges associated with ageist perspective-taking, existing evidence has argued that the practical functionality of a building needed to be a priority (Luck and McDonnell, 2006). In an investigation carried out by Luck and McDonnell (2006), they found that the functional attributes of space were most frequently discussed by users during the early design process. Yet, Van Hoof et al. (2020) found:

*“Implicit ageism can be witnessed in buildings that from an aesthetic perspective are beautifully designed, but which in practice do not cater for the needs of older people. In such buildings, the artistic design takes precedence over the practical functionality of the building. In practice, this should not happen as town-planning authorities should scrutinise designs before being given green light or permit to build or construct.”*

*(Van Hoof et al., 2020, pg. 418)*

This call to arms has highlighted contention between the users desires of practical functionality and the BEPs aesthetically pleasing desires for the form. Thus, contradicting the famous notion 'form follows function' coined by architect Louis Sullivan (1896). Whilst spatial aesthetics are important, emphasis must also be placed on how an environment 'feels, sounds and smells' which influence how people experience it (Heylighen et al., 2017). Hadjri et al. (2019) found that living environments can support successful ageing (functionality) without jeopardising the aesthetics (form). They stated that this requires greater attention on the accessibility,

sensory, and cognitive domains (Hadjri et al., 2019). In doing so, it has been evidenced that this would support positive change to ageism by enabling independence, enhanced social inclusion and the alleviation of loneliness (Kirk et al., 2015; McIntyre and Harrison, 2017; Rooney et al., 2017; Dickson and Hailey, 2019). It was noted by Rooney et al. (2017) that independence was decreased when occupants were not able to have control over decisions regarding internal changes to their living environments. Hadjri et al. (2019) asserted that the built environment must take a critical role to ensure that adequate housing is designed to enhance health, safety, independence, and a sense of community. The latter is influenced by (dis)attachment to place which informs ageing well.

### **2.2.3 Ageing-in-Place: (De/At)tachment with Place**

'Staying-put' or 'ageing-in-place' does not 'assure' ageing well (Means, 2007; Vasunilashorn et al., 2009; Wiles et al., 2012; Buffel et al., 2013). Vasunilashorn et al. (2009) highlighted the potential negative experiences associated with staying-put, particularly that of isolation and loneliness. Means (2007) found dementia<sup>7</sup> to be the most prominent cause that exacerbated these issues. Specifically, finding that concerns with wandering, turning on but not lighting the gas, burns from hot water and neglect of self and the home fabric reduced the ability to age well within the home environment. Yet, the decision to stay-put in later life despite the likelihood of reduced quality of life and wellbeing has continued to prevail. Wiles et al. (2012) explained that this decision was commonly associated with an attachment to a particular home and/or neighbourhood. They stated:

---

<sup>7</sup> Within the UK, there are more than 850,000 people currently living with dementia. This is one in 14 adults aged 65+ and 1 in 6 adults aged 80+. By 2025, this will increase to more than 1 million adults (NHS, 2020).

*“Home is a refuge, but it is as much the background of the home, the familiarity with the places and contacts around it that provide security as any emotional attachment to the home itself...Getting too attached to a place can limit a person’s ability and willingness to move to a more appropriate living environment when necessary...Often this was as much about not wanting to be in a nursing home or institution, where it was perceived that autonomy might be lost.”*

*(Wiles et al., 2012, pg. 361)*

Attachment to place is formed by a set of feelings about a geographic location and the familiarity of a place that is manifested over a period of time (Rubinstein and Parmelee, 1992). Rubinstein and Parmelee (1992) stated that such attachments were particularly important to an older adult’s autonomy as it keeps memories active, maintains constancy during changing times, and supported a sense of sustained competency. In a more recent study, Phillips et al. (2013) added that older adults associated place attachment to safety, comfort, and security. Whilst the emotional experience of attachment to place was evidenced, Rooney et al. (2017) identified that older adults can form new attachments to new homes.

It is important to note that the experience of attachment differs between older adults (Means, 2007; Phillipson, 2007; Buffel et al. 2014). For example, older adults who have faced homelessness, family break-ups, alcohol addiction or mental health problems may attach negative experiences to their environments (Means, 2007). In addition, globalisation has influenced different forms of migration through the life-course which has resulted in the fragmentation of communities and thus, a loss of traditional community supports (Phillipson, 2007). They stated that older adults who were attached to a place tied meaningful attributes to actively re-shaping their community, whilst others felt disempowered from the fragmentation of a community and thus, had a sense of detachment to a place. This evidenced that it was important to recognise that not *all* older adults had an attachment to place, nor a desire to stay-put.

The recognition of both the attachment and detachment to a place reiterates the importance of offering a diverse variety of housing options — it is not a one size fits all narrative. Rosenthal (2009) asserted that whilst the built environment has a crucial role to play in encouraging ageing well in housing, it is fundamental to take into account the diverse circumstances of individuals in later life. They stated:

*“In choosing where to live, to relocate from their hometowns, or remain in place, ageing people prize the same civic, cultural, and lifestyle features they have valued throughout their adulthoods.”*

*(Rosenthal, 2009, pg. 18)*

It is ‘civic, cultural and lifestyle features’ that influence a sense of attachment or connection, and feelings of security and familiarity to the home and surrounding community (Wiles et al., 2012). Given the fact that most older adults reside in mainstream housing, demonstrates the strong attachment and familiarity to this specific housing typology (Garrett and Burris, 2015). Hadjri et al. (2019) have called for urgent solutions to help older adults remain independent and to age well in their own homes. They added that solutions which support ageing-in-place would help to alleviate the increasing demand on, and the escalating costs of health and social care services.

Yet, in spite of the positive moves in literature that have emphasised the ageing-in-place and ageing well narratives within mainstream living environments, a notable implementation gap remains (Robinson et al., 2019). There is a need to evolve viewpoints surrounding the quality and options of housing for older adults (Means, 2007). In doing so, future mainstream housing has the potential to play an important role in creating a heterogenous housing market that supports ageing-in-place (if desired) and ageing well.

#### **2.2.4 Review Summary**

This first review of literature concentrated on existing research which explored the theme of 'Housing and Ageing Well' (see Figure 2.1). Within this existing discourse, emphasis was placed on three main sub-themes: 1.) Housing Policy, 2.) Ageism, and 3.) Ageing-in-Place (see Figure 2.2).

Robinson et al. (2019) found that planning professionals were failing to consider the needs of older adults and have called for multi-agency collaborative approaches to planning for housing. Van Hoof et al. (2020) identified a continuation of implicit ageism within the built environment and that the functionality of buildings does not tend to cater for the needs of older adults. They called for increased scrutiny over the building design prior to being permitted to construct. Vasunilashorn et al. (2012) advocated for researchers to continue exploring how the physical environment influences ageing-in-place. They stressed the importance of supporting older adults' desires to maintain independent away from institutionalised environments. Hadjri et al. (2019) found that this would alleviate the increasing demand on and escalating costs of health and social care services. They called for solutions to address the ability for older adults to remain independent in their own homes. Means (2007) found that not all older adults have an attachment to place and therefore, do not possess the desire to stay-put. This identified the importance of offering a diverse housing market that is not a one size fits all narrative. Rosenthal (2009) asserted that land-use regulations and planning reform could lead the way to instruct 'age-friendliness' within housing policy.

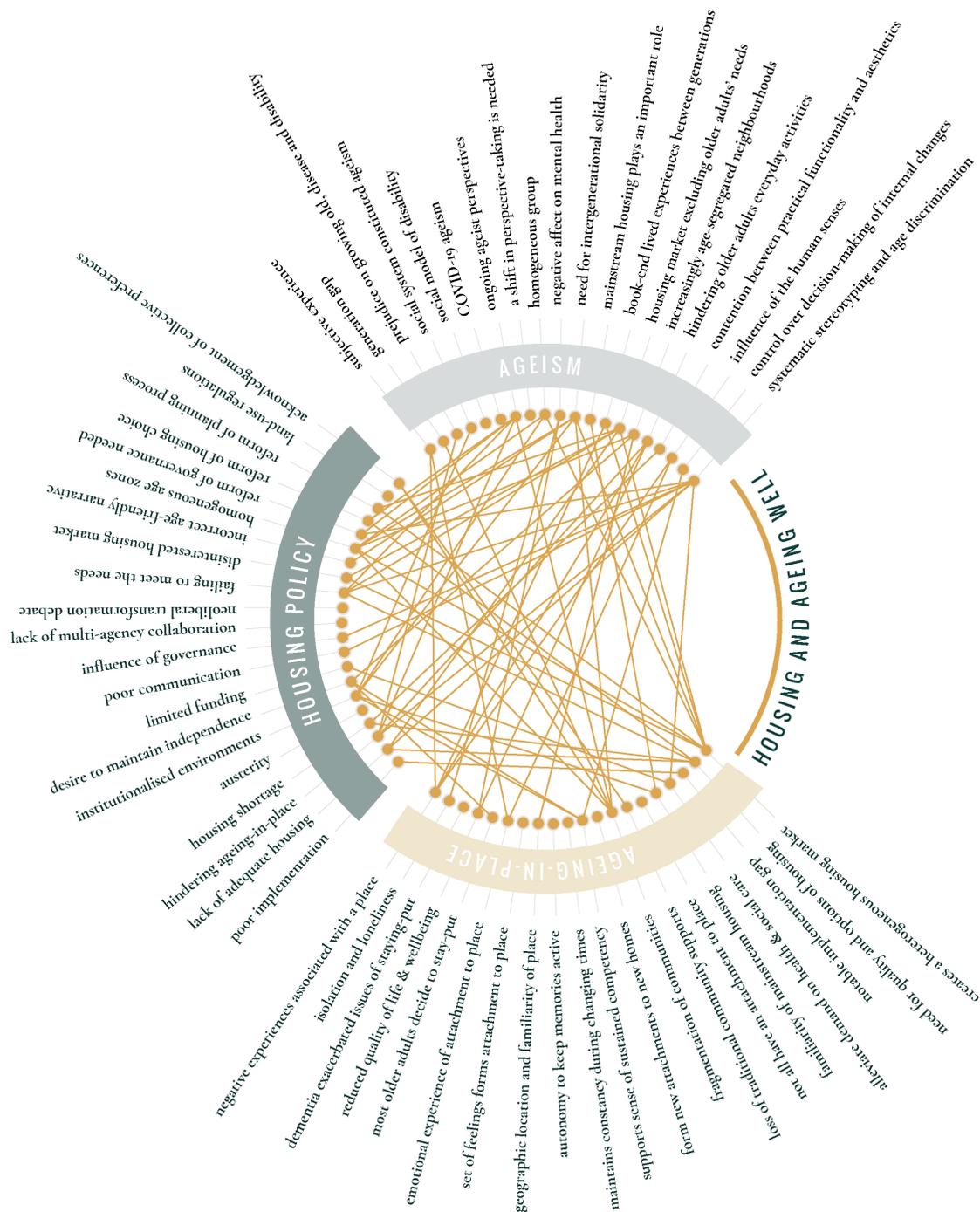
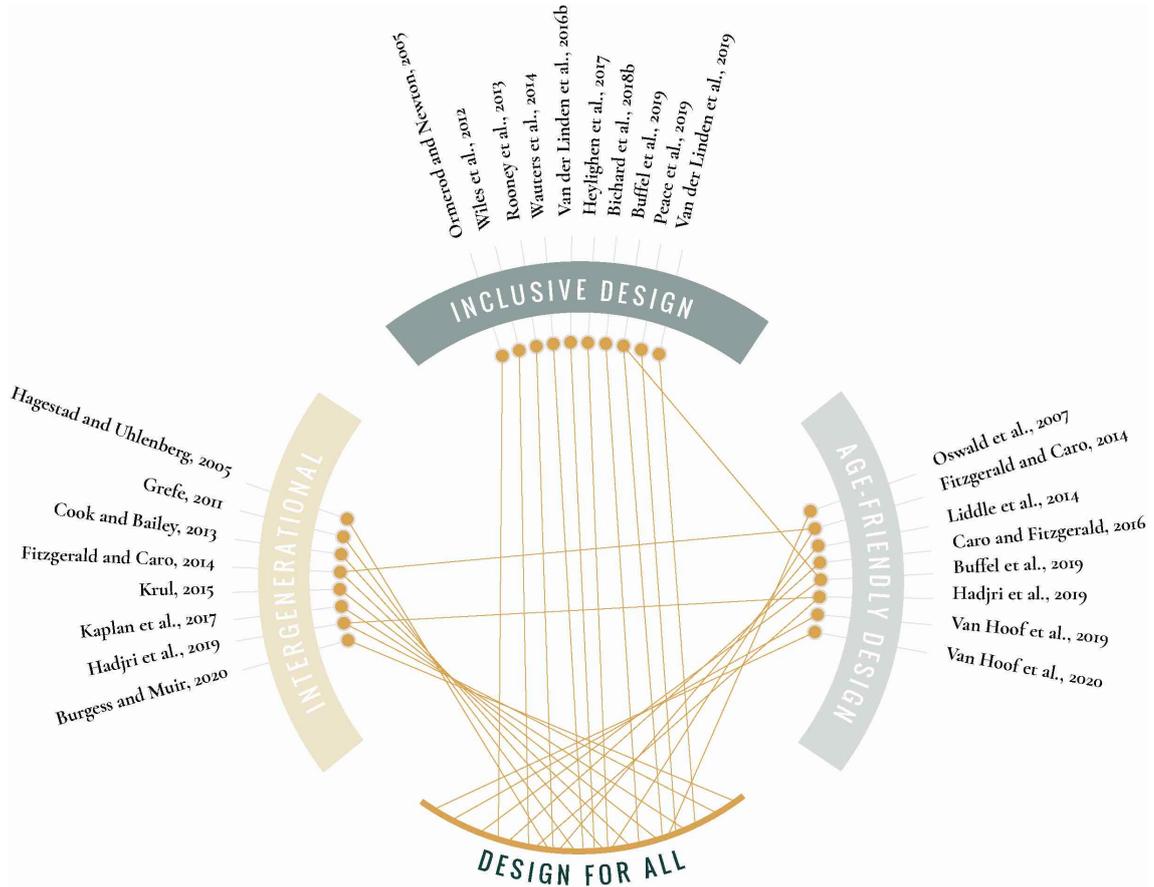


Figure 2.2 : Summary of findings from the existing 'Housing and Ageing Well' discourse

The next review 2/4, will explore 'Design For All'.

### 2.3 Review 2: Design For All

This second review of literature examined the theme of ‘Design For All’ within existing research (see Figure 2.3). Within this existing discourse, emphasis was placed on three main sub-themes: 1.) Inclusive Design, 2.) Age-friendly Design, and 3.) Intergenerational Approaches.



**Figure 2.3 :** Overview of existing research that explores the theme of ‘Design For All’

#### 2.3.1 Inclusive Design: A Socially Orientated and Responsible Approach

‘Inclusive design’ promotes human functioning by including the needs of as many people as possible, particularly those who are marginalised, overlooked or most vulnerable (Ormerod and Newton, 2005; Heylighen et al., 2017; Bichard et al., 2018b; Peace et al., 2019). This is essential within the built environment, as it has been evidenced to contribute to improved health and wellbeing (Bichard et al., 2018b). For instance, the sensory perception of environments can impact the experience of

individuals with long-term health conditions<sup>8</sup>, such as visual impairments (Peace et al., 2019).

The principles of inclusive design (see Figure 2.4) construct a socially orientated and responsible design approach to emphasise diversity, equality, and social inclusion within the built environment (Heylighen et al., 2017). They identified that designing inclusively can reduce the need for home modifications in later life, as well as increase the diverse housing options for older adults. This is crucial given that older adults want greater choice in deciding where they live, how they age-in-place and have emphasised the importance of a sense of connection beyond specialist housing provisions (Wiles et al., 2012; Buffel et al., 2019). Inclusive design can ensure the longevity of new homes (in terms of social and environmental sustainability).



**Figure 2.4** : The five key inclusive design principles adapted from CABE (2008)

<sup>8</sup> Within the UK, 7 million older adults live with two or more long term health conditions (AgeUK, 2015).

Whilst it is evident that taking a socially sustainable stance (through designing inclusively) can promote social inclusivity whilst respecting social diversity, architectural practice has remained slow on the uptake. Heylighen et al. (2017) found that one reason for this was the major challenge in informing architects about the diversity of human abilities and conditions — away from building codes and accessibility legislations. Existing evidence argued that design professionals were required to grasp that regulations and legislations such as, Lifetimes Homes Standards and Part M (access to and use of buildings), only addressed the minimum inclusivity standards and were merely a set of rules (Ormerod and Newton, 2005; Rooney et al., 2013; Van der Linden et al., 2016b). Moreover, architects and other BEPs must acquire the knowledge and willingness to implement inclusive design strategies that provide a broader understanding of user experience (Van der Linden et al., 2016b).

More recently, Heylighen et al. (2017) identified that a potential lack of engagement with designing inclusively within architectural practice was a result of the assumption that it restricted the design process or reduced design solutions. They found that many were 'uncertain' of what was required to design inclusively and saw the approach as 'a set of good intentions' which seemed to possess 'a basic attitude' associated with accessibility and functionality. In addition, they found that these perceptions surrounding inclusive design, its practical applicability, and infusion into architectural education needed greater consideration in order to increase the adoption of inclusive design within architectural practice. This must take into account the diversity of real people and their interactions with the built environment (Heylighen et al., 2017). This was further emphasised by Bichard (2018b, pg. 5), who asserted the urgent and ongoing priority to incorporate wider diverse participation when designing in order to ensure that inclusive design were developed further than 'merely a function of the built environment'.

Interestingly, Van der Linden et al. (2016b) identified that a lack of information formats available for understanding inclusive design was partly to blame. They called

for this to be addressed through more effective design-oriented information formats that specifically correlated with the design practice of architects. In doing so, this has the potential to better support architects to move away from prescriptive building code solutions commonly associated with quantitative aspects, and more towards inclusively designed solutions based on more qualitative aspects (Ormerod and Newton, 2005).

In recent times, inclusive design has evolved beyond the context of age and ability to understand further the diversity within society (Heylighen et al., 2017). This has opened up increasingly rich discussions surrounding designing environments for greater inclusion of older adults and most recently, traction has gained with focusing the lens on inclusivity through age-friendly design (Peace et al., 2019).

### **2.3.2 Age-friendly Design: Active Participation in Society**

'Age-friendly design' can create supportive environments for older adults to actively age-in-place with their families, neighbourhoods, and civil society, whilst also offering opportunities for enhanced community participation (Caro and Fitzgerald, 2016). It can support greater accessible measures to be designed into living environments to ensure healthy ageing (Oswald et al., 2007). Oswald et al. (2007) found that by living in accessible housing, older adults perceived their home environments as useful, meaningful and enabled independence which led to improved wellbeing as depressive symptoms<sup>9</sup> were reduced. Hadjri et al. (2019) stated that an 'enabler' to support accessibility within the physical environment was through the implementation of age-friendly design.

---

<sup>9</sup> It has been evidenced that within England, 22% of men and 28% of women aged 65+ are affected by depression which is the most common mental health condition in later life (AgeUK, 2019).

Whilst the age-friendly movement has existed for over a decade, evidence surrounding this topic within the built environments remains sparse (Buffel et al., 2019). It has been found that the evidence that does exist has been too focused on 'age-friendliness' as a status that can be achieved through the completion of a series of specific tasks, as opposed to it being an ongoing strategic process (Liddle et al., 2014). Liddle et al. (2014) argued that conscious decision-making is required that is both strategic and ongoing to ensure that age-friendly design can facilitate a built environment that optimises active ageing.

Age-friendliness offers architects and other BEPs a powerful conceptual framework that can support the development of socially engaged urban practice (Buffel et al. 2019). Buffel et al. (2019) stated that it endorsed a participatory model that supported older adults to take an active role in the production of age-friendly built environments and thus, optimising active ageing. They found that this can support architects and other BEPs to become more experimental, participative, and empowered by engaging with older adults. In addition, architects increased engagement with age-friendly design can provide them with a better understanding of how the built environment affects an older adult's identity and subjective emotions (Buffel et al., 2019). They stated:

*“Such issues may serve as prompts for designers to work in ways that, variously, give value and weight to people’s subjective perceptions of place; acknowledge the relational value of spaces, as well as the conflicts and tensions in the shared use of space; and encourage forms of practice that enable a more confident and connected sense to place.”*

*(Buffel et al., 2019, pg. 219)*

It is through the spatial practices of architects where it becomes possible to broaden the repertoire and co-production of age-friendly environments (Buffel et al., 2019). Housing design (one of the WHO's eight domains of age-friendliness - see Figure 2.5) has been identified as essential for optimising active ageing through advocating

the age-friendly narrative (Hadjri et al., 2019). Hadjri et al. (2019) evidenced that this promoted better health and wellbeing for older adults through maximising utility, independence, and quality of life. The adoption of age-friendly design can support housing to be more flexible, multi-functional and able to adapt alongside an individual's life-course which has been evidenced to support ageing-in-place (Hadjri et al., 2019). However, if we are to move from the margins to mainstreaming age-friendly housing design, architects and other BEPs must take action to advocate the age-friendly narrative.



**Figure 2.5 :** The WHO's eight domains of an age-friendly urban life that can support the health and wellbeing of older adults (WHO, 2007)

Within the 21st century, age-friendly environments must not go ignored and should be continuously 'reviewed' and 'refined' to ensure respective housing environments (Van Hoof et al., 2019). Van Hoof et al. (2020) found that age-friendly living environments continued to be 'under-studied', 'under-explored', and 'often completely ignored' by architects and other BEPs. If we are to support successful ageing-in-place, it is necessary that the built environment carefully considers and leads the way in centralising the age-friendly narrative (Liddle et al., 2014). However, architects - even those who have framed themselves as socially engaged practitioners, have shown little interest in age-friendly design or engagement with older adults' everyday experiences (Buffel et al., 2019). Fitzgerald and Caro (2014) asserted that engagement with the age-friendly movement will open up new opportunities for intergenerational interactions which will better support active ageing within communities.

### **2.3.3 Intergenerational Approaches: Interventions and Environments**

'Intergenerational approaches' contribute to the sustained health and wellbeing of an individual over their life-course (Cook and Bailey, 2013; Fitzgerald and Caro, 2014; Krul, 2015; Kaplan et al., 2017). They have been identified to support the reduction of age-segregation, ageism and perceived loneliness<sup>10</sup> by providing more meaningful social interactions across generations (Grefe, 2011; Cook and Bailey, 2013; Kaplan et al., 2017). This has been identified as a positive influence on physical and mental health through the promotion of physical activity, healthy eating practices, and other lifestyle behaviours (Kaplan et al., 2017). Fitzgerald and Caro (2014) found that the social, physical, and mental contribution to an individual can support their active ageing within communities. However, the built environment needs to be considered in order to positively assist intergenerational interventions.

---

<sup>10</sup> Within the UK, it has been identified that 1.4 million older adults were affected by loneliness pre-pandemic. This has been projected to increase to 2 million people by 2026 (AgeUK, 2021).

The built environment has been evidenced to influence intergenerational interventions through spatial homogeneity (Hagestad and Uhlenberg, 2005), segregation from the wider community (Cook and Bailey, 2013), and lack of privacy (Burgess and Muir, 2020). Hagestad and Uhlenberg (2005) found that this has limited intergenerational opportunities of lasting cross-age ties, perspective-taking, and mindfulness. Krul (2015) evidenced communication, commitment, and culture as most important to improving intergenerational solidarity. Specifically, they evidenced that these factors influenced the success of intergenerational living and active ageing-in-place. Burgess and Muir (2020) added that within these living environments, a positive experience of intergenerational solidarity and companionship took priority over potential challenges. This has been found to positively influence older adults' perceptions of their experiences of ageing within the built environment (Kaplan et al., 2017).

Intergenerational living environments are found to be most widely associated with multigenerational households made up of family members (Burgess and Muir, 2020). They evidenced that within the UK, this is currently 7% (1.8 million) of all living environments and that traction had gained in the popularity of these household arrangements due to increased longevity, population ageing, and delays in young adults relocating. Burgess and Muir (2020) stated that the traditional single family household may not be the norm in the future of contemporary society and instead, collective and less individualised living environments may lead the way. They have called for the UK housing industry to provide more suitable new-build homes that support the collective living of multiple ages through means of flexible living in shared spaces and privacy. This assertion added to Hadjri et al.'s (2019) study which found that flexible and multi-functional housing design enhanced multigenerational living which supported ageing-in-place. This intergenerational approach was identified as a potential care model that could build on the concept of maintained social networks and community ties for improved cognitive function (Hajri et al., 2019).

### 2.3.4 Review Summary

This second review of literature concentrated on existing research which explored the theme of ‘Design For All’ (see Figure 2.3). Within this existing discourse, emphasis was placed on three main sub-themes: 1.) Inclusive Design, 2.) Age-friendly Housing, and 3.) Intergenerational Approaches (see Figure 2.6).

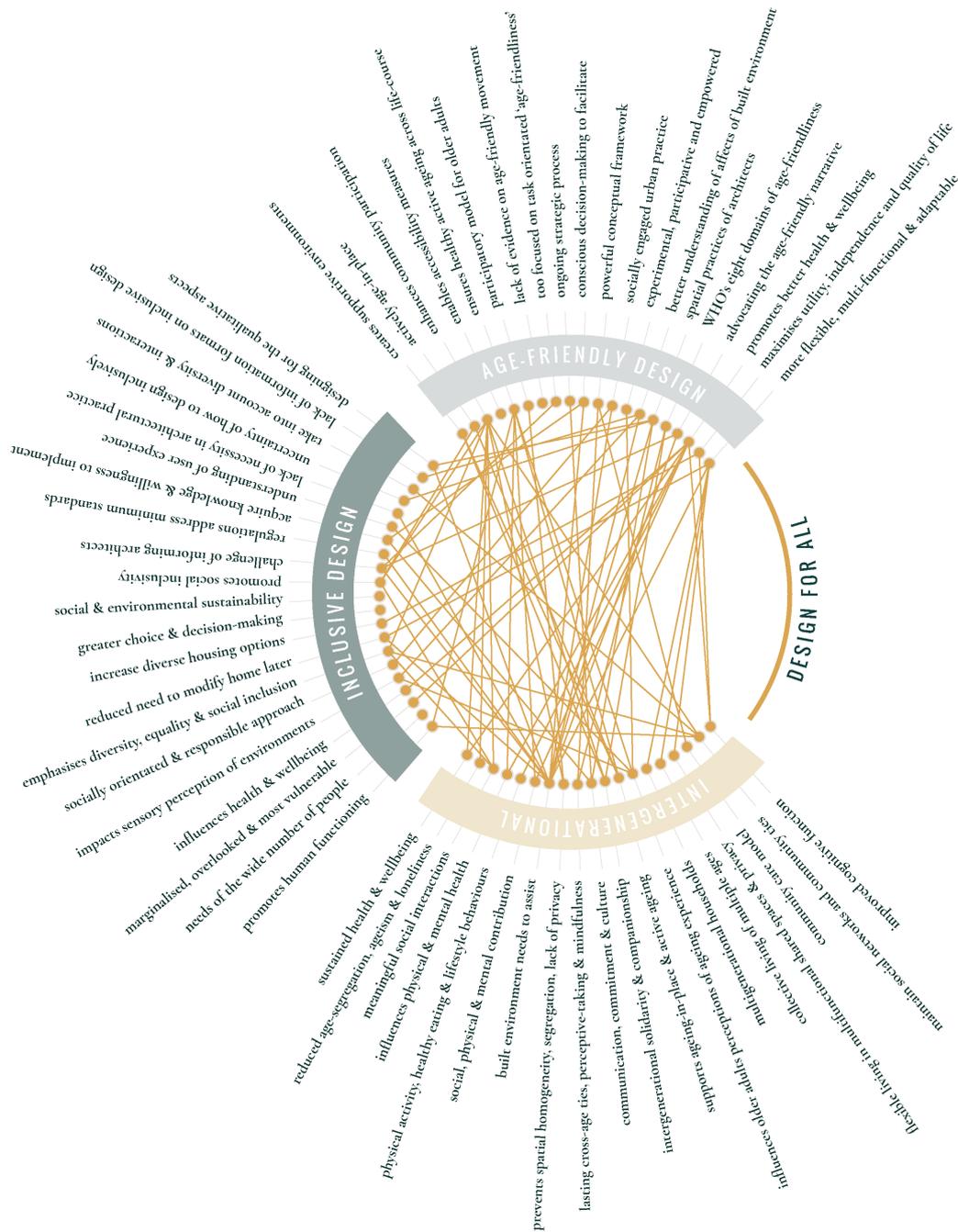


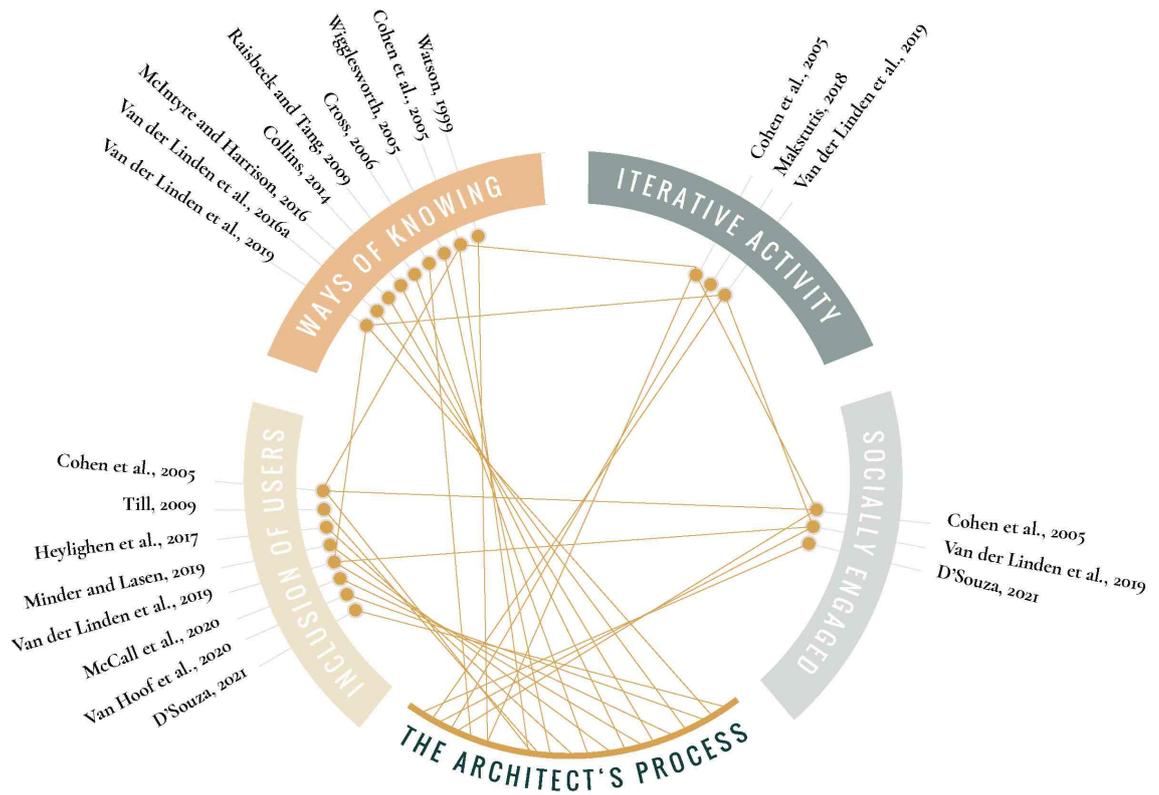
Figure 2.6 : Summary of findings from the existing ‘Design For All’ discourse

Within this second review of literature (Design For All), Van Hoof et al. (2020) identified that there was a significant lack of studies into the design of age-friendly environments and argued that this recognition identified the mere existence of ageism within the built environment. Liddle et al. (2014) found an absence of research studies exploring the age-friendly agenda and more specifically, a limitation of empirical evidence concerning the features that make environments age-friendly. In addition, they found that there was a lack of engagement with the conceptual and practical notions of age-friendliness by researchers, policymakers and practitioners. Heylighen et al. (2017) found many challenges still needed to be addressed with regard to the context of an architect's perception and their practical applicability of inclusive design within the built environment. Rooney et al. (2013) identified that design professionals were not grasping that age-related regulations only addressed the bare minimum of inclusivity standards. They called for architects to acquire the knowledge and willingness to implement accessible design strategies within their everyday practice. Van der Linden et al. (2019) found uncertainty and a lack of necessity amongst architects to design inclusively and that there was an absence of clear information to engage architects when designing environments to support ageing.

The next review 3/4, will explore 'The Architect's Process'.

#### **2.4 Review 3: The Architect's Process**

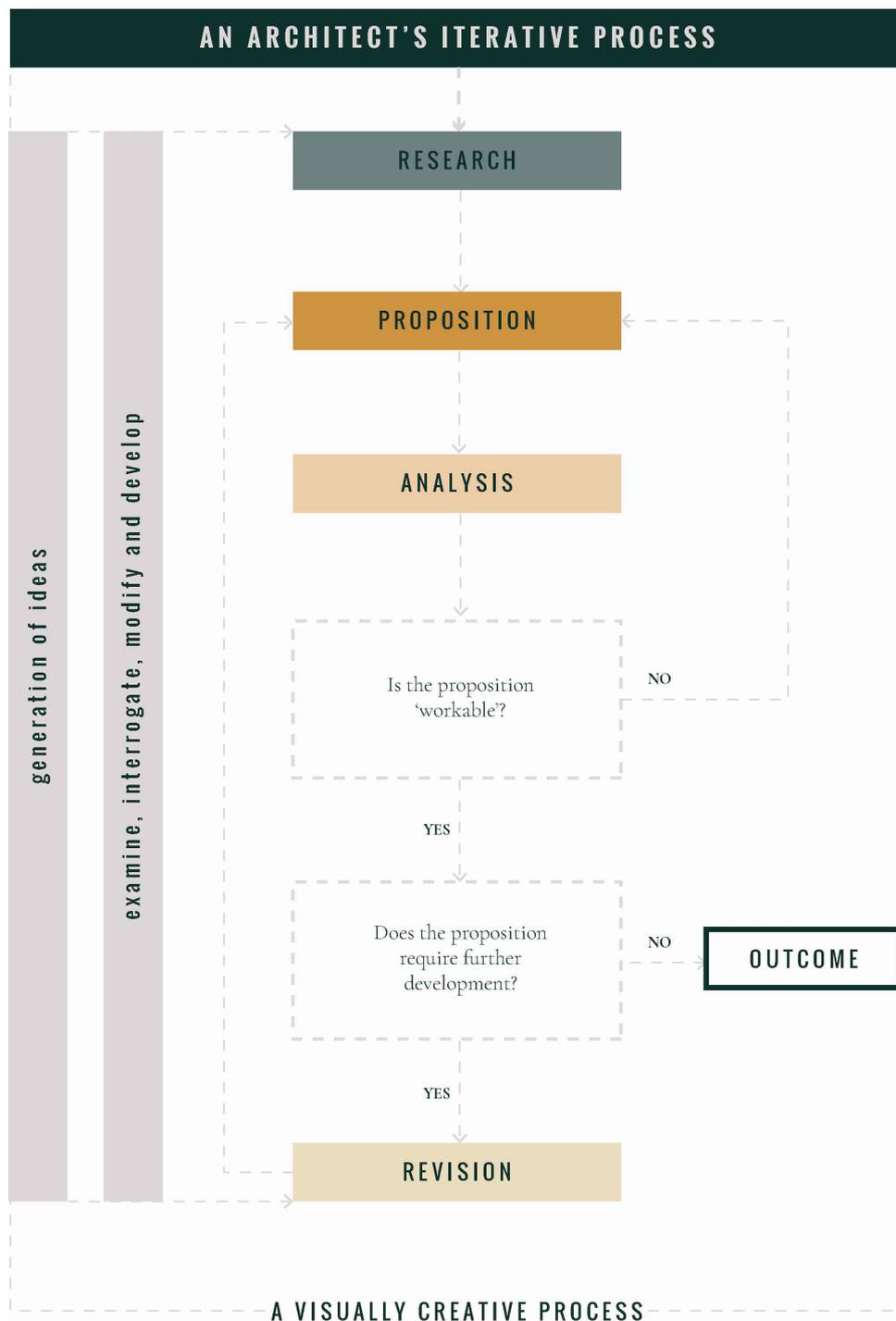
This third review of literature evidenced the theme of 'The Architect's Process' within existing research (see Figure 2.7). Within this existing discourse, emphasis was placed on: 1.) The Iterative Activity, 2.) Socially Engaged Practice, 3.) Inclusion of Users, and 4.) Designerly Ways of Knowing.



**Figure 2.7** : Overview of existing research that explores the theme of ‘The Architect’s Process’

### 2.4.1 Iterative Activity: Research, Proposition, Analysis and Revision

An architect’s process is an ‘iterative activity’ (see Figure 2.8) which relies heavily upon four key stages — research, proposition, analysis, and revision (Makstutis, 2018). Whilst the individual architect has their own way of generating ideas during the process, these stages remain consistent in order to achieve a desired outcome. Makstutis (2018) added that during these four stages, the architect was required to produce visually creative work that could be ‘examined, interrogated, modified, and developed’. This ensured a creative process that provided an appropriate outcome in order to meet the needs and solve problems within the given context. Cohen et al. (2005) argued creativity as the essence of architecture and that this could be achieved through the aesthetic sensibility and expertise of an architect’s multifaceted and multi-skilled process of constantly pushing the parameters.



**Figure 2.8 :** An architect's iterative activity adapted from Makstutis (2018)

It is creativity within the architectural process that differentiates architects from other disciplines within the construction industry (Cohen et al., 2005). Whilst creativity has also been recognised as a skill of artists, it is the technical expertise of architects that differentiates the purely conceptual artist from the architect. It is important to note that there are other construction professionals that offer technical services, such as architectural technicians. However, Cohen et al. (2005) argued that an architect's

technical expertise supported creativity but also facilitated the realisation of architecture during the process. They stated:

*“It was not only the final product that mattered, rather each and every stage in the building process, each draft and drawing had to be aesthetically pleasing in its own right.”*

*(Cohen et al., 2005, pg. 783)*

Van der Linden et al. (2019) added that these visually pleasing processes (such as, sketches, schemes, models, renders, collages, plans and elevations) could be used as pervasive material knowledge that generated design moves and reflective practice that provide a solution to the problem at hand. Cohen et al. (2005) stated that this creative technical expertise was distinct to architects as it ensured their unique set of values; sense of place, aesthetics, beauty, and a feeling for the built environment were distilled within the architectural process. They emphasised that being motivated by social values during an architect’s process supported designing for ‘the good of the public’ (Cohen et al., 2005).

#### **2.4.2 Socially Engaged Practice: Designing for The Common Good**

‘Socially engaged practice’ has been evidenced to enhance an architect’s immersion, understanding and authority to influence during the design process (Van der Linden et al., 2019). However, this required a designer to have the interpersonal skills that involved empathy and recognition of users needs in order to understand the diverse emotions, perspectives and motives of others (D’Souza, 2021). D’Souza (2021) stated that this enhanced a designer’s sensitivity to human behaviour and the understanding of the vulnerability of others.

A designer’s social engagement was identified as particularly evident amongst architects who worked in the public sector (such as local authority planning departments), rather than within the private sector (Cohen et al. 2005). They found that public sector architects had ‘a stronger sense’ of working to contribute to the

common good of society (Cohen et al., 2005). However, they did identify the theme of enhancing people's lives amongst architects in the private sector.

More recently, it has been evidenced that to enhance people's lives an architect must use both their intellectual as well as bodily expertise in order to position the feel of a space at the core of the design process (Van der Linden et al., 2019). Van der Linden et al. (2019) identified that this made an architect's process extremely personal and that private sector architects understanding of this may lead to a shift in their process to place greater emphasis on social value when designing. They stated that to achieve this dual expertise, architects were required to use a pragmatic strategy which relied heavily upon their intuition, personal experience, analysis of other buildings and the embedded knowledge in their social constellation (made up of their team, firm, associations, and architectural community).

Interestingly, it was found that limited information was explicitly sought out from the users and instead, architects mainly drew from the implicit body of knowledge within their architectural practice (Van der Linden et al., 2019). They associated this with an architect's personal ambitions for housing quality which were found to be based upon implicit professional values, limited time resources and incomplete problem definitions. In addition, the increasingly complex architectural design process had fuelled the challenges for architects to take into account the users perspectives (Ibid).

It is these implicit assumptions of architects that had the potential to be socially problematic for user experience within the built environment (Van der Linden et al., 2019). As a result, they indicated a need for the greater immersion of architects within users everyday environments in order for them to become better informed about user contexts and their practical needs. They found that this had the potential to act as an authoritative argument, rather than based upon implicit assumption-making (Ibid). Whilst it was not always possible for architects to immerse themselves into the users contexts, they evidenced that the inclusion of users during the design process enhanced an architect's understanding of their lived experiences.

### **2.4.3 Inclusion of Users: Collaborative Methods for Participatory Design**

The 'inclusion of users' during the design process offers rich insight into the potential preconditions and solutions which can be discussed firsthand (Heylighen et al., 2017). Heylighen et al. (2017) evidenced that this can be supported by using collaborative methods such as, participatory design and co-design. These collaborative methods support the acceptance of novel ideas and advocate designers as innovation process consultants (Minder and Lassen, 2019). D'Souza (2021) stated that participatory design positions the user as expert of their experiences which constructs knowledge development, idea generation, and concept development for the designer. McCall et al. (2020) found that participatory design has evolved to better understand older adults' needs and desires.

In McCall et al.'s (2020) study, they examined the priorities, decisions, negotiations and processes of service users and stakeholders during the development of suitable housing for older adults. It is important to note that they did not include architects or designers within this study. They found that participants were more critically engaged than visionary which resulted in outcomes that tended to stay within the confines of current housing practice and policy. This led to their conclusion that there was limited vision in regard to planning for the future of housing and ageing. They concluded that visionary individuals needed to be included when creating housing for older adults. This highlighted the specific need for architects and designers when developing suitable housing options. In addition, it identified a lack of research that involved architects, a critical stakeholder when it came to the implementation of visionary housing strategies. McCall et al. (2020) drew attention towards the various user and stakeholders differing priorities which were found to be continuously negotiated and thus, made it difficult to implement solutions. This required a visionary individual to facilitate this collaborative process.

Minder and Lassen (2019) stated that a trained designer's role was as a creative facilitator of design-oriented tools that evoked active dialogue and provided a fulfilment level during the collaborative process. D'Souza (2021) added to this

assertion, stating that the designers facilitator role involved actively leading, guiding, empathy and leadership. Successful facilitation demonstrated the innovative competence of a designer and their consultant authority for facilitating a more open and collaborative process (Minder and Lassen, 2019). Yet, they found that non-designers perceived designers visual and aesthetic competence as unimportant to the outcome of the collaboration process. In addition, that fixed views and preconceived ideas of how the process should be undertaken reduced the competency of a designer. They stated:

*“It seems that some designers are good at orchestrating both the creation of pioneering spirit through powerful visions and establishing meaningful inclusion - others less skilled in coordinating the interplay.”*

*(Minder and Lassen, 2019, pg. 17)*

As a result, they found that architects continued to distance themselves from users during the design process (Minder and Lassen, 2019; Van der Linden et al., 2019). Interestingly, D’Souza (2021) stated that including users in a collaborative process required the designer to relinquish some control of the design project. This loss of control was linked with a loss of authority which removed the architect from being at the forefront of a project (Cohen et al., 2005; Till, 2009).

However, Cohen et al. (2005) found that whilst an architect may attain a loss of status, this had the potential to enhance quality based upon putting teamwork at the core of design practice. They stated that this ultimately ensured a better design service for the public. Van Hoof et al. (2020, pg. 418) stated that this was particularly evident within the context of older adults whereby architects and other BEPs were ‘completely ignoring’ these users. The inclusion of users is paramount for the success of both the proposed and implemented solutions (Van Hoof et al., 2020).

#### **2.4.4 Designerly Ways of Knowing: Unlocking Knowledge**

'Designerly ways of knowing' are distinct from other forms of knowing (such as the scientific method), as it articulates the inherent attributes of design activity, design behaviour and design cognition (Cross, 2006). Cross (2006, pg. 17) stated that design had its own specific 'things to know, ways of knowing them, and ways of finding out about them'. An architect's designerly ways of knowing about users relied upon the ability to use design-oriented methods to facilitate understanding users experience and support the 'unlocking' of knowledge (Van der Linden et al., 2016). Van der Linden et al. (2016) evidenced that being skilled in collaborative practices, not having predetermined ideas, and having the ability to unlock knowledge advocated the architect's competence whilst providing greater authority over the design process. This required architects to think in new ways to generate contextual knowledge that fostered insight, empathy and innovation (Van der Linden et al., 2016a; 2019). They asserted that this can support architects to become more informed by unlocking knowledge beyond the static information of reports and research publications that were misaligned with the design process. This added to Cohen et al. (2005, pg. 778) earlier finding of the misalignment between practice and theory whereby architectural literature reduced creativity in order to meet strategic, market, and managerial demands.

In taking this thinking on board, it is not surprising that existing discourse has evidenced that architects have difficulty with understanding, engaging and communicating knowledge both in practice and externally (Watson, 1999; Wigglesworth, 2005; Collins, 2014; Raisbeck and Tang; 2009; McIntyre and Harrison, 2016; Van der Linden et al., 2016a; Van der Linden et al., 2019). McIntyre and Harrison (2016) asserted that the effective exchange of knowledge between architectural practice, policy and research is essential. They evidenced that this can be supported through the fundamentals of good communication, the desire for structured knowledge, the value of contextual guidance, the importance of visual formats and the need for guidance to support client motivations. This enabled an architect's process to become more informed through the dynamic process of design

materials, interactive relationships and fluid knowledge transfer, as opposed to the static ways of knowing (Van der Linden et al., 2016a). Design-oriented information formats can support the communication and transfer of knowledge about users' experiences into design practice (Ibid). In addition, an extract taken from their later study (2019, pg. 86) stated:

*“Architects experience difficulties in engaging in a dialogue with non-designers such as the client...They also experience difficulties in sharing this personal experience or research with the design team. There is a clear role for materials here, as a first lead, to overcome this challenge and support social interaction and make clients' and architects' knowledge tangible.”*

*(Van der Linden et al., 2019, pg. 86)*

An additional finding of interest from Van der Linden et al. (2016b) advanced that having a particular mind-set and a lack of information formats has fuelled the limited adoption of inclusive design in an architect's process. There is the need for 'designerly ways of knowing' (design activity, design behaviour and design cognition) in order to support new ways of thinking that consider the architect's accounts of their design process, mobilises their creative skills and contextualises information about users within the environment (Van der Linden et al., 2019).

#### **2.4.5 Review Summary**

This third review of literature evidenced the theme of 'The Architect's Process' within existing research (see Figure 2.7). Within this existing discourse, emphasis was placed on four main sub-themes: 1.) The Iterative Activity, 2.) Socially Engaged Practice, 3.) Inclusion of Users, and 4.) Designerly Ways of Knowing (see Figure 2.9).

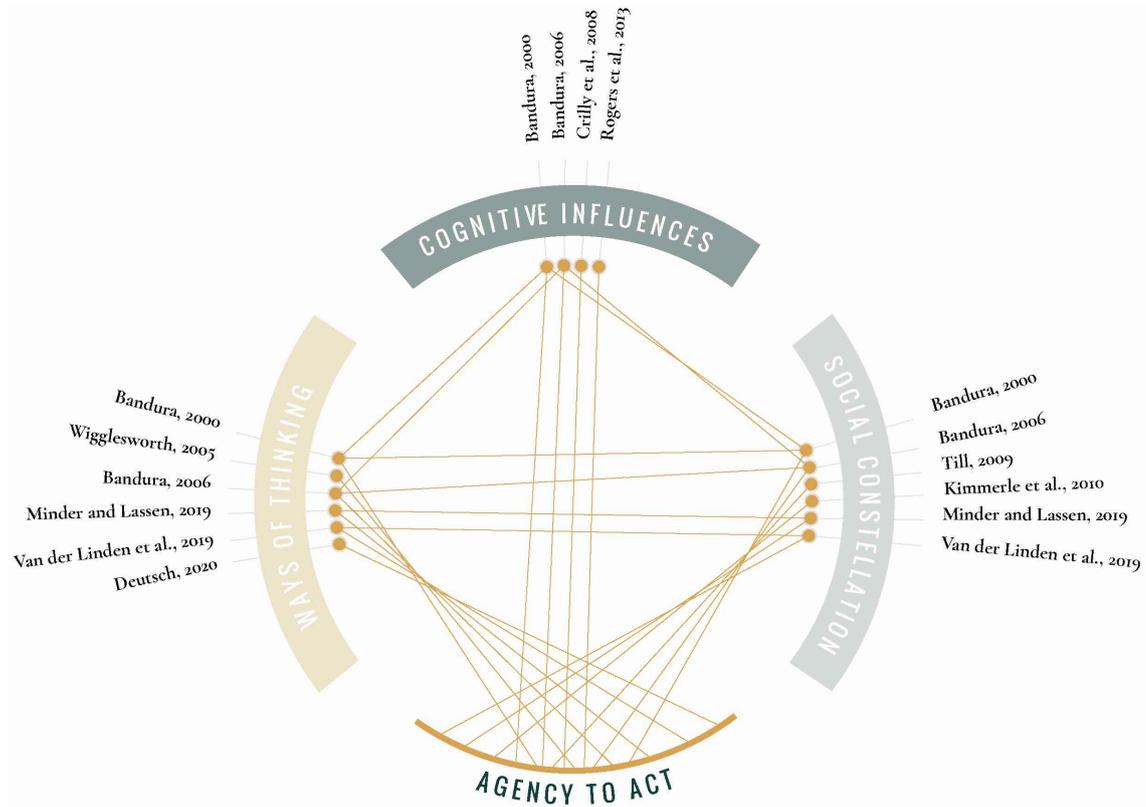


Within this third review of literature (The Architect's Process), Minder and Lassen (2019) found that the designers' own creativity on multidisciplinary projects holds influence, yet had largely been ignored within the concept of facilitation. They called for further research to advocate and raise awareness of designers creative inputs during the collaboration process. Cohen et al. (2005) found that architecture as a profession, has been a continuously neglected area of research. Specifically, they note that there were limited studies providing insight into the accounts of individual architects. Furthermore, arguing that there were few studies offering insights into the challenges and constraints faced for architects and other BEPs in the context of everyday practice. Van der Linden et al. (2019) called for a need to inform architectural practice about user experience. They argued that this had continued to be addressed unsuccessfully by traditional modes of user research. In addition, they also found that by understanding the mechanisms of architectural practice, a more effective knowledge transfer could be achieved. They argued that this could be supported by recognising the need for additional sources and tools to engage users.

The next review 4/4, will explore 'Agency to Act'.

## 2.5 Review 4: Agency to Act

This fourth review of literature evidenced the theme of ‘agency to act’ within existing research (see Figure 2.10). Within this existing discourse, emphasis was placed on three main sub-themes: 1.) Cognitive Influences, 2.) The Social Constellation, and 3.) Ways of Thinking.



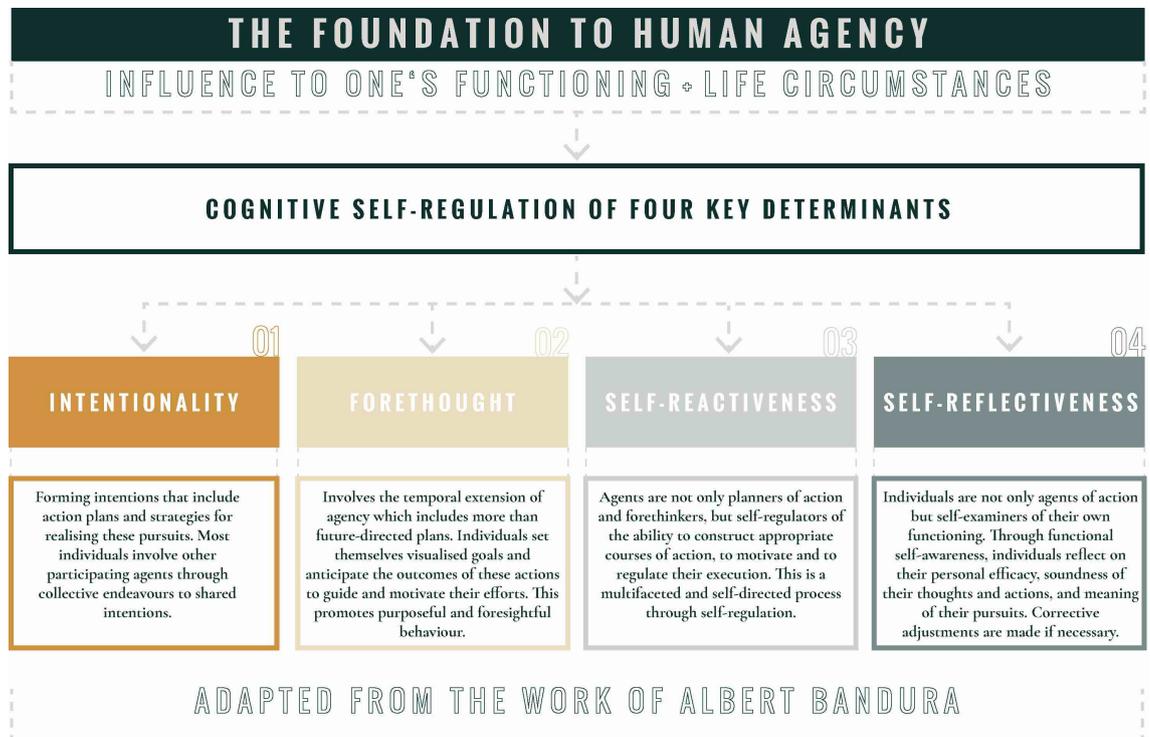
**Figure 2.10 :** Overview of existing research that explores the theme of ‘Agency to Act’

### 2.5.1 Cognitive Influences: Functioning, Efficacy and Self-regulation

Within social research, the agency of an individual is defined as ‘the capacity possessed by people to act of their own volition’ (Rogers et al., 2013). Bandura (2006) stated that to possess agency is to be an agent who intentionally influences one’s functioning and life circumstances.

The foundation to achieve this is through the belief of personal efficacy (see Figure 2.11), which influences cognitive self-regulation of four key determinants: 1.) Intentionality, 2.) Forethought, 3.) Self-reactiveness, and 4.) Self-reflectiveness (Bandura 2000; 2006). These determinants provide an individual with the ability to act

on the present to construct, evaluate, and modify alternative courses of action in order to achieve a valued outcome which overrides environmental influences (Bandura, 2006). Crilly et al. (2008) identified that through this complex interplay between values, affect and cognition, the agent was able to better influence action.



**Figure 2.11 :** The four key determinants that influence human agency adapted from Bandura (2006)

Interestingly, Crilly et al. (2008) found that those with cognitive flexibility (lateral thinking) were more likely to evaluate, reflect deeply, and generate innovative alternatives agents through support complex social issues when determining a course of action. They evidenced that individuals who possessed cognitive flexibility held self-transcendence values (universalism and benevolence) which positively influenced socially responsible ways of taking action for the common good.

This supported Bandura's (2006, pg. 167) previous claim that it was a socially embedded interplay between an individual's agency and environmental influences. They stated that people act on the environment in order to create, preserve, transform, and even destroy it rather than solely react to the given. It was evidenced

that through this interplay, the agent was required to be proactive in managing and developing their self-regulatory skills, particularly the belief in their efficiencies, competencies to social commitments, and action plans (Bandura, 2006). Crilly et al. (2008) added further that the individual was required to consider the interdependencies and multiple (often conflicted) demanding views of various stakeholders in order to ensure socially responsible actions were achieved.

### **2.5.2 The Social Constellation: Multiple Views for Collective Practice**

Within the context of architecture, the interdependencies and consideration of multiple views can be supported through collective practice. Van der Linden et al. (2019) stated that this can be achieved by interpreting 'the architect' not as a 'single person' but as the social constellation that makes up their practice. This was based upon their background, relationships, values and ideas which resonated with Bandura (2006) four key determinants of cognitive self-regulation (see Figure 2.11). It has been highlighted that an individual's social constellation supports collective thinking (Bandura, 2000; Till, 2009; Kimmerle et al., 2010; Van der Linden et al., 2019). An extract taken from Till (2009, pg. 151) stated:

*“The idea of architect as expert problem-solver to that of architect as citizen sense-maker; a move from a reliance on the impulsive imagination of the lone genius to that of the collaborative ethical imagination; from clinging to notions of total control to a relaxed acceptance of letting go”*

*(Till, 2009, pg. 151)*

It is this notion of collaborative imagination that supports collective practice and brings to light the importance of socially responsible actions and ethical duty in architecture. However, Van der Linden et al. (2019) evidenced that an architect's perceived ambitions and responsibilities were amplified by the culture of peer-recognition within an architect's social constellation. This highlighted the potential collective influence and dominance of architectural peers over the trajectory of architectural design practice.

Through the act of collective thinking, the agentic capabilities of the collective were enhanced (Bandura, 2000). Bandura (2000) evidenced that working together with shared beliefs produces a collective power. This was based upon learning and knowledge building as an interplay between cognitive systems and a social system (Kimmerle et al., 2010). Kimmerle et al. (2010) stated that individuals do not only internalise information from their social environments into their cognitive systems, but also externalise their own knowledge. They stated that it was this exchange between social systems and individual cognitive systems that established the foundations for the development of new knowledge within an organisation (such as architectural practice).

For example, Minder and Lassen (2019) evidenced that designers who were well networked experts (strong social constellation) placed importance on staying up-to-date with best practice as a collective. This was identified to positively influence a project as the expert designers were better equipped to share more diverse examples which supported initial design inquiry. However, Bandura (2006) identified that collective efficacy was required in order to influence the type of future the collective sought to achieve. This collective power was evidenced to enable shared knowledge and skills to exercise motivational commitment, resilience to adversity, and performance accomplishments (Bandura, 2000). Thus, an architect's social constellation plays a crucial role in the attainment of collective agency within practice.

### **2.5.3 Ways of Thinking: Critically, Creatively and Collaboratively**

The act of practicing politically within architecture has been identified as being propositional whilst undermining those propositions (Wigglesworth, 2005). It demands the architect to work with 'the status quo', whilst critically exploring alternative ways of adjusting the status quo to ensure that current conditions move forward. Wigglesworth (2005) stated that this can be achieved through undertaking disciplined training in a way of critically thinking that is both contingent and responsive to the context that confronts them and be flexible in making judgement. This resonated with Bandura's (2006) previous notions of cognitive self-regulative

management in order to influence action. Deutsch (2020) evidenced twelve ways for architects to think critically, however the fundamentals were the ability to be rational, to ask ‘pertinent questions’ and separate ‘facts from fiction’ (see Figure 2.12).



**Figure 2.12 :** Twelve ways for architects to think critically adapted from Deutsch (2020)

Whilst this ensured criticality in an architect’s way of thinking, it did not ensure that the architect would be understood. Deutsch (2020) explained that this relied upon the interplay between ‘emotion, creativity and the ability to think like others to act’. An extract taken from Deutsch (2020, pg. 6) asserted:

*“Architects can’t just design for themselves. They need to think not only in terms of the owner - who pays for the work, and with whom the architect is contracted - but the building’s users, neighbours and the public-at-large who will have to live with the resulting building.”*

*(Deutsch, 2020, pg. 6)*

This evidenced the link between thinking and feeling, and reason and emotion which provided justification as to why thinking critically was dependent upon critical creative thinking and not a separate phase — they were required to occur at the same time. To think creatively, was to see existing situations and innovate new positive outcomes (Deutsch, 2020). It required a designer to demonstrate that they knew what they were talking about (Minder and Lassen (2019). However, Van der Linden et al., (2019) evidenced that architects were better at pinpointing project-specific information, rather than explaining the intuitive ways of their knowing. They identified that architects were not fully aware of the knowledge they had acquired because of the habits and perceptions of what constitutes as knowledge (Van der Linden et al., 2019). This was found to potentially hinder knowledge flow within internal architectural practice. They stated that knowledge could be supported by better understanding the complex reality of architectural practice through the dynamic mechanisms of people and materials. This evidenced the role collaborative thinking with their relationship networks, firm, stakeholders and broader architectural community (social constellation) played on the ways of thinking.

It is collaborative thinking which supports diversity of opinions, insights, and inputs which enabled the architect to better understand the overall context (Deutsch, 2020). This can be achieved by architects collaborating with other disciplines within the field that typically make up the project team (such as contractors, structural engineers, and consultants). This supported a collaborative process aimed towards the acquisition of a collective intelligence that enabled problem solving. Deutsch (2020) identified that architects collaborating with non-architects (such as user-clients) was also an essential component of collaborative thinking. This required architects to be

able to communicate effectively whilst portraying empathy to the user. This could be supported by putting themselves in other shoes in order to consider how the users would experience and use the environment (Deutsch, 2020).

By having the ability to be sincerely interested in others, empathise and actively listen, collaborative thinking for collective action can be successfully fostered. Bandura (2000) stated that an architect must master their ability to think critically, creatively and collaboratively in order to enhance their agency to act. Specifically, these ways of thinking have the potential to provide an architect with an advantage and ability to act as a differentiator within the industry (Deutsch, 2020).

#### **2.5.4 Review Summary**

This fourth review of literature evidenced the theme of 'Agency to Act' within existing research (see Figure 2.10). Within this discourse, emphasis was placed on three main sub-themes: 1.) Cognitive Influences, 2.) The Social Constellation, and 3.) Ways of Thinking (see Figure 2.13).

Van der Linden et al. (2016) identified that the social constellation of an architect plays a crucial role on their attainment of agency within practice. They also found that within practice, little was known about architects' specific ways of knowing about users. Crilly et al. (2008) found that cognitive flexibility influenced an individual's social responsibility to take action for the common good. Bandura (2006) identified that this socially embedded interplay relied upon an individual's agency and environmental influences. Specifically, they found that those who possessed proactive management and self-regulatory skills amplified this interplay. Till (2009) advocated that socially responsible actions, ethical duty and political practice can be supported by collective practice in architecture. Wigglesworth (2005) called for architects to be trained in critical thinking to ensure the exploration of alternative ways of working. Deutsch (2020) found that the ability to critically, creatively and collaboratively think provided an architect with an advantage to act. However, they

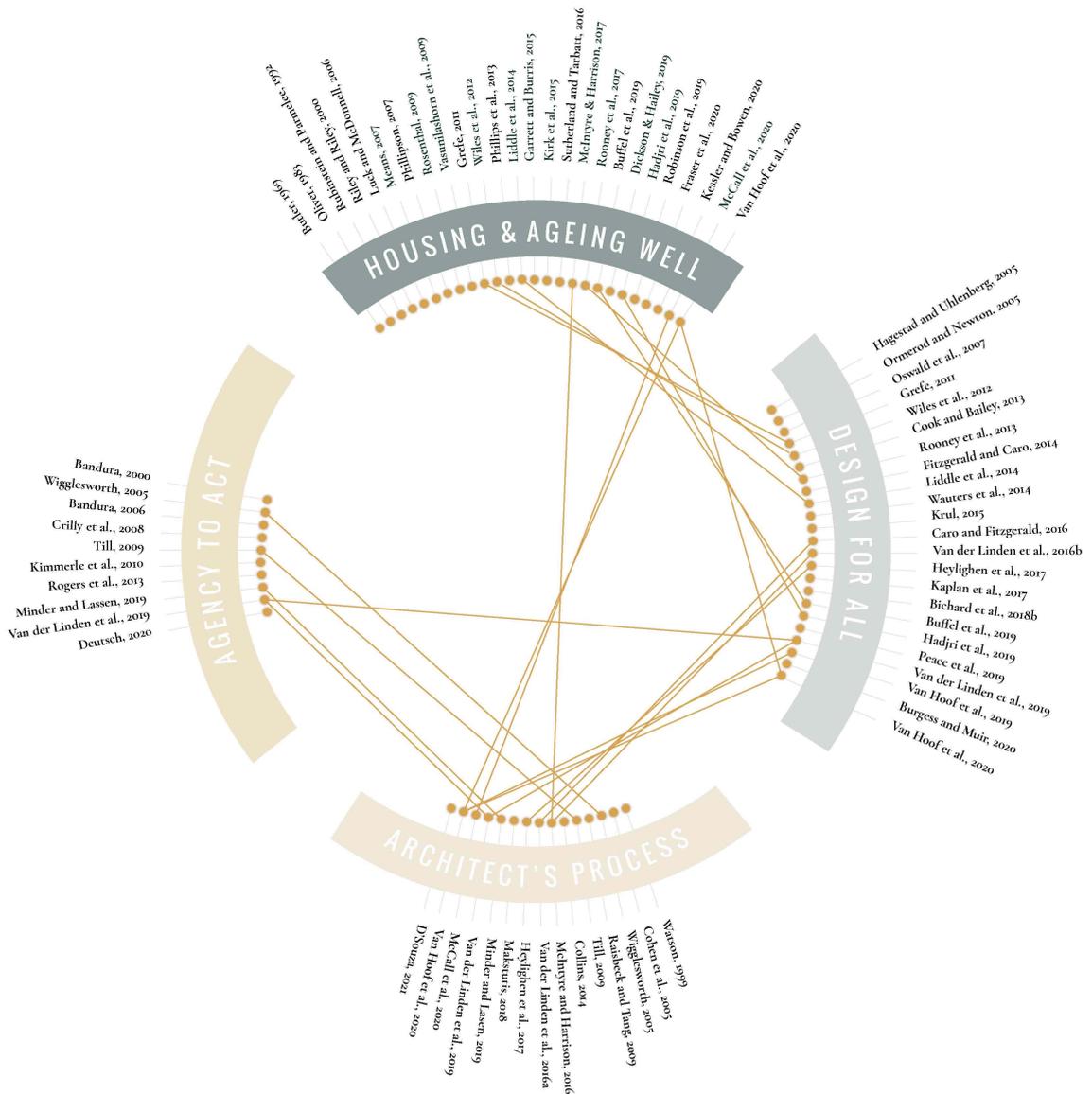
argued that to 'successfully' act, an architect must be sincerely interested, empathetic, and actively listen to better understand the context.



Figure 2.13 : Summary of findings from existing 'Agency to Act' discourse

## 2.6 Summary

The objective for this review of literature was to identify existing research and investigate the themes uncovered as most prevalent: 1.) Housing and Ageing Well, 2.) Design for All, 3.) The Architect's Process, and 4.) Agency to Act (see Figure 2.14).



**Figure 2.14 :** Summary of existing research that explores the themes of: 1.) Housing and Ageing Well, 2.) Design For All, 3.) The Architect's Process, and 4.) Agency to Act

Whilst this review of literature has presented the surrounding context and uncovered the most prevalent themes across existing research, it also provided insight into where gaps in knowledge currently exist. These gaps are visually evident within Figure 2.14 above, whereby the relevant themes of 'Housing and Ageing Well' and 'Design for All' have been investigated by more researchers when compared with 'Agency to Act' and 'The Architect's Process'. This recognises the need for an increase in research studies within these two latter themes within the specific context of creating supportive living environments for ageing. During this literature review, a number of call to arms and gaps of knowledge were identified which shined a light on the need for research studies within this context (see Figure 2.15).



Figure 2.15 : Identifying the gap in current knowledge

## CHAPTER 3:        METHODOLOGY

### 3.1    Overview

This chapter builds upon the existing evidence synthesised in the review chapter which identified a lack of contemporary inquiry into the specific experiences of the architect when creating supportive living environments for ageing. The chapter begins by describing the constructivist research philosophy that informed this research study which developed the conceptual framework implemented. Aligning with this philosophy, it introduces the Constructivist Grounded Theory (CGT) methodology adopted for accomplishing the overall research aim and objectives and to answer the research question — *‘how does agency and process of architects influence the design of supportive living environments for ageing?’*. It describes the inductive research design strategy that was followed by the researcher when carrying-out the fieldwork (which includes the challenges of moving from face-to-face interviews to remote online interviews as a result of the COVID-19 pandemic). Finally, this chapter outlines the purposeful sampling strategy adopted and discusses the interviewing method for data collection. In addition, how the data was collected through audio recordings and analysed twofold, with consideration to any ethical issues that arose as a result of this research.



## 3.2 Research Philosophy

The researcher spent a great deal of time reflecting upon their philosophical positioning when selecting the appropriate methodologies and approaches to use for this research study (see Appendix A). The researcher acknowledged that it would be misleading to assume that prior knowledge and experience engaging in architectural practice and research in the field of housing design and ageing did not play a role in the study's inception<sup>11</sup>. This supported Groat and Wang's (2002) view that 'pure objectivity' was impossible, particularly within the social-cultural settings whereby the researcher's background, gender and viewpoint influenced how research was viewed.

This research was grounded in exploring the architect's subjective understanding, as opposed to an objective way of knowing the context setting. Acknowledgement of the multiplicity of paradigm was crucial in order to understand how the ontological (belief about the nature of the social world) and epistemological (belief about how research proceeds and what counts as knowledge) informed assumptions, research structure and how research was organised to solve specific problems (Leavy, 2017). Hence, the study made reference to Morgan and Smircich's continuum of research paradigms (see Figure 3.1). To achieve this, the research sought to understand 'how' the architect perceived these subjective experiences within the context setting (Groat and Wang, 2002). This is what leads the generation of theory in this research and guides the researcher's ontological and epistemological positioning.

---

<sup>11</sup> The researcher has 7+ years working as an architectural practitioner in London and freelance across the UK, with the majority of the projects being within the residential sector.

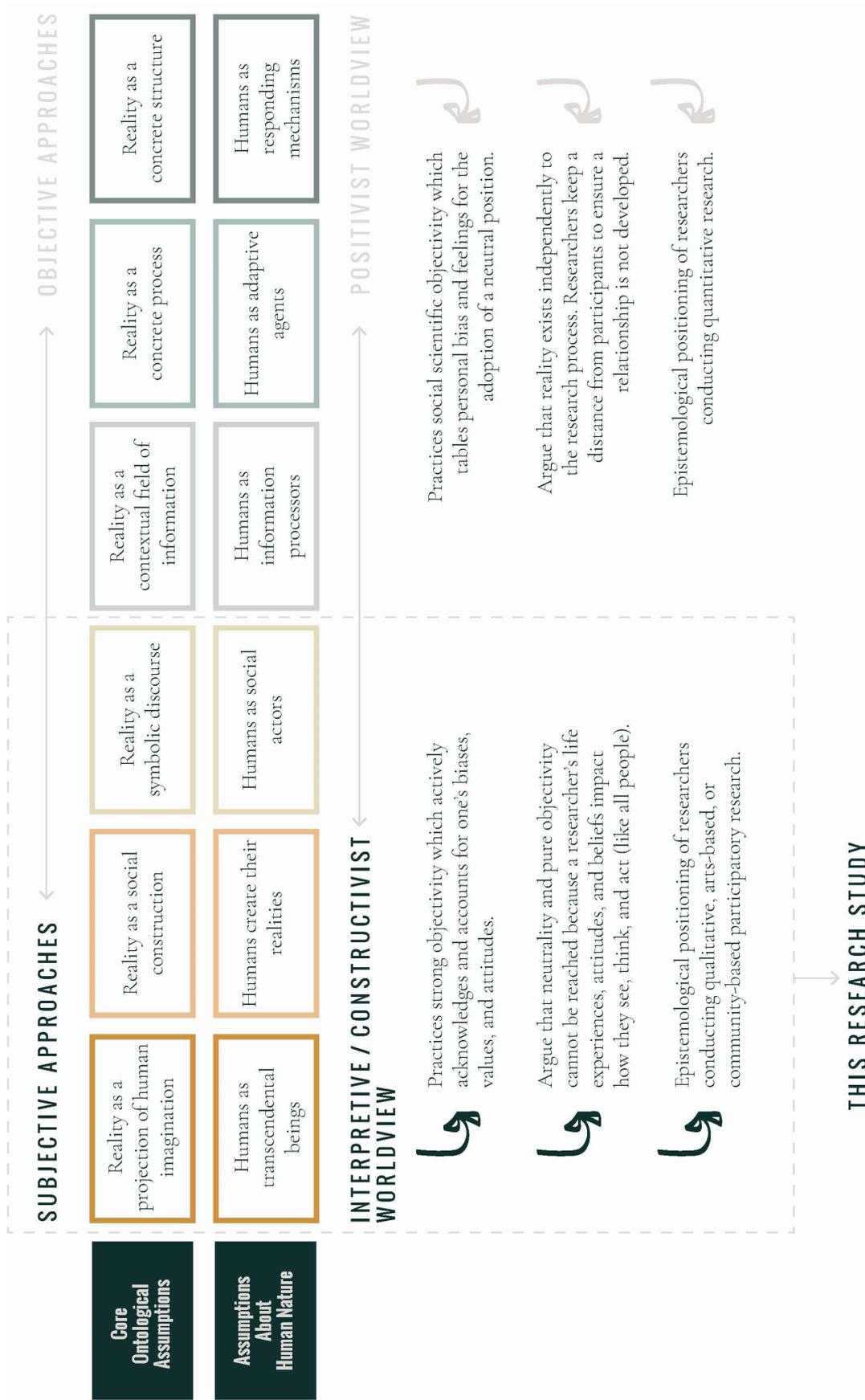


Figure 3.1: Morgan & Smircich's continuum of research paradigms reproduced (Groat and Wang, 2002)

As a result, this research was grounded in a constructivist ontology where the discovery and development of knowledge was constructed through reflecting upon the subjective interplay between interactions and interpretive processes of subject and object (Leavy, 2017). Guba and Lincoln (1985) stated that this interplay of 'investigator' and the 'object of investigation' were interactively linked which supported the creation of new knowledge as the investigation proceeded. Similarly, Bryman (2008) found that within social science research, the individual's organisation, culture, and background supported the active generation in creation. Hence, it was this constructivist belief system that underpinned this study.

Since the purpose of this research was to generate new knowledge, it focused on an under-explored topic in architecture. Specifically, this study aimed to theorise the architect's experiences and the influence of their agency and design process when creating supportive living environments for ageing. Therefore, it adopted an inductive research approach to generate new insights that could be theorised from the architect's perspective which were exploratory and richly descriptive in nature (Bryman, 2016). Robson and McCartan (2016) stated that this supported an accurate portrayal of the persons, personas, events or situations to understand the influences within the topic area.

To summarise, this research study aimed to gather in-depth qualitative data to explore agency and the design process through the architect's subjective experience of creating supportive living environments for ageing. The research question was naturally informed by existing knowledge and the researcher's previous architectural experience within the field of housing design. However, the inductive research approach, combined with the constructivist positioning of the researcher, supported this line of interactive inquiry within the context setting.

### **3.3 Research Approach and Research Design**

#### **3.3.1 Research Approach**

The research question — *‘how does agency and process of architects influence the design of supportive living environments for ageing?’*, coupled with the researcher’s ontological and epistemological position guided the selection of an appropriate research approach.

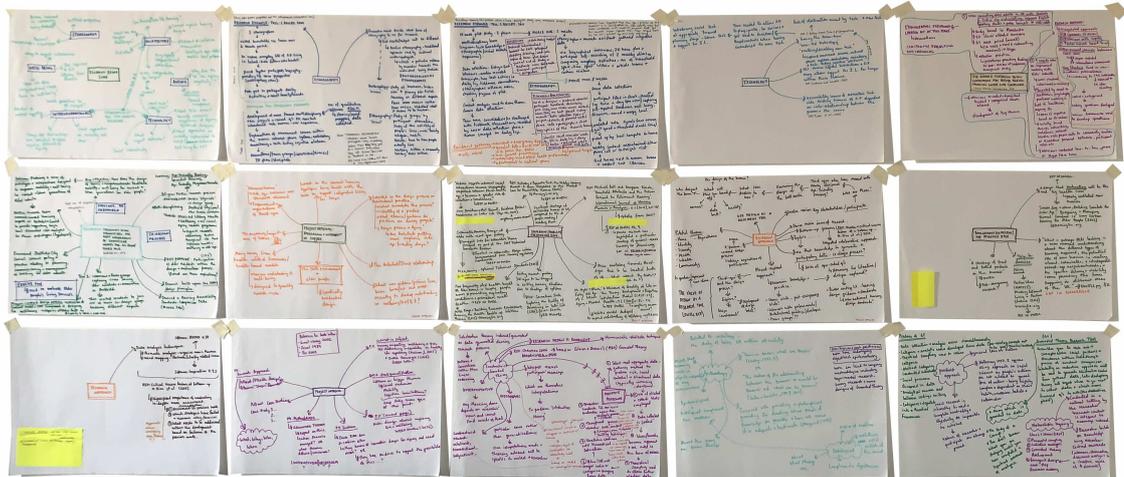
Whilst the study was framed within the discipline of architecture, the research objectives crossed into the disciplines of health and social care. The relationship between the philosophies of these three disciplines was crucial and the temptation to retreat into disciplinary ‘respective silos’ must be avoided (Housing LIN, 2018). In light of Nelson et al.’s (1992) assertion that qualitative research was an interdisciplinary, transdisciplinary, and sometimes counter-disciplinary field between humanities and the social and physical sciences, supported the case for using qualitative research methods.

In 1991, Cuff adopted a similar qualitative approach to her research which generated thick descriptions and analysis of architectural practice. This elicited insight into the everyday life of architects and the culture of architectural practice (Cuff, 1991). Whilst Groat and Wang (2002) argued that the design of Cuff’s study which examined the entirety of architectural practice and built form was commendable, the link to empirical reality of buildings prevented theoretical clarity within her discussion. Although this weakness was recognised, the qualitative approach adopted an interactive inquiry with the subject in order to create new knowledge through participants experiences.

Qualitative research is committed to understanding and describing human experience whilst exploring the multiple and diverse influences that shape experience (Robson and McCartan, 2016). This resonates with the aim of this research — to explore architect’s experiences of creating supportive living environments for ageing. The

approach also acknowledges and accepts the role of the researcher as part of the research outcome which aligns with the researcher’s philosophical positioning.

### 3.3.2 Research Design



**Figure 3.2:** Glimpses of the ‘guts’ of the methodology process

The conceptual framework within the research design was rigorously developed based on the topic under investigation and the purpose of this study (see Figure 3.2).

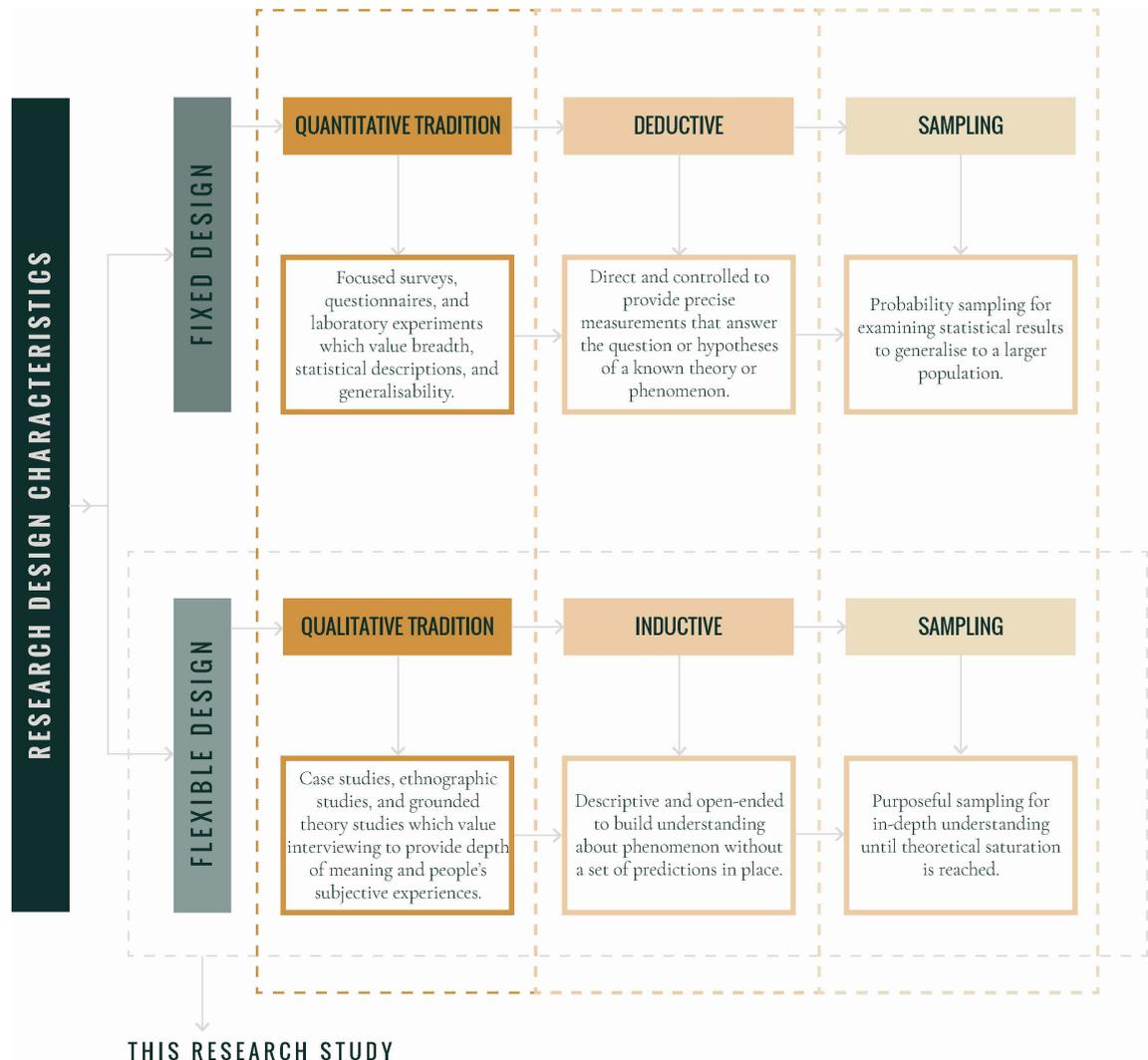
As Leavy (2017) stated:

*“I think of research design as building a structure or plan for your research. Just as architects work with many different general types of structure — single family homes, multi family homes, nonresidential buildings, and so forth — social researchers have five primary structures with which they work: quantitative, qualitative, mixed methods, arts-based, and community-based participatory.”*

*(Leavy, 2017, pg. vii)*

Similarly, this process developed the ‘structure’ for the research design framework which used an inductive approach to generate rich meaning and descriptive data towards understanding the central research question — ‘*how does agency and the design process of architects influence creating supportive living environments for ageing?*’. Interviews are deemed the most appropriate qualitative method for

generating thick descriptive data that would provide an in-depth understanding on the research topic (Robson and McCartan, 2016).



**Figure 3.3** : Flexible and fixed design characteristics adapted from Leavy (2017)

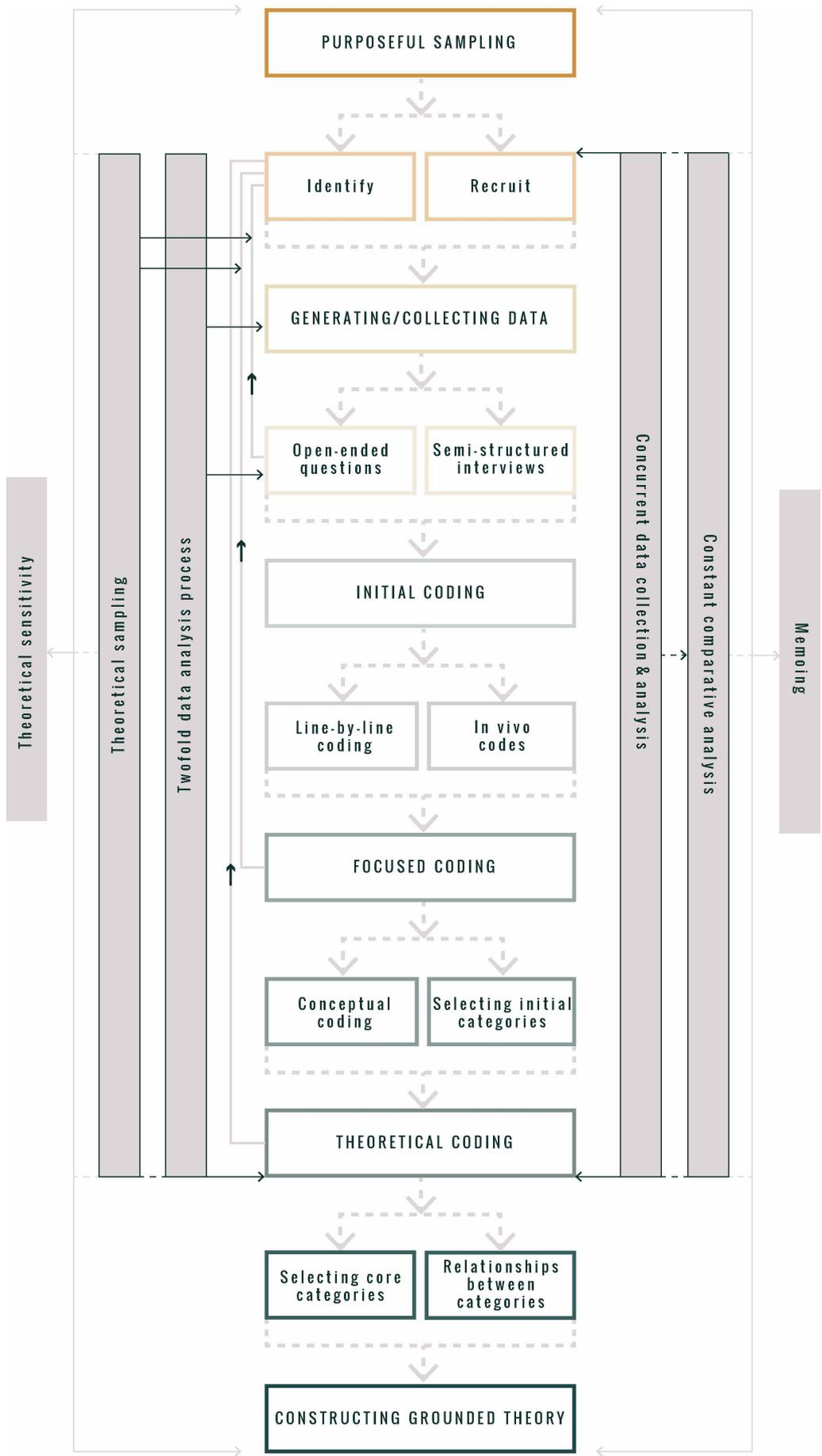
The researcher's philosophical viewpoint, professional experience working in architectural practice, ethical standpoint and practical skill set influenced the trajectory of the study towards a flexible design strategy, as opposed to fixed design (see Figure 3.3). The flexible design study enabled the research framework to be revisited, refined and modified throughout the study (Robson, 2016). During this stage, time was given towards ensuring an appropriate approach was selected to best address the research purpose and answer the research question.

To support a flexible and innovative study, whilst drawing upon the epistemological positioning, the research design followed a Constructivist Grounded Theory (CGT) framework. The principles of a flexible design strategy support CGT methods as it encourages theory to be developed through the constant modification of the study as data emerges (Robson and McCartan, 2016). Frequently, interview-based ‘tactics of enquiry’ are used within the flexible design of a Grounded Theory study (Ibid). By using this approach, rich descriptive and explorative data can be generated for the creation of new theory.

### **3.3.3 Grounded Theory**

As evidenced in the previous chapters, there is a substantial lack of theoretical enquiry into the perspective of architects creating supportive living environments for ageing. Therefore, the purpose of this architectural research was to generate new knowledge within this topic area. The central aim of Grounded Theory is to support the generation of novel knowledge from fieldwork carried out during a research study (Robson and McCartan, 2016). It is inductive in nature and allows the context setting to determine the data trajectory, rather than preset opinions or notions (Groat and Wang, 2002).

Within built environment research, Grounded Theory has become a popular methodology choice to implement (Sutrisna and Setiawan, 2016). Sutrisna and Setiawan (2016) stated that the data collection technique for Grounded Theory yields rich data and that the robustness of the data analysis process derives meaningful research findings. As a result, these rich and robust techniques (such as the iterative coding process as shown in Figure 3.4) of Grounded Theory enhanced the researcher’s rigour, validity and usefulness (Bollo and Collins, 2017).



**Figure 3.4 : Research Design Framework**

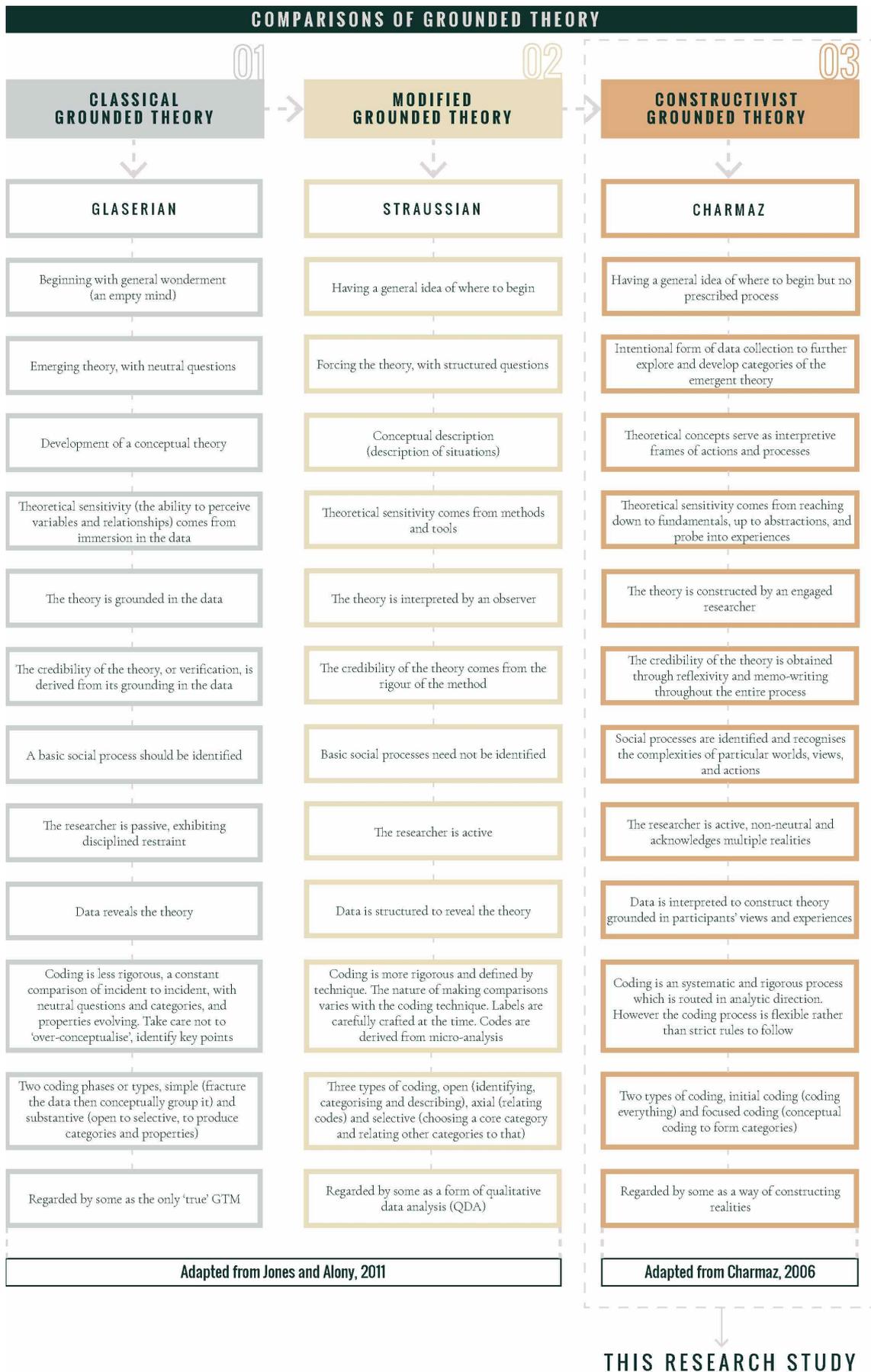
These techniques supported the continuous and consistent comparative analysis process of supporting, refuting and challenging the emerging links between theory and data to critically explore and validate new knowledge (Robson and McCartan, 2016). This systematic coding cycle provided a controlled process within this research study which led to a point of theoretical saturation in order to construct new understanding, meaningful insight and a practical guide to action (Ibid).

Given that this research study was grounded in a constructivist ontology (see Figure 3.1) whereby the development of knowledge was constructed through reflecting upon the subjective interplay between interactions and interpretive processes, a Constructivist interpretation of Grounded Theory (CGT) was adopted. This study aligned with Charmaz's view:

*"I assume that neither data nor theories are discovered. Rather, we are part of the world we study and the data we collect. We construct our grounded theories through our past and present involvements and interactions with people, perspectives, and research practices."*

*(Charmaz, 2006, pg. 10).*

Charmaz (2006) argued that this was based upon the multiple social realities and the mutual creation of knowledge between the researcher and participant. The use of CGT aims towards an interpretive understanding of human agency, emergent processes, social and subjective meanings, problem-solving practices, and actions (Charmaz, 2015). This is as opposed to the 'scientific observer' approach of Glaserian version (true reality) which viewed the discovery of theory as an emerging process that was separated from the researcher (see Figure 3.5). Where an interpretive perspective of the studied context was adopted, a 'shared reality' was constructed through dynamic discourse between the researcher and the participant's subjective experiences (Charmaz, 2006). Therefore, the role of researcher in such research is to understand this interplay between interactions and interpretive processes of subject and object.



**Figure 3.5 : Comparisons of Grounded Theory**

In 2015, Conlon et al. conducted a CGT research study comprising of the interview method which provided access to participants experiences, views and attitudes of intergenerational solidarity. Whilst this method was debated by Grounded Theorists (see Figure 3.5), Conlon et al. (2015) stated that the constructivist approach that underpinned this interview method enhanced the construction of theory through eliciting 'enriched' interpretation and exploration of data. In addition, this constructivist approach was acknowledged to support the role of reflexivity in the research process. Specifically, Conlon et al. (2015) co-constructed data and knowledge as a research team which abstracted conceptual understandings through ongoing discussions and referring to written memos for interpretations. They found that this reflective process supported an interconnected movement between the individual and team levels in order to construct theory. Thus, the iterative nature of this method and the role of reflexivity on the emergent interpretations and team interrogation yielded an 'open' yet rigorous approach to CGT.

Drawing on the success of Conlon et al.'s (2015) reflective process in their CGT study, this study implemented a similar strategy. Whilst this research was carried out, data analysed and memos written by a lone researcher (as opposed to a fully integrated research team), it conducted a similar process of reflexivity on the emergent interpretations of the data with two additional Grounded Theory researchers. Likewise to Conlon et al.'s (2015) study, it involved ongoing discussions with reference to written memos and individual interpretations of the emerging theoretical discoveries throughout the entirety of the data analysis phase. A codebook was referred to in order to support the three researchers coding the findings in order to scrutinise individual subjective interpretations. This openness and nuances of interpretation addressed transparency within this research study which promoted trustworthiness and reduced bias (Charmaz, 2006).

To summarise, the nature of a flexible design strategy (see Figure 3.4), coupled with the CGT research framework, support the iterative process as evidenced in Figure 3.5. This approach was appropriate for this study as it allowed a holistic discussion to

develop whilst keeping the dynamic discourse within the research parameters (Sutrisna and Setiawan, 2016). It advocated and encouraged the reframing of questions to provide a greater insight, confirmation or refusal of emergent theory in order to arrive at a deeper, and more complete understanding of the context setting (Charmaz, 2006). This is in contrast to quantitative research which requires a consistent design strategy to achieve external validity (see Figure 3.3). In addition, the CGT research framework improved the trust, reduced bias and transparency of this qualitative study.

### **3.4 Geographical Location**

The selection of a particular geographical location was acknowledged as a means of potential bias which may occur by selecting easily accessible or favoured locations (Salkind, 2010). Yet, the rationale behind using the geographical specificity of the North East was to facilitate the discovery of new knowledge, by using an extreme and atypical geographical setting (Seawright, 2016). The North East was an extreme context because the population of middle-aged was decreasing whilst older-aged was set to double which had potential implications for provision of care (GovUK, 2014), it was unattractive to private developers due to the low house prices (Robinson et al., 2019), and had one of the highest income deprivations (ONS, 2021).

Hence, the provision of housing for ageing remained 'very patchy' in the North East of England (Park and Porteus, 2018). In addition, Park and Porteus' publication further highlighted the 'typical' focus of understanding within the South of England. Robson and McCartan (2016) argued that using 'the extreme and the unique' as the setting for a study provided a valuable testbed which facilitated a deeper understanding of the challenges that might be discovered in more 'typical' contexts.

By recognising the positives of making use of atypical and extreme locations (such as the North East), a study's trustworthiness, usefulness and transferability of knowledge is strengthened and validated. Kvale and Brinkmann (2009) argued that

this provides the verification of knowledge to support the contextualisation of understanding in the real world. This aligned with the CGT methodological approach of this study and the epistemological positioning of the researcher. Whilst the geographical location helped to represent a diverse context setting to recruit from, this study developed a selection criteria to guide the purposeful sampling process.

### **3.5 Sampling**

This research adopted a non-probability sampling strategy (purposeful sample to a specific context setting), as opposed to a probabilistic sampling strategy (random sample to provide an equal chance of participation). This qualitative study was concerned with the transferability of thick description of creating supportive living environments for ageing (Groat and Wang, 2002).

#### **3.5.1 Sample Strategy**

In line with the research objectives, this study adopts a purposeful sampling (commonly used amongst qualitative researchers) in order to identify and recruit individuals relevant to the context setting (Bryman, 2016). It provides the researcher with the opportunity to actively 'seeking out' and 'choose' the 'best cases' to generate the 'best data' in order to produce conceptual categories that formulate theory (Robson, 2016; Leavy, 2017). This strategy enabled the researcher to control some variables whilst sampling for others to offer explanatory insight into the research question posed (Bryman, 2016).

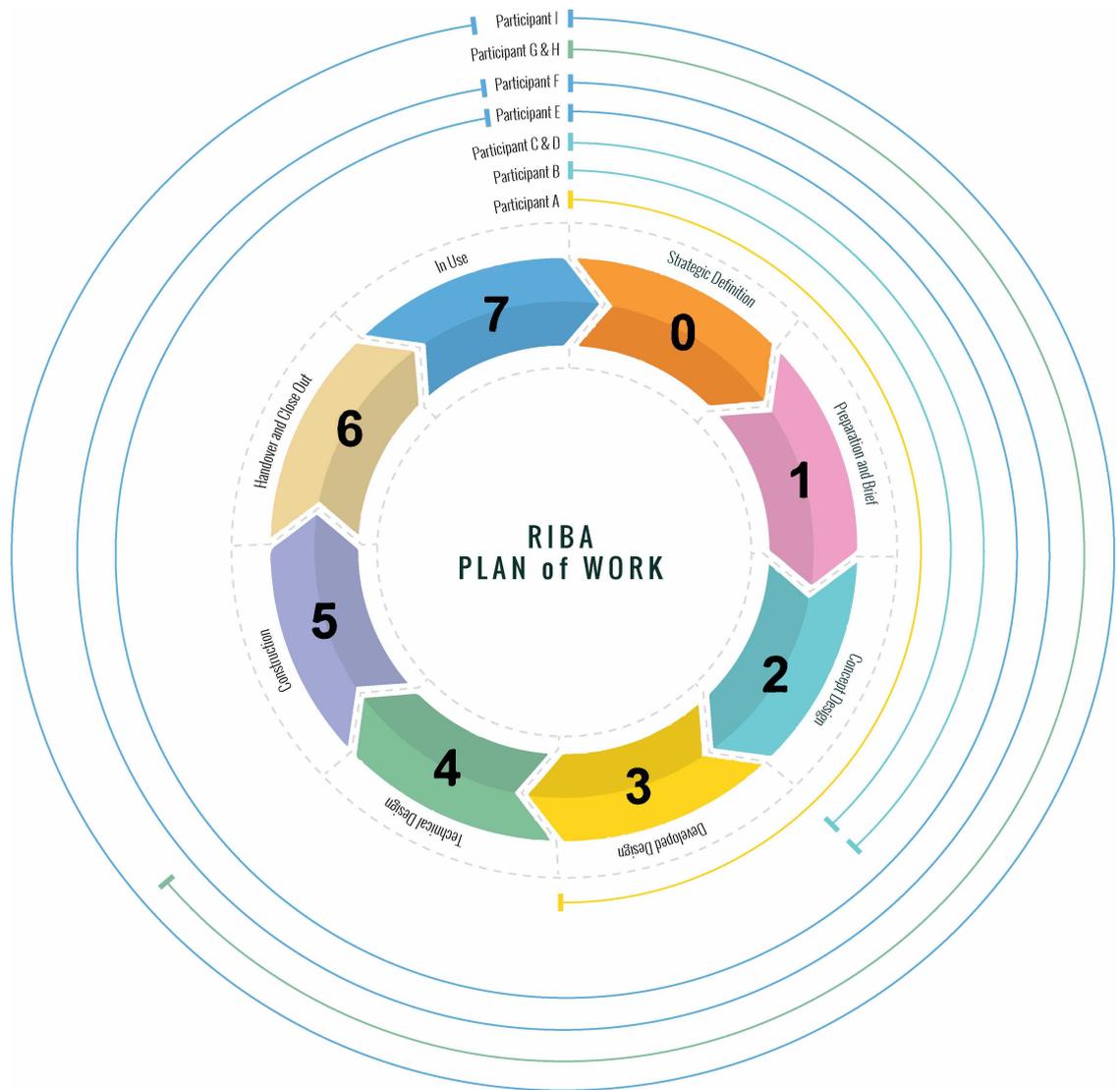
The first stage of the sampling process was to determine the units of analysis and population within the study. Leavy (2017) stated that this could be a person, group, or non-living item that made up the population. Given that the study was specifically interested in the architect's subjective experiences of designing supportive living environments for ageing, individual architects designing supportive living environments for ageing were the units. The population that the study made claims about was therefore architects who worked in a 'standard' architectural practice (big or small) who had experience in designing supportive living environments for ageing.

This was a professional practice made up of professionally-qualified architects who met the standards for conduct through complying with requirements of their professional body (ARB) when providing architectural services (such as design and construction of buildings) to clients. Once this was identified, time was given to determine the sampling size within this population.

Methodologically, the sampling size arose from the flexible and adaptable research approach for this study. Bryman (2016) stated that there were discrepancies between qualitative researchers with regard to the amount of interviewees necessary to answer the research question. However, in line with the study's Grounded Theory framework, the sample size was not predetermined and instead, an 'open-ended' approach was determined. An open-ended sample size supported the Grounded Theory approach of movement 'back and forth' between fieldwork and data analysis until theoretical saturation was reached (Robson, 2016). Thus, supporting the purpose of this qualitative study — to generate new insight into the under-explored topic of architect's subjective experiences of creating supportive living environments for ageing. Whilst new insight might be constructed, the generation of theory was not reliable nor complete until theoretical saturation was reached. Charmaz (2006) explained that this procedure required the researcher to carry on sampling until the discovered categories (a unit of information) and their properties became saturated. This was supported by Kvale and Brinkmann (2008) who suggested interviewing as many subjects as necessary in order to achieve theoretical saturation.

Theoretical saturation was reached when the discovered categories provided no new relevant data. At this point, well developed sub-themes demonstrated variation, were well established and validated the interrelationships between categories (Strauss and Corbin, 1998). To support validity, this study conducted a constant comparative method (as evidenced in Figure 3.4) within the data analysis and was repeated to achieve theoretical saturation. Limitations of this theoretical 'systematic' process have been identified as complicated and time consuming, however these limitations were what enabled a comprehensive level of theoretical saturation (Charmaz, 2006).

In line with the purposive sampling strategy and in order to gain an holistic understanding, architects were recruited with experience in creating supportive living environments for ageing across the RIBA Plan of Work 2020 (see Figure 3.6). This supported the retrieval of varied perspectives and multiple diverse experiences from the outset (Miles and Huberman, 1994).



**Figure 3.6 :** Alignment of participants' experience to the RIBA Plan of Work stages

Whilst a purposeful sampling strategy supported the identification and recruitment of architects, the North East of England was used as a recruitment frame.

### 3.5.2 Selection Criteria

Carefully defined selection criteria is important for purposive sampling in order to ensure that the most appropriate participants are recruited through an inclusion and exclusion criteria to provide the most relevant information to guide the inquiry of the study (Leavy, 2017). Inclusion criteria helps to support good validity and reliability through minimising random error and selection bias (Salkind, 2010; Robson and McCartan, 2016). By establishing a set of predefined characteristics (variables) for inclusion, the researcher was able to narrow down the subject focus rather than unnecessarily including the entirety of architectural profession and built form. Specifically, focusing on understanding how agency and the design process of architects influences the context of supportive living environments for ageing.

In 1997, Groat and Ahrentzen adopted an open-ended interview approach in their study with architectural practitioners. This elicited the accounts of women's professional careers and their experiences of discrimination or encouragement within the field. Interestingly, they used a stratified sample frame that incorporated a selection criteria in order to maximise a variation of perspectives for greater representation. They stated:

*“Our sample is heavily weighted to tenured women...Yet these are precisely the women who are most likely to exert influence...Their perspectives merit serious consideration.”*

*(Groat and Ahrentzen, 1997, pg. 273).*

Groat and Ahrentzen (1997) argued that greater impact can be achieved through sampling particular groups rather than all groups and as a result, exert greater influence within the subject field. Drawing on the success of Groat and Ahrentzen's (1997) study, and guided by the purpose of this research, this study conducted in-depth, semi-structured interviews with participants who met the inclusion criteria relevant to the topic of creating supportive living environments for ageing.

Three inclusion characteristics were identified as important to this research study: 1.) located in the North East; 2.) award-winning practice; and 3.) experience of designing supportive living environments for ageing. As previously discussed, the geographical location of the North East was identified to support the generation of new knowledge using an extreme and atypical context. In addition, the inclusion of practices that had won architectural awards (be it regional, national, international awards) ensured that these practices were active in establishing best practice within industry. Lastly, it was important that the insights provided by architects were those who had specific experience working in designing supportive living environments for ageing.

Controlling for these specific variables, enabled the researcher to identify which architects were most appropriate, successful and knowledgeable within the remit of housing design for ageing (see Appendix B). Compliance with this criteria was ascertained through in-depth investigation of potential participants architectural practice websites. The application of these criteria aimed to address the research objectives and reduce bias within the sampling strategy.

This study reduced bias when selecting relevant participants by utilising the Architects Registration Board platform to identify all architectural practices within the North East (ARB, 2020). Of these 175 architectural practices in the North East, 153 practices were eliminated from the recruitment pool as they did not satisfy all three of the inclusion characteristics (see Figure 3.7). This narrowed down 22 architectural practices that were relevant to this research study.

For the sample to be representative of this cohort whilst also following the Grounded Theory approach to purposeful sampling, the researcher carried out a desktop study. This provided the study with an initial sample of participants working in varied sizes of practices that had experience working at varied stages of the RIBA Plan of Work Stages (see Figure 3.6). The analysis of this initial emergent data guided the selection process of further participants from the recruitment pool to support theory development.



**Figure 3.7 :** Sampling strategy

### 3.5.3 Recruiting during the Covid-19 pandemic

Whilst the sampling strategy was thoroughly developed with a clear selection criteria put in place, the unforeseen circumstances of the COVID-19 pandemic had a significant impact on the recruitment process. For example, only two out of the seven practices that were contacted during the first wave of the COVID-19 pandemic were interviewed, where previously, prior to the COVID-19 pandemic, recruitment response rates were at 100%. Interestingly, the six practices that did not respond were contacted during the height of the COVID-19 pandemic — when dealing with various difficulties including work-life balance, or being furloughed may have impacted upon response rates. As a result of this, the decision was made to pause further recruiting until the peak of the COVID-19 pandemic had passed. During this time the researcher attended researcher development training webinars that specifically focused on remote online interviews during the COVID-19 pandemic (Lupton, 2020).

Overall, seven practices (nine participants) were successfully recruited over the duration of this study. All seven practices were identified through the recruitment pool as meeting the selection selection criteria.

### **3.6 Semi-structured Interviews**

Interviewing was used as the primary qualitative method for data collection during this research study in order to answer the research question — *'how does agency and process of architects influence the design of supportive living environments for ageing?'.* This method supports the investigation of meaning, knowledge, and participant experiences in order to uncover 'reality' of the social world and support the contextualisation of theory (Robson and McCartan, 2016). It holds narrative and storytelling in high regard, and therefore uses conversation as a learning tool (Leavy, 2017).

As a consequence, interviews were deemed the most appropriate qualitative method for generating thick descriptive data to provide an in-depth understanding on the research topic (Robson and McCartan, 2016). Furthermore, this study adopted an interactive inquiry based on an interplay between the researcher and the researched in order to generate new theory (Groat and Wang, 2002).

The inductive research approach, designed to understand the subjective experiences of architects supported the modification of inquiry and investigation of responses as the study progressed. Therefore, it was associated with flexible design strategies as shown in Figure 3.3 (Robson and McCartan, 2016). The interplay between discovery and development resonated with the constructivist positioning of the researcher and the CGT methodological approach of this study (see Figure 3.5).

In addition, this study made reference to Kvale and Brinkmann's (2008) 'ten principles of a good interview' (see Figure 3.8). These principles provided a criteria for evaluating each interview session, the open-ended questions and the

researcher's interviewing technique. This provided a continuous process of improvement to strengthen the consecutive interviews within this research study.



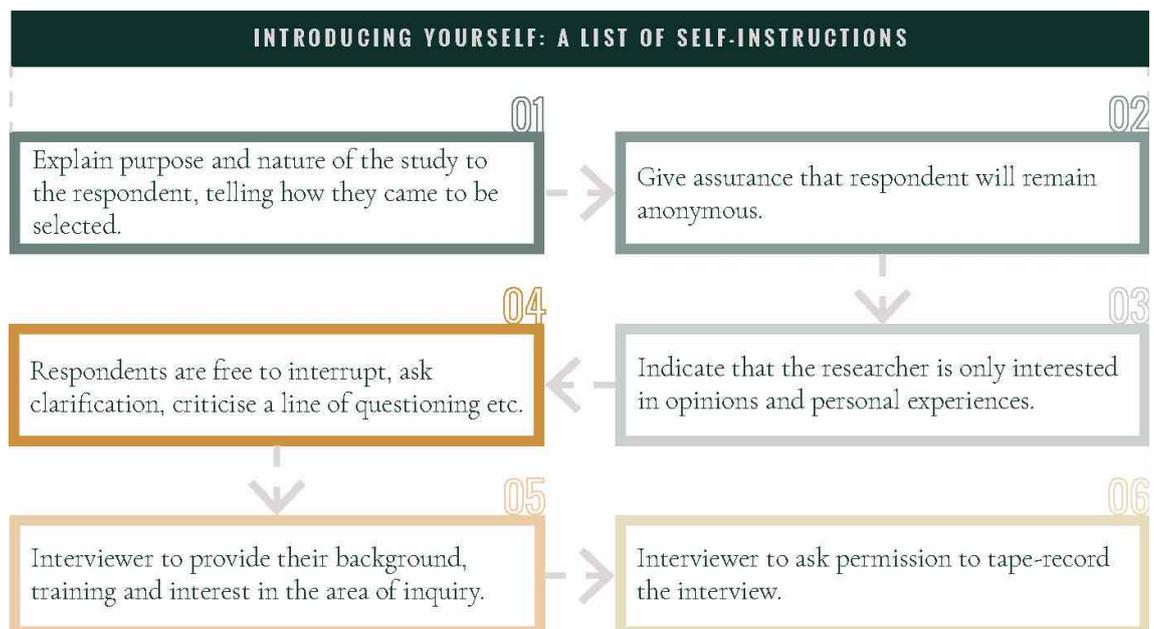
**Figure 3.8 :** Ten principles of a good interview (Kvale and Brinkmann, 2008)

### 3.6.1 Open-ended Questions

Whilst the interviews were flexible and iterative, careful preparation of open-ended questions and their sequence supported the elicitation of architects' subjective experiences relevant to research question — *'how does agency and process of architects influence the design of supportive living environments for ageing?'*. These open-ended questions were structured into categories identified during the review of existing literature (see Appendix C). These categories included:

architectural background, the architect's process, agency to act, and designing supportive housing for ageing. As a consequence, this supported interviews to be free and open in-depth discussions that provided 'rich and highly illuminating material' whilst providing structure in order to answer the research question posed (Robson and McCartan, 2016). In addition, the openness of these discussions helped to establish participant cooperation during the fieldwork. For example, the initial category — the architect's background, provided easy questions for nuanced discussions around the architect's daily practice which were easy to answer in order to 'warm up' the participants and to build up rapport (Leavy, 2017).

Building a rapport is a key advantage of open-ended questions in interviews (Robson and McCartan, 2016). Leavy (2017) added that building a rapport amplifies the success of interviews and can be supported through strategies of engagement. This study initiated informal conversation to engage the participants prior to commencing the prepared inquiry. More specifically, the researcher followed Robson and McCartan's (2016) 'Introducing yourself: a list of self-instructions' when introducing themselves and explaining the nature of this research study (see Figure 3.9).



**Figure 3.9 :** Introducing yourself: a list of self-instructions (Robson and McCartan, 2016)

During the semi-structured interviews, strategies were used by the researcher in order to build a rapport with the participants. These included: active and patient listening, gesturing and probing participant responses (Kvale and Brinkmann, 2009). Kvale and Brinkmann (2009) stated that the 'craft of research interviewing' harnessed these rapport strategies and as a result, develops the quality of subject knowledge. It is important to note, the researcher's awareness of face-to-face interviews for building a rapport (Leavy, 2017). However, whilst this was initiated for the first couple of interviews, it was no longer possible during the COVID-19 pandemic.

### **3.6.2 Interviewing during the Covid-19 pandemic**

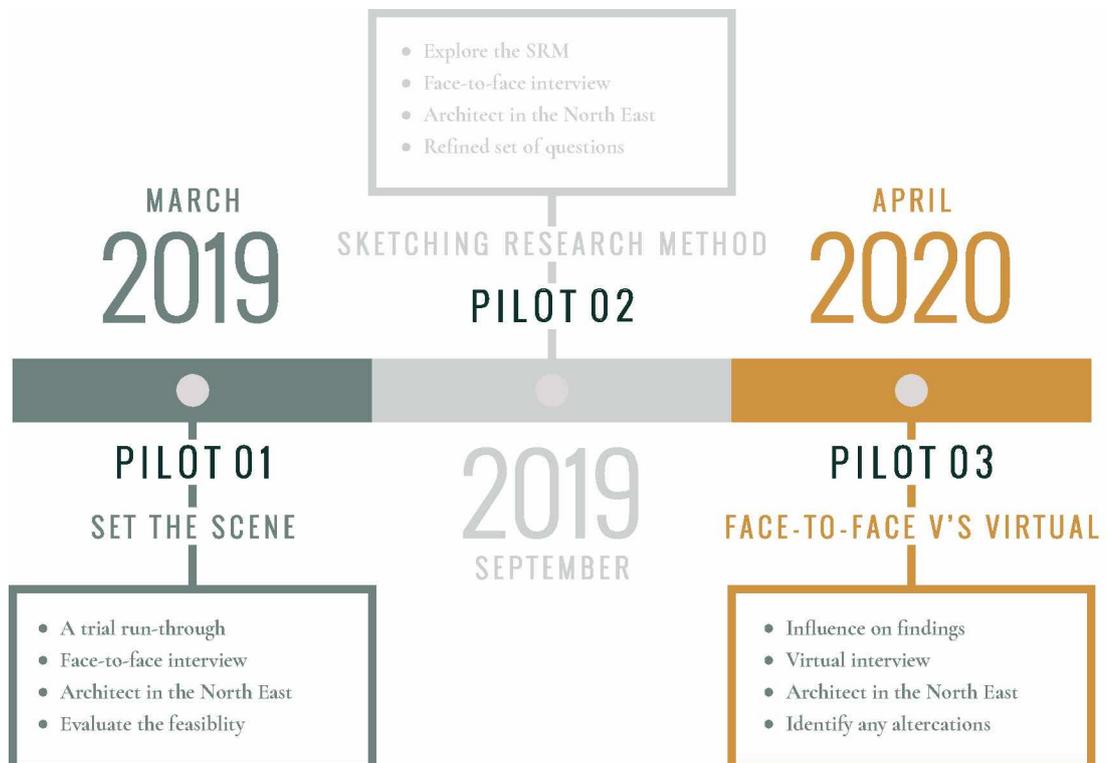
Whilst the first two interviews were conducted face-to-face, the following five interviews had to be reformatted to remote online interviews due to the COVID-19 pandemic. This prevented the researcher from observing the participants place of work which would have acted as another form of gathering contextual information (Robson and McCartan, 2016). Whilst this reduced the opportunity to observe the architectural practice setting, the remote online interviews did not appear to influence a change in participant responses.

This was tested in a remote online pilot study, which was analysed and cross-examined against the previous face-to-face interview data. This process identified that there would be little impact or change to participant responses by moving to remote online interviews. Specifically, that verbal communication which was based upon spoken time and lexical content was not hindered (Rasipuram et al., 2016). In fact, Rasipuram et al.'s (2016) study found that increased enthusiasm was noted in remote online interviews. Whilst this was a positive finding, it was noted that remote online interviews did reduce the ability of spontaneity of drawn information. This was significant within the context of architectural practice as it is commonplace for architects to think through freehand drawing in order to 'translate thought' (Deutsch, 2020). The lack of serendipitous discovery reduced the possibility for these unknown moments to present themselves and thus, was highlighted as a limitation to this research study.

### 3.6.3 Pilot Studies

The pilot studies enabled the researcher to establish an overall protocol for addressing the research aim and objectives. They also identified any potential problems with converting the research design into reality (Robson and McCartan, 2016). This provided the groundwork to ensure that a successful interviewing and data analysis process was achieved.

Three pilot studies were conducted at various points during this research study (see Figure 3.10). The first pilot study was undertaken to set the subject scene and provide a trial run-through of the data collection and analysis process. This face-to-face pilot study took place in the North East of England at the participant's architectural practice. This enabled the researcher to evaluate the feasibility, time, cost, adverse events, and improve upon the study design prior to performing the full-scale research project.



**Figure 3.10 :** Timeline identifying when pilot studies were conducted and why

In addition, the second face-to-face pilot study was undertaken to explore the potential successes of the researcher using the developed sketching research method (SRM) as a secondary form of data analysis. This involved conducting a new interview with reference to a refined set of semi-structured questions to guide a more focused inquiry which was later analysed using the SRM.

Lastly, the third remote online pilot study was initiated as a result of the COVID-19 pandemic and investigated whether moving from face-to-face to remote online interviews would influence the participants answers to the questions. The data was analysed and cross-examined against the previous interviews to identify any potential alterations. All three participants (architects) were purposefully selected who were not used during the main research study to prevent potential bias. These participants were representative enough to be used for the purpose of each pilot study yet, were not appropriate for the main sample as they did not fully meet the selection criteria.

For instance, the participants recruited for the first and third pilot study had experience of designing supportive living environments for ageing, however, did not work in an award-winning practice. In addition, the second participant recruited worked in an award-winning practice, however, they did not have experience of designing supportive living environments for ageing. In this instance, the purpose of the pilot study was to understand the sketching research method, as opposed to the experience of creating supportive living environments for ageing.

#### **3.6.4 Limitations of Selected Interview Method**

The lack of potential standardisation or generalisation of findings was highlighted as a potential limitation of the interview method (Robson and McCartan, 2016). However, whilst this study adopted the interviewing method, it conducted these interviews within an extreme and atypical context of the North East. This geographical location provided a valuable testbed that facilitated deeper understanding into the challenges that might be discovered in a more 'typical' context, such as the South of England (Robson and McCartan, 2016). This

strengthened and validated the trustworthiness, usefulness and transferability of the findings that were generated during the interviews (Kvale and Brinkmann, 2009).

### **3.7 Carrying Out The Fieldwork**

#### **3.7.1 Research Setting**

The setting was determined by the research design and methodology chosen in order to answer the research question posed. Given that this exploratory and richly descriptive study aimed to explore the experiences of architects creating supportive living environments for ageing, it was most appropriate for the interviews to be conducted in the architect's natural setting of architectural practice (prior to the COVID-19 pandemic). This meant that the architects were not removed from the environments that surrounded their everyday working practice (Groat and Wang, 2002). Interviewing in a participants natural setting ensured that the data was embedded in the context being studied. Cuff (1991, pg.113) asserted:

*“The more we examine the architect’s world the more logical it seems, the better we become at guessing what an architect might do in certain circumstances, and concurrently, the more architecture appears to distinguish itself from any other profession or art.”*

*(Cuff, 1991, pg.113).*

The researcher conducted the fieldwork in the natural setting of architectural practice to enhance understanding of the ‘culture’ (that is, working towards a common goal and significance of their actions) within architectural practice (Cuff, 1991). It was through this research setting (prior to the COVID-19 pandemic) whereby the researcher had the opportunity to informally observe participating architects in their working environment.

### **3.7.2 Fieldwork Process**

Interview times ranged from 45-80 minutes in length. This fell within the parameters discussed by Robson and McCartan (2016) who stated that interview sessions which lasted less than half an hour were unlikely to be valuable, whilst over an hour, may be unreasonable to busy interviewees. Overall, a total of 8 hours and 45 minutes was spent interviewing the nine participants.

Following these interviews, the researcher had a debriefing session with the research supervisors. By reflecting on the fieldwork process, any difficulties encountered (such as the phrasing of a particular question) were identified and altered where relevant to the emergent data. This period enabled the supervisors to stay up-to-date with the developing fieldwork, whilst it also provided the researcher with enhanced support to help guide the consecutive fieldwork. In addition, the researcher allocated sufficient time for writing up the transcripts (see Appendix D). In line with this study's Grounded Theory methodology, the researcher provided themselves with a period of time after each interview session for memo writing.

### **3.7.3 Memo Writing**

Within the social sciences, memoing is a well-established research strategy that is used to capture ideas, views and intuitions at all stages of a research study (Robson and McCartan, 2016). This was a crucial method within this Grounded Theory study as it 'prompted' the researcher to analyse the emerging data and code early in the research process in order to elaborate on the tentative categories, properties and relationships that were identified (Charmaz, 2006). The researcher ensured that successive memo writing was carried out throughout the fieldwork process to ensure ongoing analytic note-taking, reflectivity and a greater level of theoretical abstraction was achieved (see Figure 3.11).

This research study used memo-writing to encourage heterogeneous and spontaneous thinking and was not used as a mechanical formal procedure. The researcher's memo-writing ranged from the development of insights, analysis and

meaning-making of emergent data to personal thoughts surrounding the subject (such as by reading publications, attending events, and current news). Corbin and Strauss (1990) stated that ‘different types’ of memo writing help to fuel the overall analysis process and enhance scrutiny at a later stage. Robson and McCartan (2016) noted that by the researcher recording their responses, scrutiny can be amplified through identifying possible ‘contaminating’ effects on the research. This strategy supported the CGT methodological framework of this research study and the necessary reflective process of the researcher.



**Figure 3.11 :** Ongoing engagement with analytic note-taking and reflectivity of the developing insights, analysis and meaning-making of the emerging data.

To support this strategy, the researcher established a chronological ‘memo bank’ to provide a full record of all the varied memos written across the duration of the research study (see Appendix E). This provided the researcher with an efficient way to retrieve a specific memo and easily refer back to previous ideas and questions that came up at an earlier stage of the study. In addition, the written memos were referred

to when conducting the reflective process carried out with two additional Grounded Theory researchers which supported the understanding of interpretations of emerging theory and the development of the final categories.

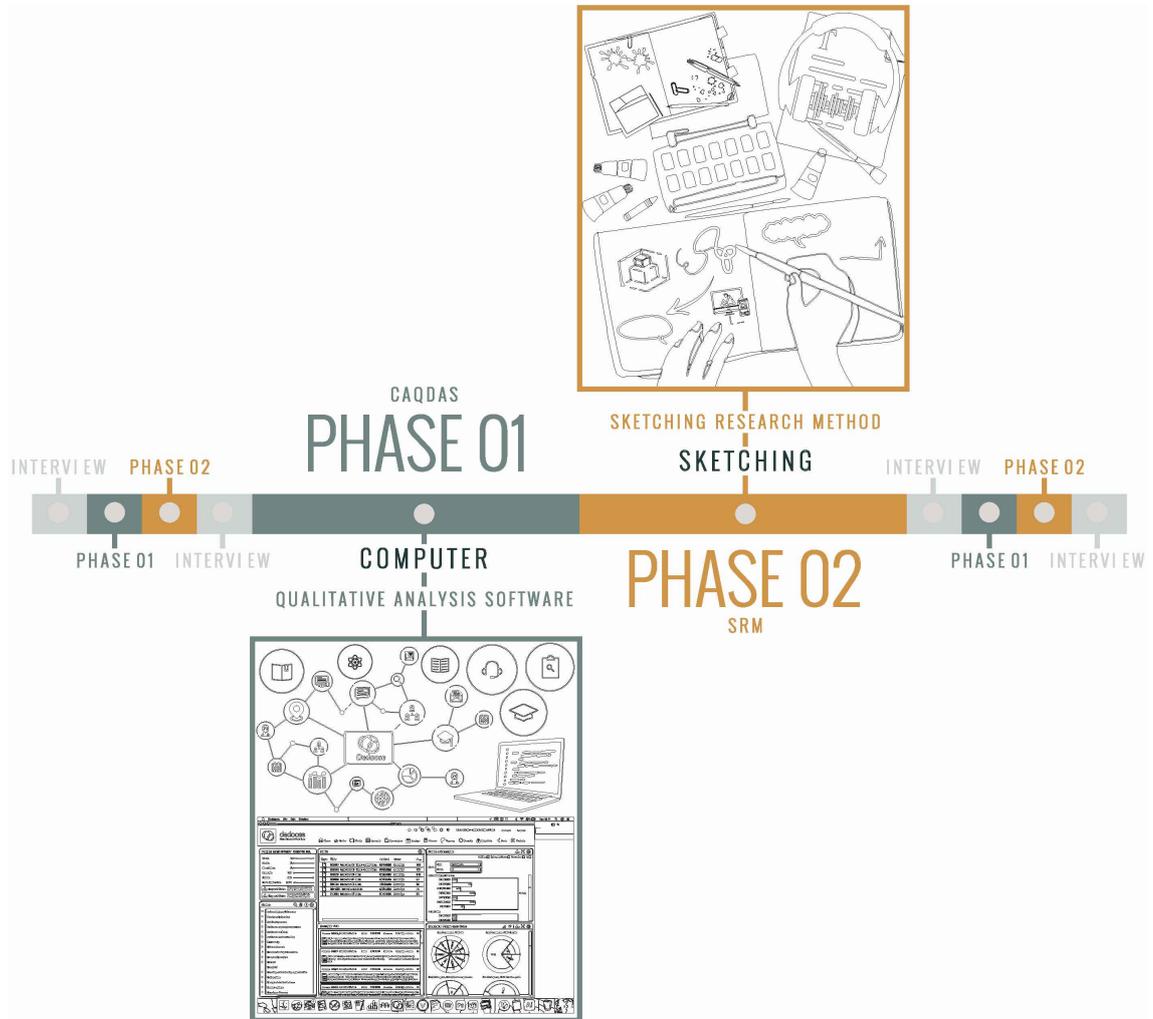
#### **3.7.4 Fieldwork during the Covid-19 pandemic**

Whilst face-to-face fieldwork was initially carried out at the start of the data collection phase, this was no longer possible during the COVID-19 pandemic (see Appendix F). The research setting became remote, using the online video-conferencing software Zoom to conduct the interviews. A down-fall of the move to remote online fieldwork was that there was a loss of rapport and non-verbal communication which had otherwise been generated during the face-to-face interviews. It is important to note, that whilst this hindered the researcher's experience of conducting the fieldwork and the retrieval of spontaneous drawn information, it did not influence the ability to communicate verbally to acquire data for data analysis (Rasipuram et al., 2016).

### **3.8 Data Analysis**

This study used a twofold analytical process (see Figure 3.12) which comprised of firstly, a more traditional text-based coding and analysis that was supported by the computer-assisted qualitative data analysis software (CAQDAS) Dedoose. Secondly, this was complemented by the sketching research method (SRM) which was a visual phase two method of analysis.

Aligning with the CGT methodological framework of this research study (see Figure 3.4), the more traditional text-based data analysis followed a constant comparative coding-cycle that was iterative and flexible in order to understand the concepts that were emerging from the data (Charmaz, 2006). This ensured that the researcher had control over the direction of data recorded, transcribed and later analysed, in order to purposefully answer the research question — *'How does agency and process of architects influence the design of supportive living environments for ageing?'*.



**Figure 3.12 :** Twofold data analysis process comprising of CAQDAS and SRM.

The visual method of SRM did not seek to replace the traditional method of CAQDAS, but aimed to enhance the analysis process through an assemblage of book-end approaches (text analytics and visual analytics). Robson (2016) identified that text-heavy methods present danger in losing connections from the lack of ‘seeing’ connections between data. Sketching-out the ‘salient issues’ through a concentrated ‘seeing’ of specific views and actions was recognised to develop a visual literacy and visual memory to inspire ideation (Schenk, 2014). By combining these book-end approaches, there was the potential to critically enhance the researcher’s innovative ways of thinking and visualising the emergent data. This was particularly relevant within this study as the researcher’s background was as an architecturally trained designer. Therefore, the process of sketching was a natural tool for thinking-out ideas. The researcher brought this twofold analysis process

together by cross-examining the thematic codes that were identified in the extensive CAQDAS process with the key themes sketched-out during the SRM. This provided the researcher with an opportunity for comparative analysis and the validation of themes.

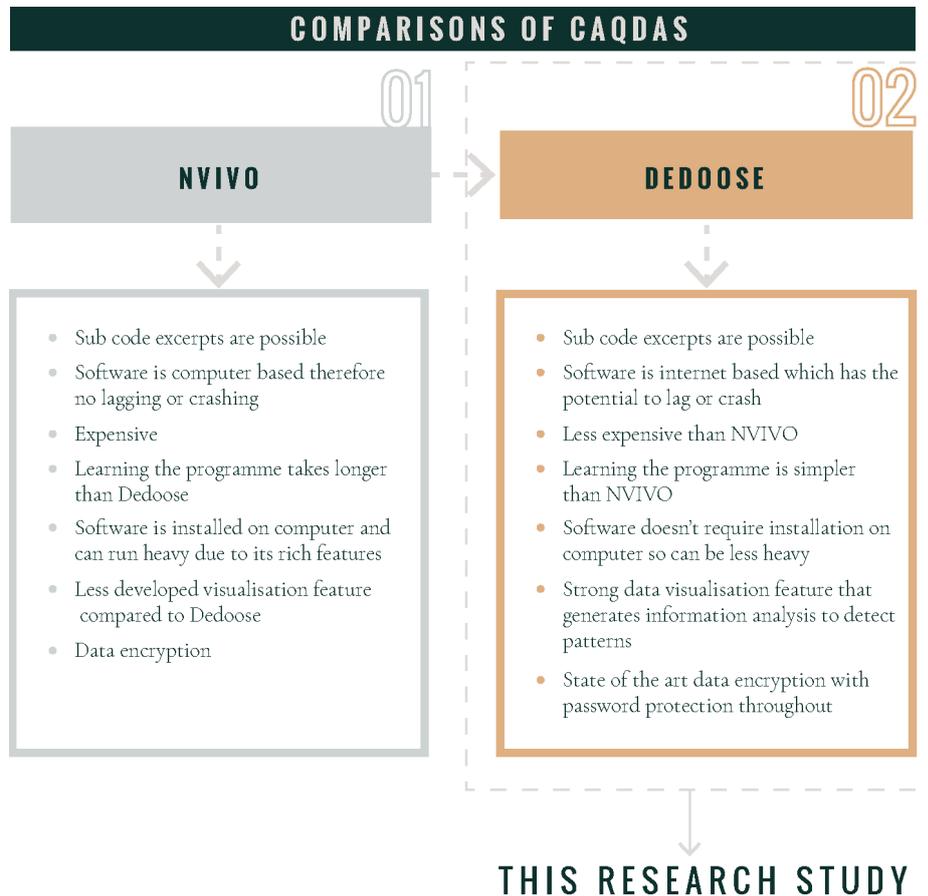
This research study was based within the 'applied discipline' of the built environment and the Grounded Theory methodology sought to 'practically apply' the research findings for usefulness in the real world (architectural practice). Collins (2014) stated that there was a strong preference within industry for visual over written communication. Meanwhile, McIntyre and Harrison (2016) evidenced that there continued to be a knowledge transfer gap between academia and industry. This argued the case that more visually innovative approaches (such as SRM) were required to support greater application of academic research into real world use. In addition, by using these book-end data analysis methods, the researcher was able to achieve greater rigour by analysing the raw transcripts twofold and comparing the results to validate emerging concepts and categories.

This research study required raw transcripts to be made of all interviews in order to carry out the twofold data analysis process. The process of transcribing required access to a recording of each of the interviews. Approval to record the interviews was secured prior to each individual session and later transcribed using the digital transcription software Otter.ai. The transcripts were stored on a password protected computer, as well as uploaded onto the password protected CAQDAS Dedoose in preparation for the analysis stage.

### **3.8.1 Phase One: CAQDAS Dedoose**

The use of CAQDAS is commonly used by Grounded Theorists as it moves beyond thick description to an exploratory model grounded in the data (MacMillan & Koenig, 2004). CAQDAS supports the ability to conduct open coding and memo-writing which is a crucial aspect for theorising, evaluating and auditing trails within a Grounded Theory research study (Charmaz, 2006). The purpose of using CAQDAS was to

provide ease of organising transcripts whilst achieving detailed coding and analysis. Dedoose (see Appendix G) was chosen as an appropriate programme to use due to its advanced data visualisation capabilities and increased data security (see Figure 3.13).



**Figure 3.13 :** Comparing NVIVO and Dedoose to understand the most appropriate for use within this research study.

In line with this study's CGT methodological framework, the research used a longitudinal coding approach to ensure in-depth analytical investigation and rigour was achieved (see Figure 3.4). This included initial coding, focused coding and theoretical coding which made up the 'coding-cycle' for an immersive data process (Charmaz, 2006). This approach was identified as most appropriate based upon a thorough investigation into methodological literature that specifically discussed the coding of data (Charmaz, 2015).

Within qualitative research, there have been disagreements towards the amount of data that should be coded. Both Strauss (1987) and Wolcott (1994) believed every detail should be considered, as this reflected the true social world that is — everyday life. Other methodologists felt that only the most conspicuous aspects of data that specifically related to the research question should be coded. However, Saldana (2015) argued that by deleting data without yet knowing its relevance to the study was a potential hazard. They advocated the splitting (instead of lumping) method which breaks the data into smaller code-able excerpts to ensure the careful scrutiny of action and the prevention of ‘superficial analysis’. This aligned with the ‘first step’ taken by many Grounded Theorists who used line-by-line coding to prompt the researcher to study the data more ‘closely’ and to help ground the codes, concepts and categories (Charmaz, 2006). Charmaz (2006) stated that it was this method that supported the researcher to ‘remain open’ and to ‘see nuances’ within the heavy data and as a result, promoted trustworthiness and reduced bias.

This study followed a CGT framework which sought to prevent superficial analysis, assumption-making and present opinions/notions through concentrated and active involvement in the coding process (Groat and Wang, 2002). Therefore, line-by-line coding was used during the initial coding process to provide the researcher with the ability to explore the data openly in order to support all analytic possibilities (Charmaz, 2006). It used in vivo codes to enable a multi-faceted inquiry that preserved the assertion of participants. Although the researcher identified that this was a lengthy and time intensive process, they acknowledged that this offered the opportunity for greater understanding of implicit meanings and actions (Ibid). Furthermore, this was integral for this inductive study in order to provide the researcher with a holistic understanding grounded in the narrative and descriptions of participants own experiences. Moreover, this guided the second major phase of the coding process for further analytical questioning.

In addition, this study used the focused coding process for progressive refinement of the previously identified in vivo codes through a directed, selective and conceptual process. It involved reorganising the initial line-by-line codes into 'clusters' that suggested categories of belonging and a condensed form of order (Saldana, 2015). Through this synthesis, the codes were reanalysed and collapsed under focused parent codes (Glaser and Strauss, 1967). Charmaz (2006, pg. 59) explained that this emergent and continually active process required the researcher to 'act upon the data rather than passively read them' in order to ensure the identification of codes which make most 'analytic sense' to support categorisation of the data.

Following the coding-cycle as set-out above, this process generated 394 initial line-by-line codes that interpreted processes, meanings, practices and actions. These 394 initial codes were then consolidated into five focused codes related to agency and the design process. Saldana (2015) advocated that qualitative researchers should develop their own coding methods and data analytic processes in order to strengthen the research process. Whilst this traditional CAQDAS phase critically focused in on the theoretical implications of the findings, the researcher undertook a second phase of analysis to fully immerse themselves in the data more visually by using the SRM.

### **3.8.2 Phase Two: Sketching Research Method**

The sketching research method (SRM) is a visual method which supports in-depth knowledge generation within qualitative research data (see Appendix H). As the researcher's background was as a trained architectural designer, sketching was a natural tool for thinking-out ideas. It supported the development of a visual literacy and visual memory to inspire ideas that may otherwise be overlooked (Schnek, 2014). Schnek added that this uncovers the 'salient issues' through a concentrated 'seeing' of specific views and actions (Schnek, 2014).

In addition, Wallick (2012) noted that by sketching-out the multiple pathways of inquiry, the overlooked 'salient issues' are able to play a significant intellectual and

analytical role in identifying connections between influence, intent and investigation. This provided the researcher with concentrated 'seeing' of specific views and actions which encouraged visual exploration of analytic possibilities beyond the traditional data analysis that was carried out in the previous phase. Therefore, these methods 'yielded' a deeper insight into a participant's experiences which enhanced the researcher's understanding of the subject (Brown, 2021). In addition, this method was identified to possess 'considerable potential' for complimenting other research methods (Heath et al., 2018).



**Figure 3.14 :** Japanese format of concertina sketchbooks used for phase two of the data analysis process.

Moreover, to encourage visual exploration of thinking-out the data, the researcher used the Japanese format of concertina sketchbooks as the base for sketching-out each interview (see Figure 3.14). The use of colour supported a less complicated way of identifying and clarifying the evolving connections. In addition, this supported the study's Grounded Theory data which was known for being messy, difficult to

manage and complex (Bollo and Collins, 2017). Both the concertina format and colour enabled the researcher to visibly untangle and identify where connections were apparent within each journal and across the respective interview data for 'engrained design-thinking' (Wallick, 2012).

This Grounded Theory study required the researcher to continuously reflect on the data and interview process, and as a result, this sketching process was adopted to encourage the researcher to reflect upon their own thoughts and feelings about the given data. Hurdley et al. (2017) stated:

*“Returning to this practice (sketching) forces us to move out of the customary scholarly field of writing...remembering modes of social inquiry forgotten in conventional histories of academic social science disciplines.”*

*(Hurdley et al., 2017, pg. 750).*

Hurdley et al. (2017) highlighted that it 'opens our eyes' to a different way of looking and shaping the world. This was crucial for this study's CGT methodological framework (see Figure 3.4) and provided an overview of the researcher's experience, decisions, and interpretations (Charmaz, 2006). It enabled the researcher to assess particular interests, positions and assumptions of the emergent data in order to enhance an holistic understanding of participants individually and as a cohort. This was cross-examined with the reflective process undertaken during phase one of data analysis as shown in Figure 3.11.

### **3.9 Ethical Considerations**

Research practice must consider the ethical implications of potential harm to both the researcher and the researched whilst carrying-out fieldwork. Robson and McCartan (2016) explained that this required a pre-analysis process, small-scale pilot interventions and the undertaking of relevant researcher training activities in order to conduct responsible research. In line with this notion, the researcher attended a

variety of training sessions, such as the 'Qualitative Inquiry Workshop' at Newcastle University. This encouraged responsible research practice and the importance of embedding procedural ethics, ethics in practice and reflexivity into the research study.

The research was conducted using the RCUK Policy and Guidelines (2017) and the ESRC's Research Ethics Framework (2019). All data collected as part of this research was held by Northumbria University which remained confidential and secure through a password protected file. The information collated was only used for academic research purposes and was not passed on to any third parties or used for marketing purposes, in accordance with the Data Protection Act (2018). By considering all ethical aspects during the design and implementation of this study, the researcher upheld ethical integrity and quality.

### **3.9.1 Lone Worker**

Whilst the researcher was familiar with the fieldwork process from conducting previous research studies, the fieldwork was carried out alone and in unfamiliar settings. Therefore, the researcher made reference to the Fieldwork Code of Practice for Staff and Students (Northumbria, 2020). Specifically, the 'regular planned reporting back' was identified as the most appropriate measure. This was supported by the creation of a simple 'fieldwork checklist' on the researchers mobile phone which was quick and easy to access. Additionally, the researcher organised the interviews to take place during work hours at the participants workplace which prevented the researcher from commuting to unfamiliar private settings in the late evening or early morning.

These potential hazards were mitigated during the COVID-19 pandemic. At this point, the researcher worked from home and carried out the fieldwork process via remote online interviews.

### **3.9.2 Human Participants**

The involvement of people within this research study was considered by the researcher in order to ensure that appropriate ethical procedures were carried out when conducting the fieldwork. The researcher acknowledged that human involvement raised ethical concerns of dignity, bodily integrity, autonomy, and privacy (Kapp, 2006). However, the ethical risk level of this research study was evaluated as 'medium'. This was assessed based on the Northumbria University's ethical policy (2019) whereby a medium risk level consisted of one or more of the following: non-vulnerable adults, non-sensitive personal data referring to a living individual, secondary public data not in the public domain, environmental issues, commercially sensitive information.

Within this study, the participants that were recruited to take part were all qualified and experienced architects. The purpose of this study was to uncover their experiences of creating supportive living environments and not disclose personal, nor commercially sensitive information that may put the participant or architectural practice at risk. As an additional measure to conserve the confidentiality of participant's identity, no practice imagery of the interviewees or their practice projects was included in this thesis. Instead, the sketching research method used during the data analysis stage produced freehand illustrations which provided graphical representation without recognition.

### **3.9.3 Ethical Approval**

The ethical aspects within this research study were planned from the very beginning in order to provide a period of time to answer any potential questions or concerns from the ethical review panel (Robson and McCartan, 2016). Ethical approval was received through a two-stage process. The first stage of approval for the ability to carry out face-to-face interviews was obtained from Northumbria University in January 2019 (see Appendix I). The second stage of approval to conduct remote online interviews was automatically issued in March 2020, in light of the COVID-19

pandemic (see Appendix J). This was undertaken in compliance with Northumbria University's ethics and research policy (2019)

#### **3.9.4 Informed Consent**

The researcher made sure that all participants were fully aware of this research project and the purpose of their involvement if they wished to take part. The first aspect of obtaining informed consent was through an email providing a summary of the research background, participants relevance, their involvement and the next stage if they were interested in partaking (see Appendix K). Following this, participants were sent an additional information sheet (see Appendix L) which explained the aim of their interview, the institution the research was undertaken at and their rights (anonymous participation, data protection, voluntary participation and ability to withdraw at any time). This clarified the research purpose and process which was discussed prior to participants signing the consent form. All consent forms were signed by participants prior to their respective interviews.

#### **3.9.5 Ethics of Moving from Face-to-Face to Remote Fieldwork**

Whilst ethical approval was automatically granted for the research study to move from face-to-face interviewing to remote online interviews, the researcher took a step-back to consider this move in order to maintain ethical integrity and quality. In line with Robson and McCartan (2016), the researcher made sure that they had the required skills and knowledge to continue to carry-out the fieldwork effectively. This involved a pilot study, a literature review and attending webinars that were specifically based on remote online interviews and the influence of the COVID-19 pandemic. This process established that the researcher was well-equipped and prepared to successfully continue with the research fieldwork.

The researcher updated the email template to include that the remote online interviews were to be conducted using the online video conferencing software Zoom (see Appendix M). The researcher was aware of the potential issues with online interviews such as, participants understanding on how to handle the software,

internet connectivity and intruding into their personal home environments (Brown, 2018). However, these issues were mitigated as the participants were trained to use specialised computer software daily and in addition, were required to use Zoom for calls with colleagues and clients. Therefore, many had a professional backdrop in order to carry out their work meetings.

### **3.10 Summary**

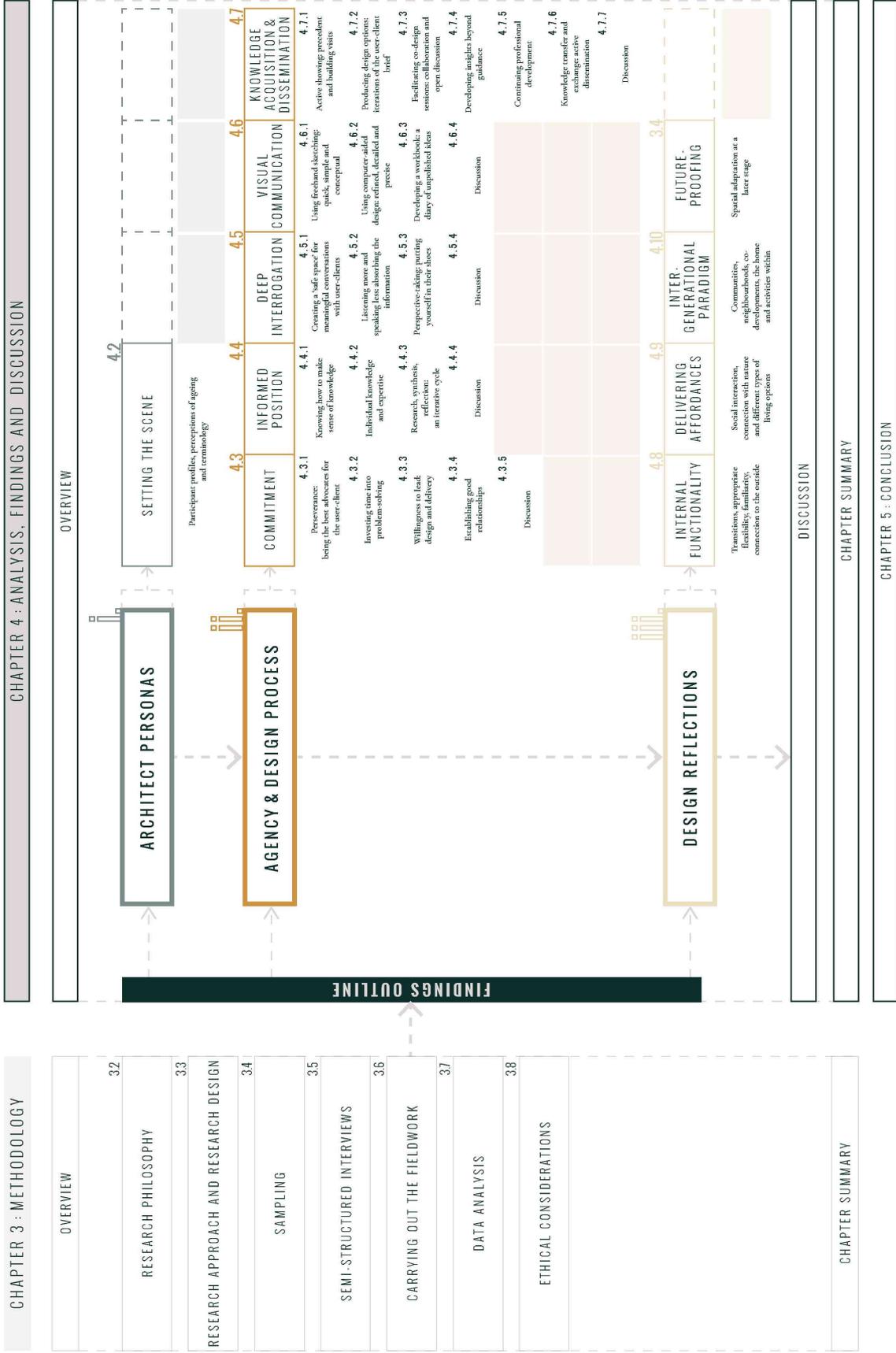
This chapter described the constructivist research philosophy that informed this research study which developed the conceptual framework implemented. Aligning with this philosophy, it introduced the CGT methodology adopted for accomplishing the overall research aim and objectives of the study. It described the inductive research design strategy that was followed by the researcher when carrying-out the fieldwork in order to answer the research question — *‘how does agency and process of architect influence the design of supportive living environments for ageing?’*. Finally, this chapter outlined the purposeful sampling strategy adopted and discussed the interviewing method for data collection. In addition, how the data was collected through audio recordings and analysed twofold through CAQDAS Dedoose and SRM, with consideration to any ethical issues that arise as a result of this research.

## **CHAPTER 4: ANALYSIS, FINDINGS AND DISCUSSION**

### **4.1 Overview**

This chapter presents the analysis of empirical findings from the interviews carried out with nine architects (see Figure 4.0). The first section offers insight into the 'Architect's Persona' which highlights their architectural background and perceptions of ageing. In addition, it shines a light on contested age-related terminology. The second section provides insights into the five categories of: 1.) Commitment, 2.) Informed Position, 3.) Deep Interrogation, 4.) Visual Communication, and 5.) Knowledge Acquisition and Dissemination, which were found to be most influential to an architect's 'Agency' and their 'Design Process'. The third section offers 'Design Reflections' from the experts in practice — the experienced architects working in designing supportive living environments for ageing. Specifically, the successes, challenges and limitations of Internal Functionality, Delivering Affordances, Intergenerational Design Paradigm, and Future-proofing which were identified as the most prevalent design reflections within the research context. A discussion of these empirical findings is provided with reference to the existing evidence-base (as stated in Chapter 2), which supports an holistic understanding of the interrelationship between an architect's agency and their design process.

It is worth noting, that whilst the findings presented in this chapter are in relation to creating supportive living environments for ageing, not all specifically reference ageing. They evidence the more general insights into the actions taken by architects in order to contextualise the specific insights into ageing.



**Figure 4.0 : Outline of the Discussion, Analysis and Findings**

## PART I: Architect's Persona

This first section offers insight into the 'Architect's Persona' which sets the scene of the types of participating architects. This highlights their architectural background and perceptions of ageing. In addition, it shines a light on contested age-related terminology.



Figure 4.1 : 'Architect's Persona' abstracted from the researcher's SRM

### 4.2 Setting the Scene

Participants recruited for this study varied in the 'types' of architects that were engaging with creating supportive living environments for ageing. It is important to note however, that in terms of gender and ethnicity, seven out of the nine participants were male and none came from an ethnically diverse (black, Asian, and minority

ethnic) background<sup>12</sup>. Nevertheless, the sample of participants within this study were still a diverse cohort (see below).

#### **4.2.1 Participant Profiles and Perceptions of Ageing**

As illustrated in Figure 4.2, the profiles of participants offered diversity in their role (which ranged from Project Architects, Partners and Directors) working in small, medium and large sized practices with 2-45 years of experience. In addition, participants came from miscellaneous origins and architectural educations. The diversity in role, experience, origins and education provided a varied set of perspectives to explore the multiple experiences of architects across the RIBA Plan of Work stages (see Figure 3.6). A socially orientated perception of ageing was evidenced by participating architects. These perceptions emphasised a downhill ageing model which destined older adults towards institutionalisation, segregation and reduced privacy. Hence, their perceptions of future ageing advocated that living environments should enable the inclusivity of all ages to support an individual across the life course.

#### **4.2.2 Age-related Terminology**

During the interviews, it became evident that there was contested terminology associated with a variety of age-related terms. For example, the difference between 'accessible environments' and 'inclusive environments'. More prominently, the misinterpretation of 'age-friendly' was acknowledged and referenced as being older age housing that was not inclusive of younger people (such as, residential retiree communities that were mono-economic and for a type of person in a type of situation). Interestingly, Participant B added that there was uncertainty in understanding between 'age' friendly and 'aged' friendly. This highlighted a notable issue with age-related terminology within the real-world context.

---

<sup>12</sup> Since the writing and submission of this thesis, the Commission's report 'Inclusive Britain' (GovUK, 2022) was published on the 17th March 2022, which acknowledged that the term 'BAME' (black, Asian and minority ethnic) would no longer be used in government.

Participants	Role	Practice size	Years in practice	Place of Origin	Architectural Education	Preferred RIBA stage	Perceptions of ageing
<b>PARTICIPANT A</b> 	Senior Partner	Large	40	Hull	Manchester University	0 - 7	<i>"The whole ageing model focuses us in going downhill as quickly as we can. The whole system takes us away from home and hearth and puts us into an institution as quickly as possible. And once we're institutionalised, we're not only messing up that system, but it's impossible to get back."</i>
<b>PARTICIPANT B</b> 	Senior Partner	Small	45	London	Sheffield University	0 - 2	<i>"What I'm really interested in is environments which are kind to people across all the generations and so in some ways, I find myself thinking about what it shouldn't be. And the important thing is it shouldn't be special and it shouldn't be isolated."</i>
<b>PARTICIPANT C</b> 	Project Architect	Medium	2	Newcastle	University of Strathclyde	2	<i>"It's just segregating people and you wouldn't segregate children at the start of life, so why would you segregate at the end?"</i>
<b>PARTICIPANT D</b> 	Director	Medium	23	Newcastle	Sheffield University	0 - 2	<i>"You've got all of these people living in a kind of shoe box size room [in care homes] and there are wafer thin walls and then another aged person on the other side of the wall and actually these issues about struggling to separate them because they've got so little space and even the communal space are foisted together. That's not good design. Awful soulless places, not all of them but a lot of them are."</i>
<b>PARTICIPANT E</b> 	Director	Small	25	South Africa	Architectural Association	0 - 2	<i>"I would always assume that the older people can do whatever anyone else can do. I think design to enable people to do things, rather than to assume that there are particular things they can't do...But, make it easier for them if they can't."</i>
<b>PARTICIPANT F</b> 	Senior Partner	Medium	25	Ireland	Manchester University	0 - 2	<i>"It's good to see more outwardly spoken thought processes around what that [supportive living environments] could be, rather than just accepting the status quo. I actually think that covid has been really positive for that because it's clearly demonstrated that there is a massive issue, especially in care homes."</i>
<b>PARTICIPANT G</b> 	Partner	Large	17	Newcastle	Northumbria University & University of Edinburgh	2 - 3	<i>"Often I think people in our generation probably will have to work an awful lot later. So, taking account of that ability to maintain a working life. Going away from care homes and propping somebody up towards facilitating a quality of life in the last quarter of their existence."</i>
<b>PARTICIPANT H</b> 	Project Architect	Large	8	Newcastle	Sheffield University	0 - 1	<i>"Everybody's different and everybody's situation is going to be different."</i>
<b>PARTICIPANT I</b> 	Director	Small	17	Newcastle	Newcastle University	0 - 7	<i>"What I have found actually which is really interesting is that, this is probably a mass generalisation but, I think every client we've worked with, maybe that's because we really want to push sustainability, but the older client is very au fait, and very understanding of wanting to do all those things [innovative design]."</i>

Figure 4.2 : Participant profiles and perceptions of ageing



### **4.3 Commitment**

It was identified that an architect's commitment was influential to their agency and design process when creating supportive living environments for ageing. Within the context of this research study, commitment was conceptualised as the following:

1. Perseverance: Being the Best Advocates for the User-clients
2. Investing Time into Problem-solving
3. Willingness to Lead: Design and Delivery
4. Establishing Good Relationships

It was these four actions that demonstrated an architect's commitment to creating supportive living environments for ageing.



Figure 4.4 : 'Commitment' abstracted from the researcher's SRM

#### 4.3.1 Perseverance: Being the Best Advocates for the User-clients

Housing was identified as the most complex form of architecture that required a massive amount of an architect's perseverance during design and delivery. To support this, it was acknowledged that an architect must be an expert in all stages of the RIBA Plan of Work. This was cited across many of the interviews, however it was noted that whilst an architect may have this expertise, an architect's commitment was fundamental to the successful design and delivery of supportive living environments for ageing and importantly, that this could not be substituted. Participant A explained:

*“Our first and last love is housing. It's the most complex form of architecture. As much as most folks don't tend to think that because we all live in houses. It's extremely difficult to get right. It takes a massive amount of concentration...A great deal of time, effort, consideration, commitment, blood, sweat, and tears.”*

*(Participant A)*

This finding highlighted the importance of an architect's perseverance over the duration of the design and delivery stages. It was noted that this dedication was fuelled by a desire to attain a holistic understanding of the context. Participant F identified that having a holistic understanding of what was important to the user-client, and the key problems and challenges faced in their existing living environments supported them to design appropriately. This viewpoint was reiterated by Participant I who expressed:

*“It's not for us to put in some of our ego or what we might want. Although, you know, you do put yourself in the position of how you would like to live in that place, but you need to understand the client in order to see how they would.”*

*(Participant I)*

Participants (A, E, F, I) frequently mentioned the inherent order of putting the needs of the user-client before the architect's ego when creating supportive living environments for ageing. Participant E communicated:

*"I guess that's one aspect that experience has taught me is kind of to depress that ego side of things. I'm not here to build a monument. I'm not here to do something that's going to get my name in lights or whatever. I would love that to happen. But ultimately, it's really an intensely collaborative process."*

*(Participant E)*

This finding highlighted the architect's commitment to being the best advocates for the user-client. It also evidenced that a collaborative process supported this positioning and strengthened the creation of appropriate supportive living environments for ageing.

#### **4.3.2 Investing Time into Problem-solving**

Across all interviews, architects discussed the importance of investing a sufficient amount of time to solve problems that were identified by the user-client during the design process. Participant A stated that this ensured their commitment to being the best advocates for their user-client. Participant F added:

*"When I'm designing, I'm not really thinking about the time and how much we're getting paid...What influences me more is being able to solve little problems, to put lots of bits together and get something that really works."*

*(Participant F)*

This was an interesting statement given that Participant F was a director of a medium-sized practice and therefore, tasked with overseeing and resourcing time and costs. When probed further, they stated that this did depend on the time of year, but found that by spending a sufficient amount of the time solving problems, the overall design process became more efficient. This highlighted that staying

committed to problem-solving during the design process enhanced their overall efficiency when creating supportive living environments for ageing. It was evidenced that an architect's problem-solving abilities were best supported by acting as a facilitator during a collaborative design process. Importantly, this was noted to enable the architect to provide their in-depth architectural design service. Participant D communicated:

*"I think the better clients are ones where you can say, 'look, you've employed us, you're not employing us as an architectural drafting service you're employing us as architects. We trained in this. We've got experience in this, and this is what we're saying'. Not in an arrogant way, just saying you're paying for service, let us give you that service."*

*(Participant D)*

Across all the interviews, it was noted that co-design sessions were one of the strategies that best supported an architect to carry out their design service. Participant I explained that this strategy was successful as it involved 'the people who are ultimately going to live there', and thus, identified the key problems at hand. Participants (D, I) identified that a limitation of this strategy was that this process 'takes a long time'. However, the benefits outweighed this limitation as it solved problems more efficiently and appropriately as a result of the architect gaining a greater understanding of the user-client. Co-design sessions were highlighted to effectively showcase to user-clients why a design proposal was suitable for solving a specific problem. Participant A explained:

*"It's in no way, just a standard response to the problem we've been given and hopefully by involving them in the process, they will be so much more informed."*

*(Participant A)*

By being committed to investing the time into problem-solving through a process of co-design sessions, user-clients were more likely to buy into the project which supported the overall efficiency of this stage.

#### **4.3.3 Willingness to Lead: Design and Delivery**

Whilst an in-depth understanding of the context strengthened the overall output, a willingness to lead the design and delivery stages was necessary. Participant C highlighted that full involvement throughout these stages was crucial as it would potentially not make sense to another architect. Participant E stated:

*“I get heavily involved all the way through [the process]. It is not something that I palm off to other people or loose touch with things as we go through. That kind of purposeful way of doing things I had when I started the practice, that’s continued. I haven’t sought to grow the practice to a point where I kind of loose that connection with a project.”*

*(Participant E)*

This purposeful way of doing things throughout design and delivery underpinned the the architect’s commitment to the user-client. It was acknowledged that this sustained involvement throughout design and delivery was best placed as the ‘lead’ on the projects. To achieve this, the architect was required to show a willingness to lead and take responsibility. Participant H expressed:

*“You have to take risks and you have to understand those risks. I think the architectural profession over the last 20-30 years has slowly devolved some of its responsibility down to contractors, project managers, quantity surveyors, anyone who will have it, so that we don’t have to deal with the risk of it...But, we do stick our neck out a bit and say we are going to take responsibility for this...There’s a lot of bravery in taking those decisions...we’re willing to work for it and work with the rest of the team irrespective of our scope around that... I think clients respond really well to that because they see that we’re proactive.”*

*(Participant H)*

This finding highlighted that committing to actively leading projects in a purposeful way and taking overarching responsibility of the design team benefitted the project’s design and delivery. Interestingly, it was identified that part of committing to taking a leadership role required the architect to commit to collaborating. This was noted to support the establishment of good relationships with user-clients and other BEPs.

#### **4.3.4 Establishing Good Relationships**

It became apparent that a commitment to collaborate during the design process required establishing good relationships. This was evidenced to support insightful knowledge that informed the architect’s process and supported their agent abilities by securing additional projects that brought in further revenue. Interestingly, it was identified that a commitment to collaborate with other architectural practices better supported creating supportive living environments for ageing. Participant I explained:

*“I suppose the bigger the projects, there are a lot more people involved. So, we’re working with other architects, which is great, the collaboration is really important. So, that’s different. We definitely do more housing rather than houses. But actually, that’s quite exciting in a way because it’s opened it up to a lot more people, which I think is really important and we can implement the things that have worked well in the smaller projects, where you can take more risk compared to the larger projects.”*

*(Participant I)*

It was evidenced that through collaboration and a commitment to build strong relationships with other BEPs, participants were able to use the lessons learnt and experience gained from the other practices to successfully influence their smaller projects. Across all interviews, establishing good relationships with user-clients was emphasised. Participant H stated:

*“It’s just really about being honest, communicating and understanding their [the user-clients] drivers and their aspirations and being able to continually have those conversations.”*

*(Participant H)*

Honest communication was evidenced to build trust and maintain ‘good relationships’ between the architect and user-client. As a result, this opened up diverse opportunities to build further relationships and acquire additional projects. This was further highlighted by Participant F:

*“Well it is good if a client trusts you...We generally do have really good relationships with our clients...Quite a lot of clients that we work with, we have worked with since we started...So, if we give them advice, they generally take it...So, we get a little bit of sway...because we’ve been working together so closely for so long.”*

*(Participant F)*

Interestingly, this finding identified that by building trust and establishing good relationships with user-client, the architect possessed greater agency in future projects initiated with these individuals. This was noted as a crucial aspect at the initial stages of the RIBA Plan of Work. Participant E expressed:

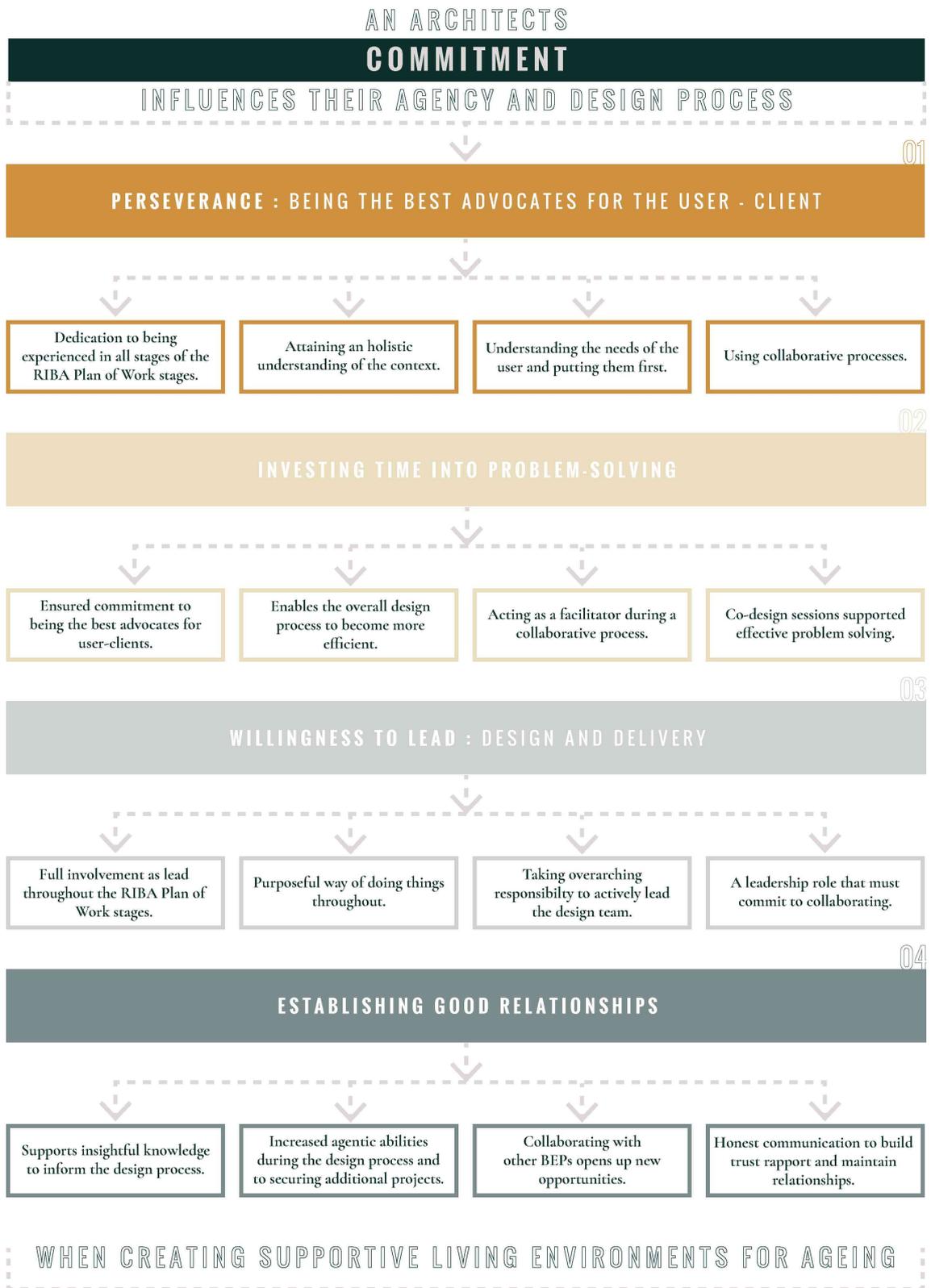
*“That’s generally actually a really positive part of the process. It’s a really enjoyable part because you’re establishing that relationship, you’re building rapport and you’re investigating the art of the possible.”*

*(Participant E)*

By being committed to establishing good relationships and building rapport, architects evidenced that they were able to investigate in greater depth the design possibilities.

#### **4.3.7 Discussion**

These findings identified an architect’s commitment as influential to their agency and design process when creating supportive living environments for ageing. It was highlighted that perseverance, investing time into problem-solving, willingness to lead, and establishing good relationships were specific actions that influenced being committed (see Figure 4.5). These actions relied on an individual’s perceived efficacy which is a key role in human functioning and influenced the course of action, goals set and commitment to given endeavours (Bandura, 2000). Bandura (2006) stated that this had a direct influence on an individual’s agent ability to act. Thus, an architect’s perceived efficacy influenced their commitment which impacted their agency when creating supportive living environments for ageing.



**Figure 4.5 :** Summary of the influence of an architect’s commitment on their agency and design process

- **Perseverance: Being the Best Advocates for the User-clients**

The perseverance of architects to being the best advocates for the user-client required architects to be committed throughout the design and delivery stages. An architect's particular roles and responsibilities have been found to impact this and influenced their ability to advocate specific objectives for the user-client (Cuff, 1991; Akotia et al., 2018; Burr and Jones, 2010; Ahuja et al., 2017). It has been evidenced that whilst the architect's role of creating the building design and construction drawings remained consistent at the earlier RIBA Plan of Work stages, construction roles that follow are being taken over by other BEPs (Ahuja et al., 2017). Burr and Jones (2010) declared that if this current trajectory prevailed, an architect's role would be drastically harmed, become more specialised and carry less responsibility. As a result, impacting upon an architect's involvement throughout the design and delivery and thus, their perseverance in advocating for the user-client.

Interestingly, this study found that even if an architect had the expertise to remain involved throughout design and delivery, their commitment was fundamental to successfully designing and delivering supportive living environments for ageing. Specifically, an architect's commitment to attaining a holistic understanding of the key problems and challenges faced by user-clients and being persistent with advocating these throughout the building process were recognised. Burr and Jones (2010) argued that the sustainability of life and buildings cannot go ignored by the building industry. This could be best supported through a higher level of collaboration between owners, architects, engineers, contractors and sub-contractors (Ivory, 2004; Cohen et al., 2005; Burr and Jones, 2010). This study added that collaborative processes best supported the architects' perseverance in being the best advocates for the user-client. This enabled the architects to continuously emphasise the needs of the user-client which ensured that the creation of supportive living environments for ageing were appropriate for use.

- **Investing Time into Problem-solving**

The time invested into problem-solving was identified to support a more efficient design process. To understand individual efficiency, an individual must be proactive in managing and developing their self-regulatory skills (Bandura, 2006). This individual understanding was highlighted to enhance an architect's commitment to investing time into problem-solving. This contends Van der Linden et al.'s (2019) assertion that as a result of limited time resources, architects mainly drew from their implicit body of knowledge and assumptions within their profession. It is fair to say that this juxtaposition could be a result of the different types of architects and projects in question. The architects within this study placed greater emphasis on designing appropriate solutions to create supportive living environments for ageing.

With this said, it was evidenced that acting as a facilitator during a collaborative design process supported the ability to solve problems through appropriate solutions. Till (2009) explained this as a move from 'lone genius' to 'collaborative imagination' based upon collective practice. This collective context relied upon making sense of a social situation and interpreting it with others through conversation and action (Cuff, 1991). It is this collective practice that brings to light the importance of socially responsible actions and ethical duty in the built environment. This was essential when creating supportive living environments for ageing.

It has been identified in previous research that architects must use design-oriented ways to facilitate user-clients experience and support the 'unlocking' of knowledge during collaborative practices (Van der Linden et al., 2019). This study identified that co-design sessions were one of the collaborative practices that best supported an architect to carry out their design service and involve user-clients and other BEPs in the problem-solving process. Collaborating with other BEPs has been identified to harness a 'collective intelligence' that enabled greater problem-solving capabilities (Deutch, 2020). This study gives further insight into ways collaborative practice can be utilised when creating supportive living environments for ageing.

- **Willingness to Lead: Design and Delivery**

A willingness to lead the design and delivery stages throughout a project was highlighted as necessary when creating supportive living environments for ageing. This has the potential to support an architect to retain a level of control during the building process and prevent reduced design quality (Cohen et al., 2005). However, Rooney et al. (2013) stated that architects needed to be willing to implement accessible design strategies beyond the minimum standards (Part M and LTHS).

Within this study, architects evidenced that by having a willingness to lead the design and delivery stages, they were more proactive and committed to delivering a supportive living environment that was appropriate to age-in-place. It was identified that taking overarching responsibility of the design team and committing to collaborating supported this process. Interestingly, Van der Linden et al. (2019) found that an architect's responsibilities were based upon 'the culture of peer-recognition' within an architect's social constellation.

Yet, architects within this study evidenced a willingness to lead purposefully across the design and delivery stages when creating supportive living environments for ageing. This was a positive insight, given that the built environment had been previously recognised as the driving force required to lead the way in centralising the age-friendly concept in order to successfully support ageing-in-place (Liddle et al., 2014). This study identified that a willingness to lead in a purposeful way underpinned an architect's commitment and established good relationships with the user-clients and other BEPs.

- **Establishing Good Relationships**

Establishing good relationships with user-clients and other BEPs was evidenced to provide insightful knowledge to inform the design process whilst also supporting the architect's agent abilities to secure additional projects. It was identified that a commitment to collaborate with other BEPs better supported this finding. This added to Van der Linden et al.'s (2019) assertion which highlighted that collaborating with

other BEPs positively influenced an architect to find 'relevant input and stimuli' to address a project.

Within this study, it was found that establishing good relationships with user-clients was best achieved by an architect building trust. Existing discourse emphasised that the established relationship between an architect and user-client requires 'effective management' in order to reinforce 'organisational boundaries', as well as 'professional autonomy' (Ivory, 2004; Cohen et al., 2005; Imrie and Street, 2014). Yet, this study found that architects placed greater emphasis on honest communication and building a rapport with the user-client, as opposed to the managerial boundaries when establishing relationships. This juxtaposition could be a result of the different types of architects and projects in question. The architects within this study placed emphasis on the users in order to design appropriate solutions to create supportive living environments for ageing. It was identified that honest communication was an important factor for an architect in order to successfully build trust and maintain good relationships during this design process.

#### **4.4 Informed Position**

It was identified that an architect's informed position was influential to their agency and design process when creating supportive living environments for ageing. An informed position was defined as having technical or cognitive tacit (know-how) knowledge. This was made up of values, beliefs, perceptions, insights and assumptions that enabled an individual to become an expert within a field. Within the context of this research study, an informed position was conceptualised as the following:

1. Knowing How to Make Sense of Knowledge
2. Individual Knowledge and Expertise
3. Research, Synthesis, Reflection: An Iterative Cycle

It was these three actions that demonstrated an architect's informed position when creating supportive living environments for ageing.

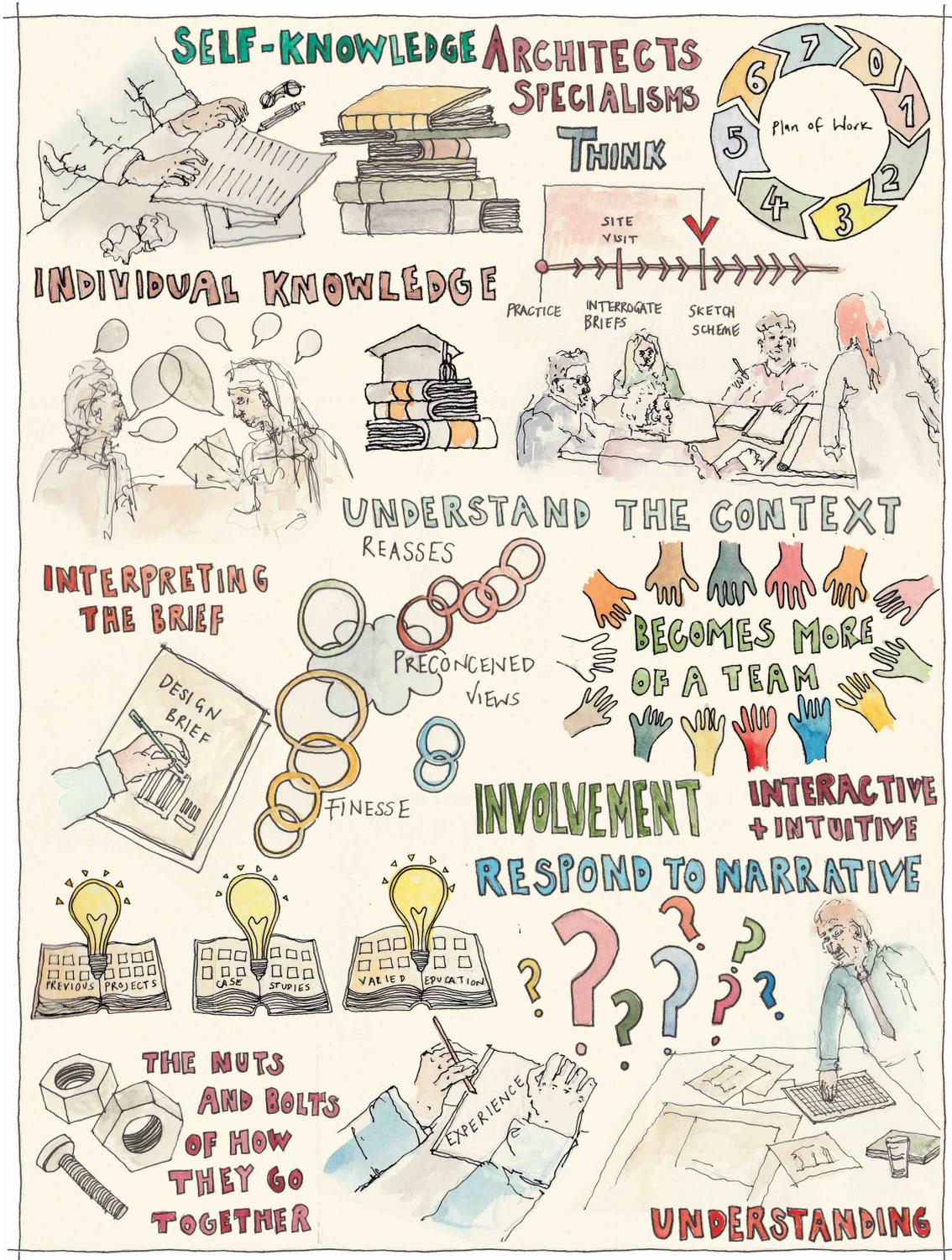


Figure 4.6 : 'Informed Position' abstracted from the researcher's SRM

#### 4.4.1 Knowing How to Make Sense of Knowledge

An architect's sense-making capabilities of knowing-how to utilise knowledge to strengthen their informed position was identified as an important factor when creating supportive living environments for ageing. Participant E expressed:

*"I just basically started doing tons and tons of research. And then going to speak to everyone that I could find who were working in that sector and I was just a total sponge, just trying to get all the information and knowledge that I could. And after about two years, I found that, actually, I was starting to make sense and people that I was speaking to in the sector were actually listening to what I was saying and I was actually talking sense. So, that was a good moment for me."*

*(Participant E)*

Interestingly, Participant E explained that whilst the sector began to listen, they were often 'a lone voice' and were cautious of being the 'know-it-all in the room'. The know-it-all in the room was referred to as an individual who made sense of relevant academic research and knew how to use that body of knowledge to strengthen an argument. Participant E added:

*"I mean, I stand up for these things [such harmful materials and environmental hazards] in meetings, but often I'm a lone voice...I think you need to multiply your voice by actually having a body of research that's clearly understandable. The dangers is that you don't want to come across as being pedantic, or just being the know-it-all in the room...There's not a lot of practices that actually put themselves out there and go, this is what we stand for. And I'm prepared to speak up about it. It doesn't feel that I've won many of the battles, but you know, I'm comfortable getting up and saying, look, I think this is important, and making and having an ideological standpoint. Our key areas are obviously, affordable housing, the social justice angle and sustainability."*

*(Participant E)*

This illustrated that whilst the architect was in an informed position which provided them with greater agency to ‘stand up’ and argue the case, they would potentially restrain back as to not come across as ‘pedantic’. It was suggested that an architect must possess the confidence and comfortability with communicating their sense-making of the knowledge, what they stand for and put themselves out there to lead the conversations on creating supportive living environments for ageing. Participant H explained:

*“I think it is around innovation...How we do that but around best practice and not just following what’s currently best practice and waiting for somebody to tell us how to develop it, but actually developing it ourselves and moving that forward. It is that leadership role in terms of being proactive in our industry, rather than reactive.”*

*(Participant H)*

This evidenced that the participant’s confidence and comfortability to put themselves out there and take a ‘proactive leadership role’ informed their agent position to develop their own innovative practices. By being proactive in making sense and communicating the knowledge, an architect enhanced their informed position.

#### **4.4.2 Individual Knowledge and Expertise**

At an individual level, architects across all interviews highlighted characteristics of possessing knowledge and expertise which supported their own (as opposed to collective) informed positions within the context of creating supportive living environments for ageing. This ranged from environmental psychology degrees, urban design qualifications, alternative housing development appraisals, Passivhaus certifications and Dementia Design Accreditations. Interestingly, this expertise was identified to be held by the individual and not the collective practice which suggested that it was down to the individual architect to attain the relevant knowledge in order to be in an informed position. Participant D explained:

*“One of the directors, he’s done, I don’t know, 20 odd years of work [in the sector]. So, he’s got a huge understanding of how these buildings work and often finds he will go to the clients and say, well, our experience has been this. So, that knowledge is kind of with him.”*

*(Participant D)*

This finding highlighted that if this architect were to leave, then the expertise would also leave the practice. Across practice level, Participants (A, G, H) evidenced that they had a cross-disciplinary team of experts beyond the typical architect, interior architect and architectural technician roles. These included; planners, urban designers, research directors, landscape architects, software developers, architectural engineers, and finance directors. This was evidenced to better support their level of success during specific stages of a project. Participant A expressed:

*“I suppose the one that’s the level of specialism that’s made the most difference to us in the last four or five years has been an individual who’s a planner first and then an urban designer. We were always frustrated sometimes speaking with planners because we didn’t fully understand, we hadn’t had that training. I just got frustrated...But, because my colleague understands the language, they can satisfy that, take it out of the way and make it clear for us.”*

*(Participant A)*

Whilst this reiterated that gaining an informed position heavily relied upon level of specialism, it further evidenced that knowledge and expertise was held by the individual and not the collective practice.

#### **4.4.3 Research, Synthesis, Reflection: An Iterative Cycle**

Research and feedback were identified as the most prevalent means to becoming more informed when creating supportive living environments for ageing. All

participants across the interviews evidenced that conducting research to retrieve feedback was a fundamental activity during the design process. It was identified that this needed to be an interactive and intuitive process between the architect and user-client. Participant A explained:

*“We have taken the time and trouble to actually prepare ourselves to understand the setting...We do it because we actually get to speak to the people who are going to use it and get feedback and it’s an interactive and intuitive process rather than a soulless box for capitalists...It’s opened up a whole load of new opportunities for us.”*

*(Participant A)*

By involving the user-clients in a process of research and feedback, the architect was able to gain a holistic understanding of the context setting. Participant E stated that there was nothing more powerful than being able to multiply an argument with research. Importantly, Participants (G, H, E, F) acknowledged that research and feedback were an interlinked process which heavily relied on one another for a successful outcome. Participant G expressed:

*“It is an interlinked process — the first bit is listening to users through the briefing process and the second bit is then trying to use what would be a broad understanding that I think most architects have of what’s being delivered currently in the industry and a bit of research to back that up and look deeper into that and try to bring the two things together. Does that example meet that person’s need? And what can I learn from the openness of the two things against each other?”*

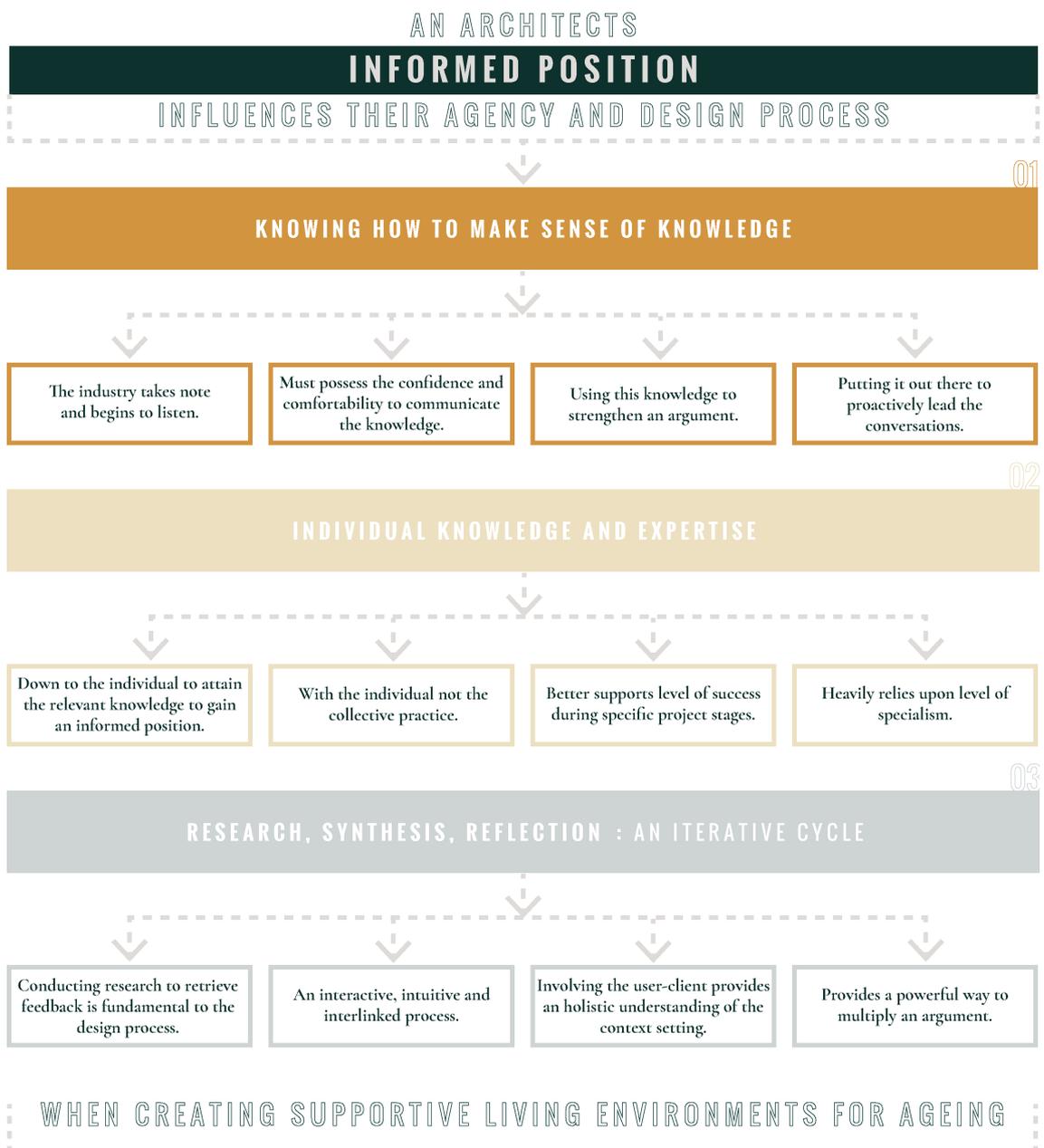
*(Participant G)*

It was highlighted that to generate an informed position through research and feedback, an architect was required to conduct the interlinked activities of listening to the user-client and understanding what was been delivered in industry. Participant G

noted that prior to listening to the user-client, it was worthwhile to do ‘a bit of stalking’ through a basic google search to find out who the user-client was and to ‘understand the client before you meet them’. Participants (C, G, I) found that by gaining an initial understanding into a user-client’s character and their background, they were better supported to look at the ‘practicalities’ of the user-client’s requirements.

#### **4.4.4 Discussion**

These findings identified that an architect’s informed position was influential to their agency and design process when creating supportive living environments for ageing. It was highlighted that making sense of the knowledge to ‘know-how’, individual knowledge and expertise, and the iterative cycle of research, synthesis and reflection were specific actions that influenced having an informed position (see Figure 4.7). These actions relied upon an individual’s tacit knowledge which played a key role in influencing the overall quality of knowledge to solve problems (Smith, 2001). Smith (2001) described this type of thinking as creative, flexible, and uncharted which leads to divergent thinking to develop insights, yet it was often underrated and under-utilised within the workplace. Thus, an architect’s tacit knowledge influenced their informed position when creating supportive living environments for ageing.



**Figure 4.7 :** Summary of the influence of an architect’s informed position on their agency and design process

- **Knowing How to Make Sense of Knowledge**

The ability to know-how to make sense of tacit knowledge was identified to enhance an architect’s informed position. This know-how requires an individual’s belief in performing this intentional action (Pavese, 2018). This supported the study finding that highlighted that knowledge sense-making was held by the individual, as opposed to collective practice. Heylighen et al. (2007) highlight that architects recognised the importance of ‘knowing-in-practice’ as opposed to ‘knowledge base’ when making

sense of their knowledge. They stated that architects made sense of their knowledge through 'knowing-by-doing', designing and constructing buildings through more visual processes (such as sketches, plans, sections, models, photographs). This 'learning by doing' was based upon an architect's tacit knowledge and own experiences during the design process (Heylighen et al., 2007). Yet, it has been acknowledged that architects may not recognise this process of design research as research and thus, this knowledge was not maximised (Collins, 2014). This study found that it was down to the individual architect to attain the relevant knowledge, to understand the value of their knowledge and the expertise required to be in an informed position to take action.

Interestingly, whilst an architect may become more informed, it was highlighted in this study that architects needed to possess the confidence and comfortability to communicate the knowledge effectively. Existing research has evidenced that architects have difficulty with understanding, engaging and communicating knowledge (Watson, 1999; Collins, 2014; Raisbeck and Tang; 2009; McIntyre and Harrison, 2016; Van der Linden et al., 2016a; Van der Linden et al., 2019). Whilst this study added to the existing discourse that very few architects were fully interacting with academic knowledge to inform their practice, there were exceptional cases identified. Interestingly, these cases highlighted an anxiousness between wanting to be proactive, but cautious of being the 'know-it-all in the room'. Bandura (2006) asserted that this can impact an individual's personal efficacy and as a result, their agency to act.

Whilst these cases evidenced cognitive flexibility to evaluate, reflect deeply and generate innovative alternatives to support complex social issues, this cautiousness had the potential to influence their socially responsible ways to take action for the 'common good' (Crilly et al., 2008). To prevent this, architects must develop their confidence and comfortability in putting themselves out there and leading the way through their informed positions.

- **Individual Knowledge and Expertise**

Individual knowledge and expertise of an architect was highlighted as a crucial component to enhance their informed position. The basis of this relied on 'soft' kinds of knowledge such as, personal experiences, case studies and episodic knowledge (Kirkeby, 2009). Kirkeby (2009) stated that this knowledge was predominately built up through experience in architectural practice when working collaboratively. Interestingly, it was highlighted in this study that traction has gained in successfully developing an internal cross-disciplinary team of experts to make up the collective practice beyond the typical architectural team. This supported greater collaborative thinking through 'collective intelligence' based upon diverse opinions, insights and inputs (Deutsch, 2020). The act of collective thinking produces a 'collective power' which fuels the agentic capabilities of the collective (Bandura, 2000). This collective thinking was highlighted to enhance an architect's knowledge of the overall context, and in doing so, better supported their individual informed position.

Additionally, architects within this study identified characteristics of possessing knowledge and expertise beyond collaborative thinking through means of qualifications, accreditation and training. Wigglesworth (2005) stated that undertaking disciplined training enhanced critical thinking that was contingent and responsive to the context that confronted the architect. This study highlighted that an informed position was enhanced through an individual architect attaining the relevant knowledge and whilst this could be achieved through collaborative thinking, the informed position was not held by the collective practice. This added to existing research which found that if an individual were to leave a workplace, they would take their valuable knowledge, resources, skills and experiences with them (Smith, 2001; Van der Linden et al., 2019).

- **Research, Synthesis, Reflection: An Iterative Cycle**

The process of research, synthesis and reflection was identified as the most prevalent means to becoming more informed during the design process. Makstutis (2018) explained this process as an iterative activity between research, proposition,

analysis and revision. This study found that to achieve this, an architect must undertake this iterative cycle with the user-client's involvement. Van Linden et al. (2016a; 2019) stated that this moves an architect's informed position beyond 'static information' to 'knowing' about users.

This study identified that this research and feedback process provided the architect with a holistic understanding of the context. This understanding of user experience has been evidenced to generate contextual knowledge that fosters new ways of critically, creatively and collaboratively thinking that promoted insight, empathy and innovation (Van der Linden et al., 2016a; 2019; Deutsch, 2020). This study highlighted that to achieve this, the architect must conduct an interlinked activity of listening to the user-client whilst understanding what was been delivered in industry. This added to existing discourse which argued that to successfully act, an architect must be sincerely interested, empathetic and actively listen to the users (Deutsch, 2020). Interestingly, Van Hoof et al. (2020) found that oftentimes, architects completely ignored older end-users. In contrast, the architects within this study emphasised the importance of involving user-clients through deep interrogation during their research, synthesis and reflection iterative cycle.

## **4.5 Deep Interrogation**

It was identified that an architect's deep interrogation of user-clients was influential to their agency and design process when creating supportive living environments for ageing. Within the context of this research study, deep interrogation was conceptualised as the following:

1. Creating a 'Safe space' for Meaningful Conversations with User-clients
2. Listening More and Speaking Less: Absorbing the Information
3. Perspective-taking: Putting Yourself in Their Shoes

It was these three actions that demonstrated an architect's deep interrogation skills when creating supportive living environments for ageing.

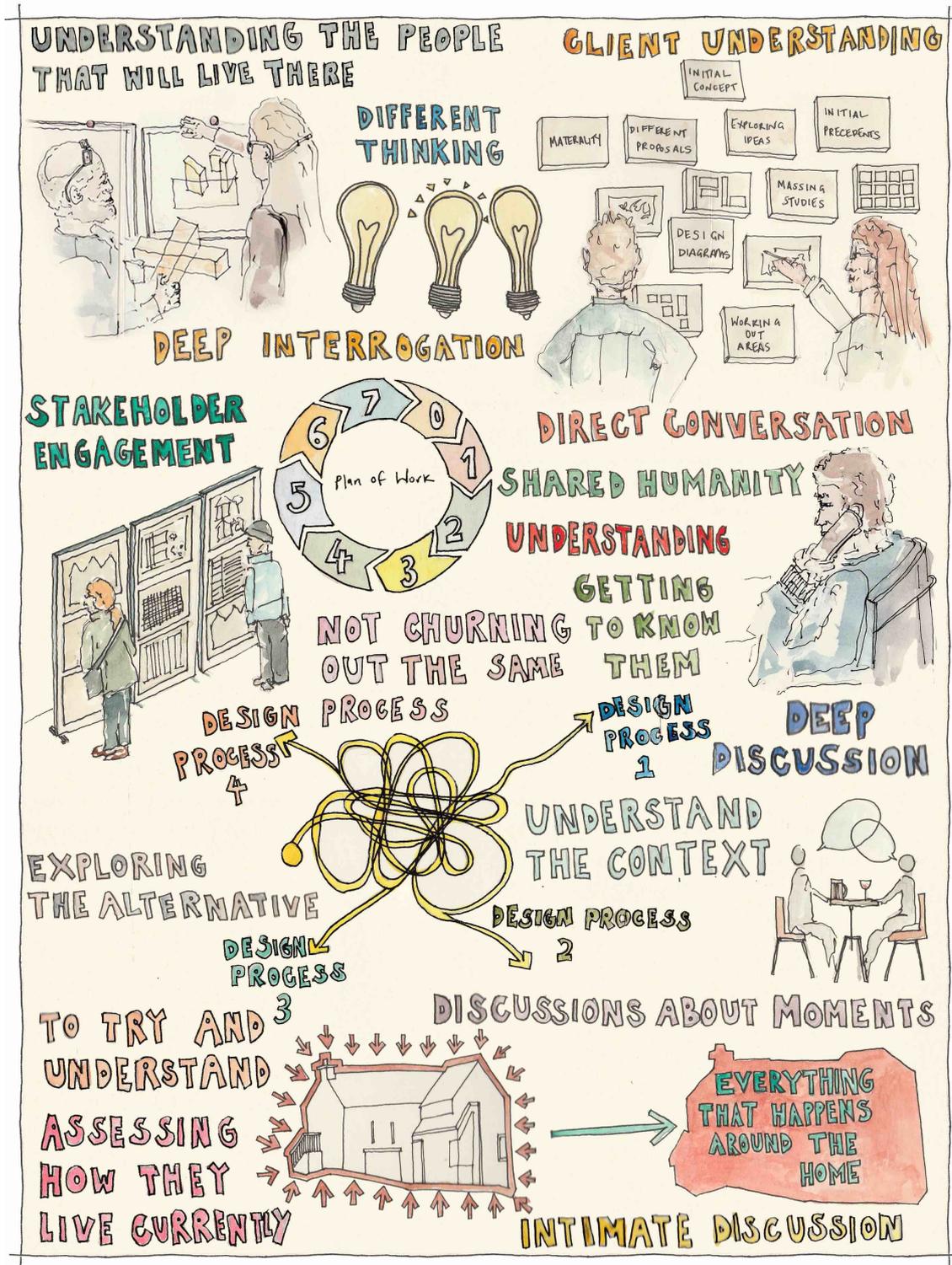


Figure 4.8 : 'Deep Interrogation' abstracted from the researcher's SRM

#### 4.5.1 Creating a 'Safe Space' for Meaningful Conversations with User-clients

Across the majority of interviews, Participants (A, E, F, G, H, I) highlighted that creating a 'safe space' both physically and mentally for meaningful conversations with user-clients influenced their ability to conduct deep interrogation. This simple act established a neutral ground that opened up initial discussions between the architect and user-client. These conversations were identified to support an architect to get to know the user-client. Participant A noted that this constructed a shared humanity that enhanced the consecutive stages of the design process. Participant A communicated:

*"I think starting from whoever they are, get into a warm conversation with them and get to know them. Maybe having a pint, a glass of wine or a cup of tea with them. It's often helpful, isn't it?...At that point people are often more prepared to anecdotalise and that's so valuable to us...It is similar to the act of breaking bread with someone. It has a kind of humanity, a shared humanity."*

*(Participant A)*

It was highlighted that creating a 'safe space' for meaningful conversations provided architects with an early interrogative tool. This was identified to best support the architects to gain greater insight into the most appropriate methods and approaches to use with user-clients during the design process. Participant D explained:

*"At the outset talking to them about what they can understand...Try and understand and ask them what they can understand...Just being open and having discussions as you meet them about what works for them in terms of a method and an approach."*

*(Participant D)*

This understanding supported the mitigation of potential challenges and misunderstandings of the user-clients that may arise during the design process. It

was highlighted that this understanding better equipped architects to develop designs that were appropriate for use. Participant D expressed:

*“You get into an intimate discussion with them about where their bed is going to be, relative to a window for a particular view because they're heading into old age and they want to live in this house forever. They're thinking about, actually, if I'm living here and I'm disabled and I'm bed-ridden. What can I see? So, you have quite intimate personal discussions about moments.”*

*(Participant D)*

Participants (D, H, I) explained that the purpose of these meaningful conversations with user-clients was to interrogate the moments of their everyday life. These everyday moments provided the architects with a true understanding of exactly *what* the user-client's needs and desires were for their living environments. It was expressed that this enabled the architects to understand *how* space was currently used and *why* specific spatial requirements were important to the user-client. This identified the key problems and opened up meaningful conversation into potential solutions. Interestingly, Participant B indicated that meaningful conversations with older user-clients was 'not part of standard architectural practice' and that there was a tendency of 'rushing to a sketch scheme'. This identified a disconnect between typical architectural practice (as opposed to architectural practice with experience in this area) and older user-clients. It was pointed out that the previous RIBA Plan of Work was a potential cause of this way of working. Participant B explained:

*“Deep discussion with the client in terms of really understanding what it is they're looking for. I was just so pleased when the RIBA introduced stage zero into the plan of work, because there's a terrible temptation for architects to just rush to a design and it may actually be that a new building is actually not the best answer to your clients project.”*

*(Participant B)*

The implementation of the RIBA Stage 0 was evidenced to better support deep interrogation through meaningful conversations with user-clients. However, it was unsurprising to hear that direct discussion was not always possible with user-clients, for example projects that were developer-led. Nevertheless, Participants (B, E, F, G, H, I) frequently mentioned that in this case, they undertook stakeholder engagement workshops which involved dialogue with individuals that represented this cohort, as well as specialists within the field. Participant H showcased this:

*“Looking back at the engagement process for [housing project name], I think it’s really interesting that we enabled discussion and argument between those groups. Putting groups of different people with different requirements together and see what’s important to one person might be, you know, something you never do in a project to somebody else. And that gave us the range of things that people wanted. We then went through that almost voting system and effectively what that does is, it finds the middle ground where people can agree on, but it cuts away some of the more radical stuff on either end of the spectrum.”*

*(Participant H)*

It was evidenced that these conversations were sustained throughout these developer-led projects. This ‘continual communication’ provided an iterative and interrogative process that fed back into developing designs. Interestingly, whilst these stakeholders were not the user-clients, it was noted that sustained engagement positively influenced them to feel involved which led to them taking some control over the developing design ideas. Whilst meaningful conversations successfully supported deep interrogation of the user-clients during the design process, it was highlighted that an architect was required to listen more and speak less in order to fully absorb information about the user-clients.

#### 4.5.2 Listening More and Speaking Less: Absorbing the Information

Listening more and speaking less was identified as crucial when interrogating the user-clients. Participant F indicated that it was the architect's role to 'listen to the people' in order to absorb as much information as possible. This ensured that architects had a thorough understanding that was based upon the user-clients experiences and what was important to them. Interestingly, Participant F stated:

*"There are people [architects] who like the sound of their own voice and they don't necessarily take on board what the clients need from the building."*

*(Participant F)*

Egotistical was identified as a hindrance to an architect being an attentive listener. Participants (E, F, G, I) identified that architects needed to 'depress that ego side of things' in order to successfully create supportive living environments for ageing. Participant I emphasised that understanding what was important to the user-clients was required before an architect's ego and their desires for a project. This essential understanding influenced the trajectory of the design process. This was illustrated by Participant G:

*"The first bit is listening to users through the briefing process. The second bit is then probably trying to use what would be a broad understanding that I think most architects have of what's being delivered currently in industry. And then a bit of research to back that up and look deeper into that and then try and bring the two things together. Does that examples meet that person's need and what can I learn from the openness of the two things against each other."*

*(Participant G)*

Through listening more and absorbing the information, the architect gained greater insight and understanding of the user-client which better equipped their position to 'look deeper' in the subsequent stages. Interestingly, it was highlighted that this interrogative process required architects to grasp potential psychological factors that

influenced the user-clients character in relation to their needs of the project. Participant E explained:

*“I think there’s quite a lot of personal psychology that goes into it because you’ve got to understand who the person is that you’re dealing with.”*

*(Participant E)*

It was suggested that being a good listener required the architect to understand psychology factors that influenced how an individual thinks, acts and feels during meaningful conversations. It was noted that that this was only made possible through the development of a good relationship with the user-client, based upon the creation of a ‘shared humanity’. This created a safe space for the user-client to express their thoughts whilst the architect attentively listened and absorbed the information. It was identified that by listening more and speaking less, architects developed a more holistic perspective of the context.

#### **4.5.3 Perspective-taking: Putting Yourself in Their Shoes**

Across all the interviews, perspective-taking was commonly discussed within the context of creating supportive living environments for ageing. To understand this context, architects frequently mentioned that the act of perspective-taking required ‘putting yourself in their shoes’. Participant F explained:

*“It requires you putting yourself in the shoes of the people who are going to be using the building and understanding how it is going to work for them.”*

*(Participant F)*

This understanding of buildings in use required the architect to immerse themselves into the user-clients existing living environments by visiting these existing buildings. This was acknowledged to provide a deeper understanding into the lived experiences of user-clients. Participant I expressed:

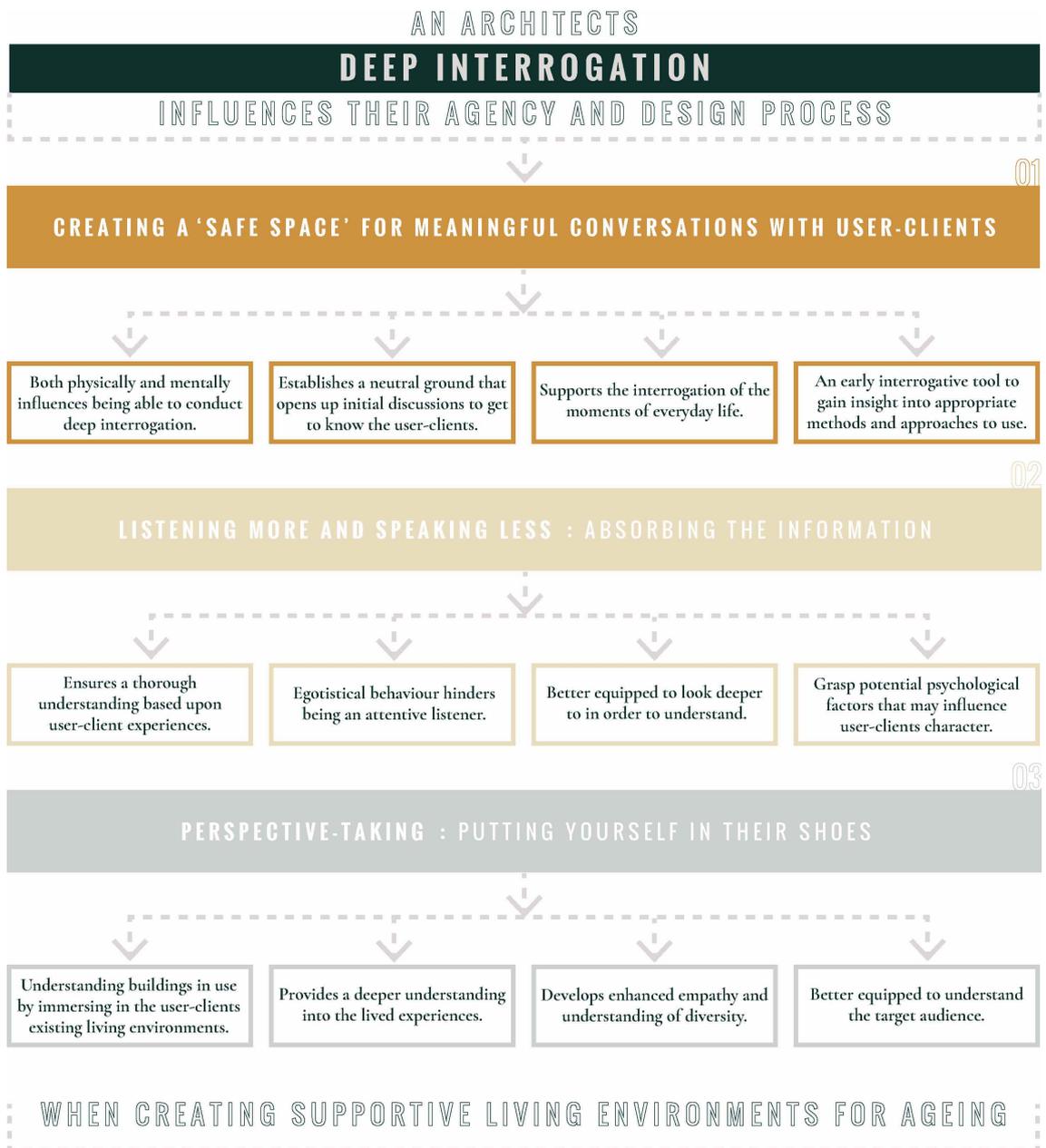
*“Put yourself in their position. I think people [architects] obviously draw on their own experiences, like how parents or grandparents live. But I think having empathy and knowing that it’s important to have a lot of different people from different demographics so that people [architects] understand and draw on all their [user-clients] experiences.”*

*(Participant I)*

This finding highlighted that an architect who put themselves in the position of the user-client developed enhanced empathy and understanding of the lived experiences of a diverse ageing population. Interestingly, Participant D suggested that an alternative way for an architect to immerse themselves during the interrogative process was through artificial-intelligence (AI) technology that tracked an individual's movements. For example, using AI technology to track a user-clients current mobility habits of getting in and out of bed. In doing so, providing insight into the limitations and potential opportunities of mobility within supportive living environments for ageing. All participants advocated that putting yourself in the shoes of the user-client best supportive perspective-taking through immersed understanding. Participant A stated that this enhanced the understanding of a diverse target audience and that this better equipped architects to serve design ideas that the user-client would find ‘palatable’.

#### **4.5.4 Discussion**

These findings identified that an architect’s deep interrogation of user-clients was influential to their agency and design process when creating supportive living environments for ageing. It was highlighted that creating a ‘safe space’ for meaning conversations with user-clients, listening more and speaking less, and perspective-taking were specific actions that influenced the deep interrogation process (see Figure 4.9). These actions relied on interrogating the conditions that were contingent to a specific project (Rendell et al., 2007). Rendell et al. (2007) stated that this was a critical practice designed to ‘question the status quo’.



**Figure 4.9 :** Summary of the influence of an architect's deep interrogation on their agency and design process

- **Creating a 'Safe Space' for Meaningful Conversations with User-clients**

Creating a 'safe space' for meaningful conversations with user-clients established a neutral ground that opened up initial discussions between the architect and user-client. This resonates with Luck et al.'s (2006) assertion that the initial 'spoken interaction' between the architect and user-client influenced openness of discussion. This study found that the initial spoken interaction was best placed in getting to know the user-client, as opposed to progressing straight into spatial design discussions.

This established a neutral ground which created a shared humanity between the architect and user-client. It was at this 'micro level' that the architect's critical judgement and user-clients' behaviour influenced the project trajectory and the success of exchanging information (Luck et al., 2006).

This study found that by getting to know the user-client, the architect was equipped to make a judgement on the most appropriate methods and approaches to use when involving the user-client during the design process. This ensured that proposed designs were appropriate for use as the architect was able to mitigate potential challenges and misunderstandings of the user-client throughout the design process. This added to Heylighen et al.'s (2017) assertion that the successful inclusion of the user-clients during the design process offered the architect rich insight into potential preconditions or solutions.

In addition, the study found that creating a 'safe space' for meaningful conversations provided architects with a true understanding of moments in the user-clients everyday life. This specifically identified *what* the needs and desires of the user-clients were, *how* their current living environment worked and *why* specific spatial requirements were important. This was a critical endeavour, given that Van der Linden et al. (2019) found that many architects based proposed designs on implicit assumptions and not user experience.

- **Listening More and Speaking Less: Absorbing the Information**

Listening more and speaking less ensured that architects truly absorbed the information provided by the user-clients. This required an architect to think critically which relied on being rational, asking pertinent questions and separating facts from fiction (Deutsch, 2020). This study highlighted that attentive listening enhanced an architect's understanding of user-client experience and what they deemed most important within their living environment. This was important, given that there was a need to inform architectural practice about user experience (Van der Linden et al., 2019).

This study found that an architect's ego hindered attentively listening to user-clients. Existing evidence has linked ego to the role of professional identity at a practice level and subjective emotional experiences at an individual level (Fodor, 1995; Rizzolatti et al., 2014; Roth et al., 2014; Coburn et al., 2017). The role of identity in professional practice and an architect's autonomy play an influential role in attentive listening to the user-client and as a result, ability to undertake deep interrogation. The study found that this ability influenced the trajectory of the design process and thus, the success of creating supportive living environments for ageing.

To support this action, architects were required to understand psychological factors that may influence how a user-client thinks, acts and feels. This recognised architects as multifaceted professionals and emphasised that 'an architect knows something about everything' (Frederick, 2007). Existing research has evidenced that the multifaceted positioning of an architect relied upon a cognitive foundation for inclusive architectural thinking (D'souza, 2021). D'souza (2021) found that Gardner's theory of 'multiple intelligences' fuelled an architect's ability to become multi-skilled in contemporary architectural design. The principles of multiple intelligences, specifically verbal skills, communication skills and interpersonal skills support the finding in this study which suggest that the ability to construct meaningful conversations which involved listening more than speaking, created a shared humanity which developed a more holistic perspective of the context.

- **Perspective-taking: Putting Yourself in Their Shoes**

Perspective-taking was consistently referred to as 'putting yourself in their shoes'. This has been identified as a social act that required an architect to have empathy when considering how a user experiences a building (Deutch, 2020). The finding in this study added to this notion which highlighted that an architect who put themselves in the position of the user-client developed enhanced empathy and understanding of individual lived experiences.

Specifically, it was identified that immersion in the user-clients existing living environments best supported an architect to develop a deeper understanding on lived experiences. Van der Linden et al. (2019) referred to this as 'infiltrating in users' life' and stated that this was the most intensive strategy to 'get closer to users' perspectives'. This was highlighted to support an architect's understanding about user-clients' context and needs. This strategy has been described as a socially-oriented practice that can act as an 'authority argument' (as opposed to assumption-making) during practical discussions during the design process (Ibid). Van der Linden et al. (2016a) argued the need for collecting first-hand information from user-clients through small-scale field studies in order to provide the architect with the appreciation of contextualised information within the environment.

This study provided insight into the crucial role immersion in existing living environments can play in contextualised understanding of lived experience for architects. Interestingly, this study identified AI technology as an additional way to develop an understanding of an individual's lived experience (such as movement around the home). The use of sensor networks to monitor everyday life has been recognised as an effective system for understanding daily routines, mobility, and environmental comfort (Bailey et al., 2011; Wilson et al., 2019; Javaid et al., 2021). It was highlighted that these forms of perspective-taking better equipped architects specific ways of knowing about user-clients which ensured that they designed appropriately for use.

## 4.6 Visual Communication

It was identified that an architect's visual communication skills are influential to their agency and design process when creating supportive living environments for ageing. At this point, it is worthwhile sharing an extract taken from Participant A who appropriately defined an architect's visual communication process:

*“Everything architects do is generate information and send information, don't we? What we're meant to do with that information is to communicate it.” (Participant A)*

Within the context of this research study, the communication of information was conceptualised as the following:

1. Using Freehand Sketching: Quick, Simple and Conceptual
2. Using Computer-aided Design: Refined, Detailed and Precise
3. Developing a Workbook: A Diary of Unpolished Ideas

It was these three actions that demonstrated an architect's visual communication skills when creating supportive living environments for ageing.

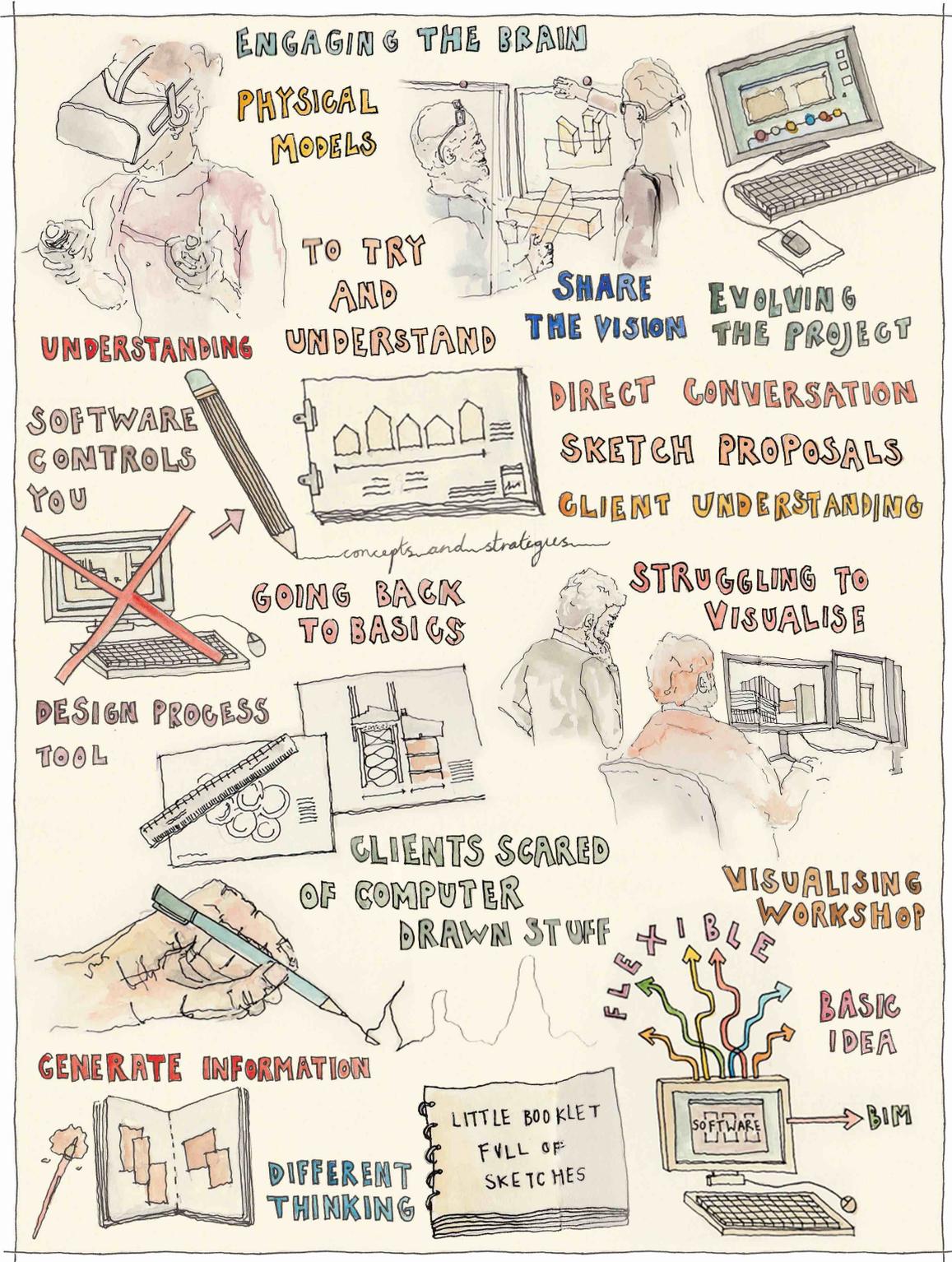


Figure 4.10 : 'Visual Communication' abstracted from the researcher's SRM

#### 4.6.1 Using Freehand Sketching: Quick, Simple and Conceptual

Across the interviews, the use of freehand sketching was highlighted as the prominent visual communication technique used during the design process, particularly when aesthetics, feel and spatial arrangements were explored. A sketch/drawing was referred to as a quick, simple and conceptual graphic. This technique was identified as particularly dominant during the RIBA Plan of Work stages 0-2. Participant H communicated:

*“It's primarily as visual as possible, you can summarise an awful lot with a simple graphic and I think the best way to summarise the intent on whichever project it is, is to do it graphically...We often start at 1 to 500 scale in terms of what the key adjacencies are, and to try and plan those out. You can do the same through housing, ageing and other projects in terms of just very simply and quickly conveying a message, conveying what the main issues are and then getting feedback and being able to develop that.”*

*(Participant H)*

The use of freehand sketching was identified to portray the ‘summary’ of intent which addressed the main issues in order to obtain feedback that invited the opportunity for further design development. All participants used this sketching process as a way to ask the key questions in order to evolve the design process.

Participant G stated:

*“You can say to a client, is that right? Is that what we've talked about, or is it completely wrong? Then you can very quickly go from a positive or a negative reaction without very much work. And that's a really key part of the process for me because if you're going down the wrong route, you want to find out pretty early in that process.”*

*(Participant G)*

The retrieval of feedback through this drawing process was identified to support the architect's understanding of the user-client's desires. This was highlighted to influence the trajectory of the design process and better equipped the project appropriateness as it moved into the consecutive design stages. It was communicated that once a project moved into the RIBA Stages 3-4, the drawing process became more refined, finessed and detailed which made it difficult to communicate to the user-client. Participant H stated:

*“As you go through a project, then that graphic develops as you get into 1 to 200 plans, sections and elevations...A lot of the clients are not particularly graphically savvy or educated in terms of plans, sections and elevations. They're going to wonder if you start getting into too much of the nitty gritty detail. So, it's trying to be able to do it graphically, in a way that's appropriate to your audience.”*

*(Participant H)*

It was expressed that an architect's drawing process needed to depict detail in a simplistic manner when visual communicating design ideas to a user-client. Participant B communicated that this was well received by older user-clients as they were able to 'pick up the pencil' and engage in the drawing process. This was identified as a valuable technique which opened up enhanced communication and collaboration between the architect and user-clients. Participant A expressed:

*“It's a basic skill. It's not optional. Whilst you need to be able to do full media, you still need to go back to it as it's the quickest. And certainly when you do it with a client who says, 'could it be a bit like this', if they suddenly recognise the value of it, it is extreme because you've suddenly found a key into exactly the difficult concept that they are trying to communicate to you. And they'll remember that as well.”*

*(Participant A)*

The ability to freehand sketch was a fundamental skill that architects were required to possess in order to best communicate design thinking to a user-client. This was identified as particularly valuable during the early RIBA stages at project inception. In doing so, the process encouraged a shared vision between the architect and user-client. Participant A stated:

*“I think it is an intuitive shared thing that we are doing, isn't it? So, if you can't share the image really quickly, and if you haven't got the ability to do a diagram or an ideogram, then it is a technique that you should practice really quickly.”*

*(Participant A)*

The use of freehand sketching was identified as an intuitive and shared activity between the architect and user-client. It was highlighted that this skill enabled an openness of conversation between the architect and user-client by breaking down knowledge barriers. Participant B stated:

*“In some ways, it breaks down the barriers. Once you go behind the screen and you're drawing, you're doing something that a client couldn't conceive of doing themselves. You've put a distance between yourself and a client.”*

*(Participant B)*

It became apparent that the use of technology was a potential barrier to carrying out freehand sketching at the earlier design stages. Interestingly, it was identified that the retainment of drawing during these earlier stages was linked to architectural education. Participant C reflected:

*“To start the development diagrams, it's a pen. We're not straight into software or anything...I think it's kind of going back to the initial first and second year at University. I didn't pick up the laptop until like third year. And then you think well I've got to, because everyone else is. But it's actually quite nice going back to basics.”*

*(Participant C)*

This finding highlighted that architectural education played an influential role across an architect's career. Participant C expressed that it underpinned an architect's ability to successfully 'go back to basics' and refrain from using computer-aided design (CAD) at the early stages of the design process.

#### **4.6.2 Using Computer-aided Design: Refined, Detailed and Precise**

The use of computer-aided design (CAD) was most commonly found to be associated with the RIBA work stages 3-4. At these latter stages, CAD (such as Revit and Enscape software) took dominance in order for drawings to become more refined, detailed and precise. It was highlighted that traction had gained in the use of CAD during the earlier stages of the design process. Interestingly, Participant G identified that there was a generational shift within the industry which was moving away from the use of freehand sketching for visual communication. Participant G stated:

*“There's a mentality of a little bit of modelling and graphic styling things too much, presenting finished solutions rather than putting up a drawn graphic of the idea. I think it's a skill set that people of my generation are a bit more comfortable with, around just taking a blank sheet of paper to a meeting and drawing with a client and making things in front of them, rather than having to go away and model stuff in Revit....It's not always a negative. You just have to control its use and understand that it's not perfect, and it's not a solution until it goes through those gateways of decision-making and the buy-in.”*

*(Participant G)*

This finding suggested that freehand sketching provided the 'gateway of decision-making' and supported user-clients to 'buy-in' to the initial design proposal. Participant D explained that this required architects to be comfortable with integrating the use of freehand sketching from the outset of project inception whilst pushing back the use of CAD application. Participants (C, D, G) argued that the introduction of technology too soon controlled the design process, as opposed to the design process controlling the technology. Participant D explained:

*"There's that worry that the software controls you and you become a slave to it. It should be a tool to help you. But actually, if your skill sets not good enough for the software, it kind of runs away with you and you end up working around to make it work."*

*(Participant D)*

The premature application of CAD was recognised as a potential preventative measure to an open and explorative design process as it forced design decision-making down a specific route. Participant D explained further that whilst the early implementation can control the architect, it was also perceived negatively by user-clients. They stated:

*"A lot of clients get quite scared when you draw stuff on computer. They think it's a kind of final proposal. Actually doing stuff by hand, keeping it quite loose is quite good because it allows that discussion with the client to be quite discursive because they don't think that's the final product."*

*(Participant D)*

Whilst the early use of CAD was highlighted as a hinderance to explorative design thinking and a barrier between an architect and user-client, this was not the case in the later RIBA stages. All participants noted that these stages became more refined, detailed and precise. This was unsurprising, given that these stages of the design process were specifically focused on technical design for manufacturing and

constructing the project on site. As a result, it was highlighted that architects had difficulty with visually communicating this stage to the user-client and relied upon the use of technology to support this stage. Participant E explained:

*“We actually get the client in, to sit with the 3D model and talk through it so that it becomes a bit more collaborative...You know, it exposes you a bit but also can be helpful with helping clients to understand what they’re getting out of it.”*

*(Participant E)*

The use of CAD was identified as an effective visual tool for communicating detailed information to a user-client whilst also enhancing a collaborative process between the architect and user-client. This was highlighted to support the user-clients understanding of exactly what they were getting at handover. Interestingly, Participant F reflected:

*“I’ve worked with this client for years and I thought that she understood plans and sections because I had gone through them with her so many times. And when I showed her the 3D, she was like, ‘ooh that’s what it is going to be like’. I honestly, not for one second thought that she didn’t get it. So, it just shows you the difference it makes to the clients. I think we sometimes assume that people have the same skills as we do in terms of reading two dimensional drawings.”*

*(Participant F)*

This finding identified a misunderstanding of the architect assuming that the user-client had the skillset, as well as the lack of understanding of the user-client surrounding the project. This suggested that 3D visuals were better understood by user-clients as opposed to 2D plans and sections. The above finding highlighted that without the 3D visuals, the architect would have continued to assume that the user-

client understood their design thinking through 2D visuals. Participant D communicated:

*“Don’t assume...Actually just like any client, try and understand, and ask them what they can understand. Your older person client may be an architect or an engineer that can read drawings perfectly well or there may be someone that’s young who can’t read drawings. So, they might need to look at a model to understand it. I think stuff like VR and things like that, you shouldn’t just assume that an older person wouldn’t want to engage with VR. I think even looking at some architects, like Richard Rogers and Norman Foster, they’re in their 80’s, they’re old people, and yet they’re top of their game at what they’re doing.”*

*(Participant D)*

This finding highlighted the importance of architects gaining an initial understanding of the user-client in order to support their involvement during the design process. In doing so, architects were best equipped to use appropriate methods and approaches that visually communicated their design thinking in an accessible manner for the user-client. Participant I explained:

*“It’s important for us as architects to show them what this building might be, but also in the communication as well. Some clients don’t know how to read plans, other clients are au fait with it and fine with that. But if they’re not, you have to communicate what you need to do, what we think is right and talking about the story...The architectural story of the architecture. So, it’s helping them buy into that, through the communication and what it is about really. What’s important to them, because it’s their house.”*

*(Participant I)*

This identified that an architect was successful in communicating their design thinking when the user-client understood the 'architectural story'. This was highlighted to underpin the trajectory of the design process.

#### **4.6.3 Developing a Workbook: A Diary of Unpolished Ideas**

The workbook of an architect's design process was described as a visual diary of unpolished and unfinished piles of sketches, concept ideas and design options. This would later be developed into more formal measured drawings that became the backbone of the outline and detailed planning applications. Participant C communicated that by visually collating work into a booklet, user-clients were able to gain a greater understanding into the importance of the architect's design process because 'they are seeing it as it happens'. By seeing an evolving workbook throughout the design process, a user-client had greater accessibility to the architect's knowledge. Participant A explained:

*"We have all our learnings for each project captured both electronically but also long hand. I know it sounds primitive, but a big A3 ledger, every drawing, every sketch, every discussion you've ever done, regardless of whether we can flush something on the screen, we can also take you through the discussion with the notes and the coffee stains."*

*(Participant A)*

This finding highlighted that the workbook process captured a record of 'every drawing' and 'every discussion'. This enhanced the user-client's involvement during the process which supported a collaborative process between the architect and user-client. This was identified to support a user-client to grasp the reasoning behind specific design decisions and that they were not a standard response to a given problem. Participant A explained:

*“I think it's a very valuable thing to do in terms of the process, because everything architects do is generate information and send information, don't we? What we're meant to do with that information is to communicate it. That's the bit we often forget about. Oh, I've done it or come up with the solution, but have you showed me your workings? Have you showed me the logic behind it? Most importantly, have you changed my mind?”*

*(Participant A)*

This valuable communicative technique showcased the logic behind the design thinking and was most commonly cited to support the architect's role as an informant that generated and communicated information. Participant A explained that this constructed a 'shared vision' between the architect and client. This was identified to be particularly strong when undertaking a co-design process. Participant H illustrated:

*“Through the co-design sessions we recorded everything and we produced interim reports which identified what the feedback had been, what the outputs were and raised the key questions for the next session. We used those as steering points for each following session. So, at the end of the co-design sessions, we had seven or eight reports, each one leading off the next and each one detailing that development...Just using the experience and then being a little bit, I suppose evangelical about it, putting it out there in terms of a different way of developing age-friendly and multi generational design.”*

*(Participant H)*

This finding highlighted that the curation of a workbook (reports) steered the co-design sessions as it provided an accessible body of information. This visual communicative tool was identified to support architects to identify feedback, pinpoint outputs and raise key questions in the following sessions. Participant H explained that this required architects to 'put it out there' and showcase to the user-client their

different way of thinking. In doing so, this was acknowledged to enhance an architect's efficiency during the design process. Participant D explained:

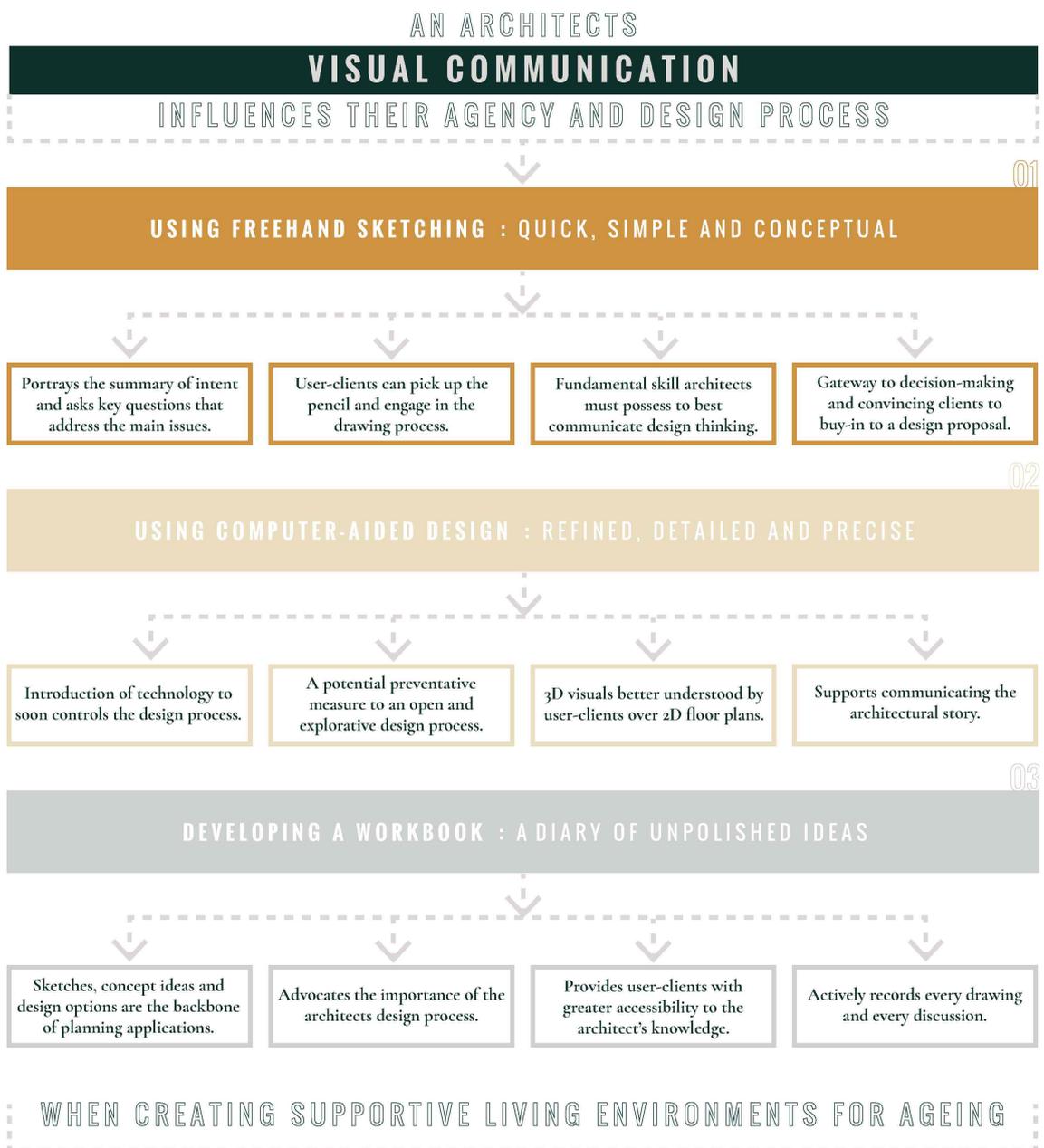
*“Rather than us disappearing for three months, preparing these hundred page documents. They'd seen them two or three times. So, when it came to being ready to submit. We just said, 'right, we're ready to submit' and they said, 'yep, good right', because they'd already seen it. We would send those digitally, but then also post them down the hard copies, every week or so.”*

*(Participant D)*

This identified the workbook as an active and evolving body of information which user-clients could consistently engage with throughout the design process.

#### **4.6.4 Discussion**

These findings identified that an architect's visual communication skills are influential to their agency and design process when creating supportive living environments for ageing. It was highlighted that using freehand sketching, using computer-aided design, and developing a workbook were specific actions that influenced an architect's ability to visual communicate information successfully (see Figure 4.11). This relied upon the production of visually creative work that could be 'examined, interrogated, modified, and developed' in order to meet the needs and solve problems within the given context (Makstutis, 2018). This visually communicative process was fundamental throughout the entirety of the building process (Cohen et al., 2005). Cohen et al. (2005, pg. 783) stated that 'each draft and drawing had to be aesthetically pleasing in its own right'. Unwin (2007) found that this visual communication process was essential for the generation of architectural proposals and building realisation.



**Figure 4.11 :** Summary of the influence of an architect’s visual communication on their agency and design process

- **Using Freehand Sketching: Quick, Simple and Conceptual**

The use of freehand sketching was highlighted as the most prominent visual communicative technique to showcase quick, simple and conceptual design thinking. Unwin (2007) explained this as a ‘medium of presentation and resultant artefact’ which situates knowledge and understanding of information for others. This study added to this notion, finding that the use of freehand sketching portrayed a summary of intent which was well received by user-clients and as a result, opened up greater

engagement and collaboration during the design process. This contends Minder and Lassen's (2019) finding whereby the visual and aesthetic competence of a designer was not found to be important to the outcome of collaboration.

In this study, the architect's use of freehand sketching was found to be particularly important when working with older user-clients. Architects expressed that older user-clients were more familiar and comfortable with this form of visual communication which provided the encouragement to pick up the pencil and engage. Thus, the visual competence of the architect using freehand sketching was well received and fuelled collaboration with the user-client. Existing evidence found that sketching fosters the 'sharing of subjective experiences' and 'enrichment of informal modes of learning' for older adults (James, 2017). This study added to this finding, which identified that the use of freehand sketching broke down knowledge barriers and enabled an openness of conversation between the architect and user-client. The use of visually pleasing processes (such as sketching) can be used as 'pervasive' material knowledge that supported the understanding of design moves (Van der Linden et al., 2019).

Interestingly, this study found that architectural education influenced an architect's ability to use freehand sketching and refrain from the use of technology at the early stages of the design process. This corroborated with Makowska (2019) study which argued that freehand drawing was a crucial element of architectural education. This was particularly fundamental in the early stages of the design process and importantly, could not be replaced by the use of advanced technology.

- **Using Computer-aided Design: Refined, Detailed and Precise**

The use of CAD was commonly associated with the latter stages of the design process when drawings became more refined, detailed and precise. At this point, technology helped architects to manage and communicate the 'complexities of information' while clearly articulating design intent (Meyer, 2016). However, within this study, participating architects expressed that there was a generational shift within industry whereby technology was being implemented earlier in the design process.

This has been found to influence drawing ability and has devalued drawing as a creative process to support innovation (Michelle, 2019). This study identified the importance of refraining from using CAD too early in the design process, as this had the potential to impact initial decision-making and a user-clients buy-in.

Specifically, it was highlighted that the premature application of CAD controlled the design process down a specific route which prevented open and explorative creativity. It was creativity within architectural practice that differentiated architects from other disciplines within the construction industry (Cohen et al., 2005). It was highlighted that appropriately timed implementation of technology was necessary to ensure that it was not a barrier to an architect's creativity during the design process.

With that said, the use of CAD (specifically 3D visuals) was identified as a successful form of visual communication for user-clients to grasp an understanding of the developed detailed design. This was important given that existing evidence has highlighted that architects have difficulty with communicating knowledge externally (Van der Linden et al., 2016a; 2019). In addition, this was highlighted to best support the architect to visually communicate the architectural story to the user-client.

- **Developing a Workbook: A Diary of Unpolished Ideas**

The development of a workbook of sketches, concept ideas and design options supported architects to visually communicate their design process to user-clients. This provided a process of recording, documenting and communicating design thinking (Deutsch, 2020). As a result, this provided the user-client with an up-to-date document of each and every drawing and discussion of the building process which facilitated the realisation of the developing architectural output (Cohen et al., 2005). This was identified to provide the user-client with greater accessibility to the architect's knowledge. Thus, highlighting the workbook as a successful tool to support the previously evidenced issue of architects communicating knowledge (Van der Linden et al., 2016a; 2019).

Importantly, architects recognised that visually communicating the design process through a workbook format illustrated the reasoning behind specific design decisions and that these were not a standard response to a given problem. It visually communicated that the architect's design thinking had been 'examined, interrogated, modified, and developed' (Makstutis, 2018). This study found that developing a workbook better shaped and informed ideas that were focused on a shared vision between the architect and user-client.

As a result of this, it was identified to be a particularly successful tool during co-design sessions as the architects were able to identify feedback, pinpoint outputs and raise key questions with user-client. Heylighen et al. (2017) stated that the opportunity to discuss firsthand with the user-client during the design process offered rich insight into potential preconditions and solutions. Participating architects explained that by sharing their developing workbooks with a user-client, greater engagement and collaboration was achieved which supported a positive design process.

#### **4.7 Knowledge Acquisition and Dissemination**

It was identified that an architect's knowledge acquisition and dissemination was influential to their agency and design process when creating supportive living environments for ageing. The process of architects acquiring and disseminating knowledge relied upon an interplay between the following actors: architect-architect, architect-user/client, architect-client/developer, architect-other BEPs and architect-ageing experts. Within the context of this research study, knowledge acquisition and dissemination were conceptualised as the following:

1. Active Showing: Precedent and Building Visits
2. Producing Design Options: Iterations of the User-client Brief
3. Facilitating Co-design Sessions: Collaboration and Open Discussion
4. Developing Insights Beyond Guidance
5. Continuing Professional Development
6. Knowledge Transfer and Exchange: Active Dissemination

It was these six actions that demonstrated an architect's ability to acquire and disseminate knowledge when creating supportive living environments for ageing.

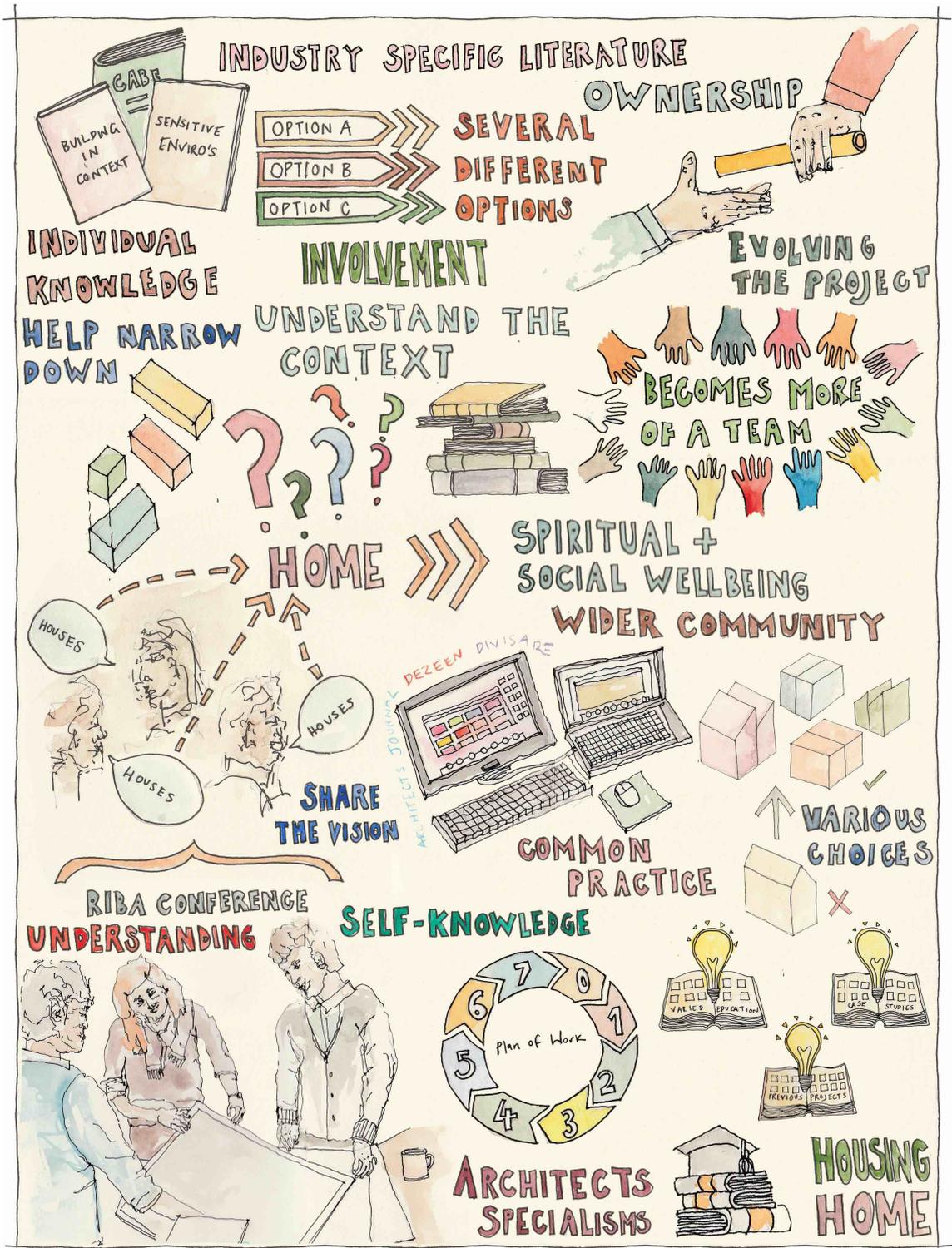


Figure 4.16 : 'Knowledge Acquisition and Dissemination' abstracted from the researcher's SRM

#### 4.7.1 Active Showing: Precedent and Building Visits

The opportunity to actively show user-clients architectural precedent and building examples was identified as a tool for enhanced knowledge acquisition of the architects and the user-clients. Participant D explained that actively showing architectural precedent opened up greater communication between the architect and user-client, whilst also supporting the architect to share their developing design ideas. Across all interviews, architectural precedent was identified as the most common visual material used to guide enhanced understanding for all involved during the design process. Participant G stated:

*“What inspires me is looking at precedent. How other people have done what you’ve done before, because you can’t reinvent the wheel on every project.”*

*(Participant G)*

The use of inspiring precedent was highlighted to enhance an architect’s ideation during the design process. Within the context of knowledge acquisition, the majority of participating architects identified that architectural precedent was largely used over academic research. This was a result of being able to actively see architectural precedent working in the real world. Participant I stated:

*“I think we probably use more precedents, more on the things that have worked and been designed and people live in them. I think people can relate to that better.”*

*(Participant I)*

It was identified that architectural precedent was more relatable for user-clients when compared to academic research as the visual material provided active seeing of what had worked previously. This suggested that the lack of relatable visual academic research material hindered its practical use in the context of architectural practice. The visual material of architectural precedent was highlighted to best depict effective, reliable and relatable references to the context setting. Participant

G explained that to strengthen the act of showing these, architects were required to stay up-to-date with 'what's being delivered currently in the industry'. This was supported by actively disseminating these to one another in the architectural practice and thus, enhancing knowledge acquisition as a collective practice. Participant D explained:

*"There is a core group of us in the office that are fairly up-to-date with what other practices are doing and mostly British architects. But beyond the UK as well and that's from things like Dezeen, ArchDaily, RIBA Journal and things like that. Not all the precedents which we draw on our within the last 10 years in the UK. They could be stuff from across Europe and beyond, over the past one hundred years really."*

*(Participant G)*

Whilst it was evident that architects heavily relied upon visual architectural precedent, it was identified that reading the text-based aspects of the case studies<sup>13</sup> were of particular interest to architects. This format was highlighted to further support the acquisition of new knowledge that surrounded the architectural precedent. This identified the case study format as a successful method for text-based information, as opposed to academic research for enhancing knowledge acquisition. Whilst the majority of participants placed emphasis on the act of showing architectural precedent as opposed to explaining research evidence, there was the exceptional case identified. Participant E highlighted that they were more focused on expressing the qualitative aspects rather than surface appearance. They stated:

*"It's more about how do I want this place to feel. I'm on HousingLIN all the time to read stuff. I go to all the meetings and open myself up to every opportunity to speak to people."*

*(Participant E)*

---

<sup>13</sup> For example case studies in the Architects Journal (AJ) Magazine which provides the architects with narrative surrounding a project through working details, drawings, costs and product information.

The 'feel' of a place was highlighted as crucial when creating supportive living environments. Participant E stated that they used well-published research over architectural precedent to support this positioning. Interestingly, they explained that they were in the process of trying to synthesise research into a more relatable output to present to user-clients. They added:

*“One of the things we’ve been thinking about was actually doing client briefing sheets. Actually getting some of the research that we’ve been looking at in terms of harmful materials, finishes and the environmental impact and distilling those down into client briefing notes that are going to be easy for clients to digest because it’s really hard.”*

*(Participant E)*

Whilst participants evidenced that understanding research was difficult, it was identified that the use of briefing sheets could be a potential supportive tool for actively showing academic research in a more 'digestible' way. This was identified as a potential process for enhancing knowledge acquisition within the specific remit of academic guidance. Additionally, it was highlighted that there was a desire to showcase built examples by conducting building visits which moved the act of showing beyond architectural precedent. Whilst visiting existing buildings was highlighted to be an uncommon practice due to time constraints, Participant D did provide an example of this:

*“We had a housing scheme whereby the client was a bit twisty about using a certain type of brick and we’d seen it somewhere else. So, we actually got in the car and went with them and had a look at something else and managed to convince them.”*

*(Participant D)*

Actively showing examples by visiting buildings enabled user-clients to acquire contextual knowledge of specific design characteristics (such as materiality in this

instance) in the real world. This was highlighted to successfully support convincing user-clients during the design process.

#### **4.7.2 Producing Design Options: Iterations of the User-client Brief**

Design options were identified as a fundamental component for the ability to obtain enhanced knowledge on a user-clients initial ideas. In addition, the process also provided the user-client with greater knowledge on design possibility. Participant I explained that this process was required as it was commonplace for user-clients initial ideas to be 'very focused' and based upon a 'list in their mind'. It was identified that producing design options better equipped the architect to draw this list out in order to formulate a written brief that established the most appropriate scope of works. Participant I stated:

*“You do the concept stuff as an evolving brief, to say, okay well, we’ve gone down that route and then show them a number of options. It’s important to show what they don’t want as well as what they do want.”*

*(Participant I)*

The conceptual stage (RIBA Plan of Work stage 2) of the design process was identified as the point when design options were most interrogated. This was highlighted to evolve user-clients predetermined ideas which strengthened the initial pre-set briefs. This process was identified to move the user-client beyond their initial thought-processes and towards enhanced innovation. This required architects to not jump to the first obvious conclusion, but to value and share the produced design options with the user-clients. In doing so, the user-client was able to acquire the knowledge to understand the integral value of this process. Participant A stated:

*“It’s in no way just a standard response to the problem we’ve been given and hopefully involving them in the process, because we do believe that if you feel involved, then you will be much more informed by going through the processes to understanding.”*

*(Participant A)*

This finding identified that producing design options encouraged the design process to move beyond standard convention in order to innovatively solve given problems. This was supported by a process of refinement which focused the design options down towards final resolution. Interestingly, Participant C highlighted that at this point of refinement they designed twofold, firstly a proposed ‘present’ design option and secondly, a proposed ‘future-proofed’ design option. They explained that this advanced the user-clients design knowledge by showcasing the best possible design opportunities within the context of creating supportive living environments for ageing. This required architects to ‘design it all’ in order to meet the user-clients evolved brief whilst showcasing how the designed floor plan could be adapted for longevity. Participant C explained:

*“For the future-proofing, we were showing how it meet the HAPPI criteria. So, it was each of the principles on an annotated plan of how it meets that.”*

*(Participant C)*

The process of producing design options was identified to provide user-clients with the ability to acquire relevant knowledge on how best to create a supportive living environment for ageing. Specifically, the importance of incorporating flexible design decisions to support alterations at a later stage if/when required. Thus, future-proofing the living environment to support ageing-in-place. Whilst this was identified as a positive move, it was highlighted that time pressures as a result of financial constraints prevented standard architectural practice from producing a variety of conceptual options during the briefing process. Participant G stated:

*“That’s probably a discipline that the industry has been steered away from because programming costs have been prioritised over getting the right solution in the first place.”*

*(Participant G)*

Programming costs were identified as a hinderance to producing design options within the specific context of creating supportive living environments for ageing. Whilst it was highlighted that fees played a substantial role on the design process, architects across the interviews evidenced that they were committed to creating the best possible living environments for ageing.

#### **4.7.3 Facilitating Co-design Workshops: Collaboration and Open Discussion**

The facilitation of co-design workshops was identified as the most prominent activity used for the generation of first-hand research. It was highlighted that this design-led process was commonly undertaken during Stage 1 and 2 of the RIBA Plan of Work and involved using creative participatory methods with user-clients only, or user-clients, other BEPs, subject specialists and local communities. Participant G explained the latter as a ‘pyramid of engagement’ made up of a ‘top strand’ of 6-8 co-design workshops, with ‘bottom strands’ of about 10-12 different sessions which all had ‘design champions’ that fed back into the top strand sessions. Participant G stated:

*“There was loads of it and different people took on responsibility for engaging in different ways. So, I did a HousingLIN workshop for a day with 30 planning professionals who work in housing and I fed that back in. Others did work with the plans through the public consultation on the planning process with the broader community that got fed back in. It’s all about how you engage and capture.”*

*(Participant G)*

These co-design workshops were required to be non-prescriptive in order to encourage participants to collaborate and contribute meaningful inputs. Participants (E, G, H) highlighted that these inputs informed the architect of the practicalities of everyday living for the user-client. Participant H explained:

*“[We used]...Interactive workshops. So, it’s ideas on big pieces of paper, sticky notes and then voting with little dots...It was an iterative process...To say, well, are we right about these things, this is what you told us...Have we got this right as the order of priorities or themes around spatial quality?”*

*(Participant H)*

This method was highlighted to enhance participants engagement during the design process. It was identified that participants increased involvement enhanced the architect’s contextual knowledge which further informed the design process. Interestingly, Participant I identified that architects must take a ‘facilitator’ role during these workshops. They stated:

*“So, you almost act as the facilitator. With the workshops we’ve done even during lockdown, we try to impart as much knowledge as possible to them. So, they can almost become designers themselves. It takes a long time, but it really helps in terms of them really feeling like they’re buying into the project... So, they are really involved in the design process.”*

*(Participant I)*

The competency of architects as facilitators during the co-design sessions was highlighted to enhance participant involvement through design-thinking. This facilitation role supported participants to acquire the knowledge to understand how best they were able to contribute during the sessions. This involvement was identified as crucial when creating supportive living environments for ageing. Participant I expressed:

*“They’re ultimately going to be living in it, so it is absolutely crucial to involve them all the way through.”*

*(Participant I)*

It was highlighted that the facilitation of co-design workshops was most successful when they were organised into a series of half-day iterative sessions that started with a broad focus. Participant H stated:

*“They started as very big, broad, brush themes, trying to establish what are the big issues...So, it’s ideas on big pieces of paper, sticky notes and then voting with little dots. Giving everyone a chance to vote on things and because it was an iterative process, we were able to take the information we got from one session, have a bit of time to process that, and then put that back to them at the next session.”*

*(Participant H)*

This activity generated rich qualitative data that was then uploaded into ‘Wordle’ software to identify the most common words mentioned during the workshop sessions. These words were relayed back to participants in the next session in order to challenge potential preconceptions around what they had mentioned. This raised further questions which supported architects to acquire additional contextual knowledge. Participant H highlighted that this enabled them to ‘create an order of priorities or themes’ that focused down their discussions with user-clients. Interestingly, Participant G found that the co-design workshops were more successful at developing open discussions which focused more on the ‘softer things’ (such as comfort), as opposed to quantitative aspects. They added:

*“I was like, hang on a minute, why are these two things so fundamentally different. To get better housing, do we need to move away from a tick box system and more towards the qualitative assessment because it's getting the good things out...It was just interesting for us seeing that.”*

*(Participant G)*

Interestingly, it was highlighted that in the recent past, it was common practice for this level of engagement to be missed altogether. Participant H reflected:

*“You kind of jumped 0-1 stages and jumped straight into 2-3, but it is starting to broaden which I think is reflected in the way that we're doing projects.”*

*(Participant H)*

It was made clear by architects that their facilitation of co-design workshops during the initial stages of the design process successfully supported the acquisition of knowledge for all involved. Participant A reflected upon their experiences of these design sessions as ‘some of the best lessons we’ve had’. It was highlighted by Participant H that these ‘lessons learnt’ were fed back into the next project in order to continually undertake a learning process that built up a level of understanding on creating supportive living environments for ageing. It is worth-noting that architects highlighted that it was not always possible to engage the end-user in the co-design workshops. This was dependent upon who the client was (such as a developer-client as opposed to a user-client) as this influenced the financial and time constraints. However, it was positive to hear that if this engagement was not possible, architects undertook co-design workshops with individuals who represented this diverse cohort. It was highlighted that the representation of difference was best achieved through understanding the people, drawing on their experiences, and championing their engagement through co-design workshops.

In addition, it was identified that collaboration with ageing experts (such as individuals within university) and other BEPs opened up diverse connections, for example with council members, housing associations and new clients. Participant H explained that off the back of these initial collaborative discussions, an age-friendly housing development was initiated and co-design workshops were conducted. This cross-disciplinary network was highlighted to strengthen an architect's knowledge acquisition beyond architectural practice.

#### **4.7.4 Developing Insights Beyond Guidance**

Across the interviews, it was identified that the majority of participants developed insights beyond guidance. Specifically, it was highlighted that architects placed academic research lower down in the hierarchy of processes used for supporting user-clients and themselves to acquire enhanced subject-specific knowledge. However, it was identified that participants did refer to relevant academic research for an enhanced holistic understanding at an individual level. However, participants found that this guidance was limited due to it being out-of-date, not engaging and lacking qualitative information. Participant G explained:

*“A lot of it is technical guidance around spatial requirements which is a bit dry when you're engaging with clients. Having something that's slightly more qualitative that looks at things like community benefit, passive supervision, green space, access to gardening...There's still a load of stuff around from 2003 that gets referred to. I think that there hasn't been a step change in the qualitative guidance. We're looking quite a long way back, and then across a broad range of information to try and pull some of those ideas.”*

*(Participant G)*

Participant G highlighted that there was a need for developed insight that looked into 'what design for ageing means to the design of housing', and that this would be useful for both architectural practice and the external market. Participant E expressed

that Homes England had an influential role in developing this insight by investing greater funding into housing research studies. They stated:

*“Even if it’s a point 5% of their total capital budget that would be a massive sum of money. The research community would never have seen that amount of money invested into housing studies and then they could do some really good research to then get better guides that supports 99.5% of their other funding. It just doesn’t happen. I think that’s the real gap at the moment.”*

*(Participant E)*

This suggested that Homes England had the potential to play a greater role in the trajectory of qualitative housing guidance which in turn, would influence architects engagement with guidance. Whilst the need for increased qualitative housing guidance was identified, all participants acknowledged a handful of existing guidance deemed useful when acquiring knowledge of good design practice within the specific context of creating supportive living environments for ageing. These included: the Housing for an Ageing Population (HAPPI) reports, Lifetime Homes Standard and the Age-friendly Housing publication. The Approved Document Part M (access to and use of buildings) was also commonly referred to as the underpinning of this guidance in order to ensure that a design worked practically. Participant H stated:

*“Things like building regulations are obviously incredibly dry and it’s just about hitting a standard in terms of space and adaptability. Whereas Lifetime Homes has a bit more about it. I mean, you kind of have to read everything together and then identify through the briefing process the critical things.”*

*(Participant H)*

It was highlighted that architects who investigated both the building regulations and supporting guidance were better able to distinguish the synergies between the two in order to identify the key principles that helped guide their projects towards successful utilisation. Interestingly, Participants (E, H) communicated that they heavily relied upon the 'Housing, Learning and Improvement Network' (HousingLIN) online platform (a shared-network of resources) when they sought to 'read-up' on insights surrounding ageing within the built environment. Participant E stated:

*"HousingLIN is a great resource because those are practitioners, those are the people on the front lines and they're talking about their personal experiences."*

*(Participant E)*

It was highlighted that HousingLIN's online presence and accessible format made the platform more engaging to the architect. This was identified to support architects to acquire enhanced knowledge on ageing within the built environment.

#### **4.7.5 Continuing Professional Development**

To enhance design practice, continuing professional development (CPD) activity<sup>14</sup> supported an architect to acquire expertise through subject-specific knowledge. Across all interviews, participants highlighted training courses, practice seminars, university events and conferences as popular CPD activity for enhanced knowledge acquisition. The most frequently mentioned specialist CPD activity in relation to design for ageing was the 'Design for Dementia' four-day training course at Sterling University. An extract taken from Participant G highlighted their perceived benefits in relation to design:

---

<sup>14</sup> The purpose of CPD activity is to support an architect to acquire a higher level of expertise through subject-specific knowledge in order to enhance their design practice. As an RIBA member, it is an obligation for architects to undertake, record and keep track of at least 35 hours of relevant learning each year.

*“It was really useful because initially you think design for dementia is all about people who are elderly, unwell and have real problems with their mental faculties in terms of how they process space and new space, but actually. The biggest thing I took away from that was that it’s the physical disabilities and difficulties that come with ageing that are the primary bit there. It’s all just magnified by the mental disease. How do you deal with not being able to see properly when you can’t process the fact that you can’t see very well. So actually, it’s just taking really good design principles and applying them in a magnified way to the projects that you’re delivering. I think that’s really important.”*

*(Participant G)*

This identified that undertaking specialist CPD training course better supported the architect to acquire the knowledge that applying ‘good design principles’ in a ‘magnified way’ alleviated potential challenges that came with ageing. Participant G explained that whilst the course was specifically tailored towards designing for dementia, they used their ‘inherited knowledge’ to feed back into their design process more generally. Adding that overall, this supported the ‘design of better housing’ irrespective of if these design principles were needed or not. The opportunity to attend interdisciplinary conferences was highlighted by Participants (B, E, F) as a further successful CPD activity for enhanced subject-specific knowledge acquisition within the specific context of creating supportive living environments for ageing. These ranged from the HousingLIN conference, the three-day Hospice UK conference, and the RIBA housing conference. Attendance to these conferences was acknowledged by the participants to provide them with an increased holistic understanding of the surrounding issues. As highlighted by Participant F attendance to the Hospice UK conference:

*“Some of its about design, maybe about 15% of it, but it gives me an understanding of what the challenges are facing them, so that you’ve got a more holistic understanding of the issues.”*

*(Participant F)*

Whilst attendance to conferences was acknowledged to provide an holistic understanding, it was highlighted that there were discrepancies with terminology. For example, Participant B found that BEPs were struggling to understand the difference between ‘accessible environments and inclusive environments’ and ‘housing and home’. They reflected on their attendance to an RIBA housing conference:

*“I was really struct with an RIBA conference on ‘home’ some time ago and people were constantly talking about houses, they were not talking about ‘home’. I thought, you know, ‘home’ is really really important in terms of spiritual and social wellbeing...For me, there’s a passionate difference between the two.”*

*(Participant B)*

This highlighted contested terminology that was being used in different ways within the context of ageing within the built environment. Whilst this was found, it was highlighted that attending conferences was still a positive activity for knowledge acquisition. Participant E explained that they attended the HousingLIN conferences to meet experts from various disciplines in order to acquire invaluable knowledge that strengthened their holistic understanding of the context. This CPD activity was identified to provide the architect with the acquired knowledge of ageing within the built environment and thus, placed greater influence over successfully creating supportive living environments for ageing. It was noteworthy that Participant E’s acquired contextual knowledge supported their advocacy:

*“I mean, I stand up for these things in meetings, but often I’m a lone voice, the engineer is not interested, the consultant is not interested, the client might be a bit interested, the contractor is very rarely interested. I think you need to multiply your voice by actually having a body of research that’s clearly understandable.”*

*(Participant E)*

This identified that acquiring the knowledge through conferences (such as HousingLIN) provided the architect with an holistic understanding that supported their confidence to speak out about issues related to ageing within the built environment. It was highlighted that Participant E was able to load an argument with a body of research which positioned them more informed on the topic within industry. However, it was noted that for this to be as effective as possible, the architect was required to communicate this research explicitly. This pointed out that an architect must actively acquire the knowledge and contextually understand the topic of ageing within the built environment. In doing so, it was identified that the architect attained greater agency during the design process when creating supportive living environments for ageing. It is important to note that whilst CPD’s were highlighted as a successful activity for knowledge acquisition, engagement with these were commonly identified to be expensive. Participant D explained:

*“From a financial point of view, we’re a bit constrained on having that. It would be great to discuss topics or subjects we are interested in and pay someone to come in and talk to us about it. But the fees are so squeezed and margins are so tight. It’s tricky to do that.”*

*(Participant D)*

As a result, architects highlighted that they actively engaged with local university events (such as architectural public lecture series) which were more feasible. This identified architectural universities as key players in an architect acquiring subject-specific knowledge and thus, were influential to the design process. In addition, this

CPD activity was recognised as a positive form of knowledge transfer and exchange between academia and industry.

#### **4.7.6 Knowledge Transfer and Exchange: Active Dissemination**

Knowledge transfer and exchange (KTE) was identified as an interactive process that involved the interchange of knowledge between BEPs, users and other relevant stakeholders. This process was identified to support building a rapport and enhancing good relationships with others (such as between researchers and architects). It was highlighted across the interviews that KTE was most commonly achieved through giving talks, interviews, tutoring within a university setting, and public consultations. In recent times, Participants (A, E, F, G, H) highlighted that public consultation events had become an important part of the planning application process. This required architects to submit a statement of community consultation alongside their planning documentation. It was highlighted that public consultations were necessary to ensure that architects acquired contextual knowledge from users in order to design appropriately for use. This identified local authority as influential to an architect's agency and design process. Whilst public consultations were identified as a necessity in order to progress through planning approval, active KTE through the other identified activities was lacking. Participant H stated:

*"I think it's the area that a lot of people can get better at, in terms of disseminating that knowledge in an organised way...In terms of disseminating our knowledge, we've done a series of talks about our experiences of stakeholder engagement and the co-design process through various forums. I talked earlier this month at the Healthy Cities Design Conference 2020. We've also fed back our work to the Royal College of Occupational Therapists at their annual conference. We've done that a couple of times now."*

*(Participant H)*

To better support KTE, it was identified that the dissemination of knowledge needed to be conducted in an organised way. Interestingly, Participant H highlighted that they

had employed a 'research director' to develop the practice's external and internal research activity. They explained:

*"We use [research director's name] who is like an exploding mind of ideas and what we're trying to do is capture that across the practice in a series of themes that he then focusses on and projects it into the external messaging, but also the internal dissemination of knowledge to help build our experience in areas."*

*(Participant H)*

By employing a research director within their architectural practice, the practice were able to successfully consolidate their KTE activity. This was identified to support the practice to structure their knowledge which better communicated subject-specific themes that emphasised their external messaging. It was highlighted that this provided diverse ways of KTE which they explained strengthened their marketing strategy. In addition, this was acknowledged to build new relationships with other BEPs which supported the formation of new networks for collaboration. Across the other interviews, the inclusion of a research director in architectural practice was identified as an exceptional case. Whilst this was noted, it was highlighted that there was a need for an individual to take ownership of this role within practice and actively lead the way in KTE. Participant D stated:

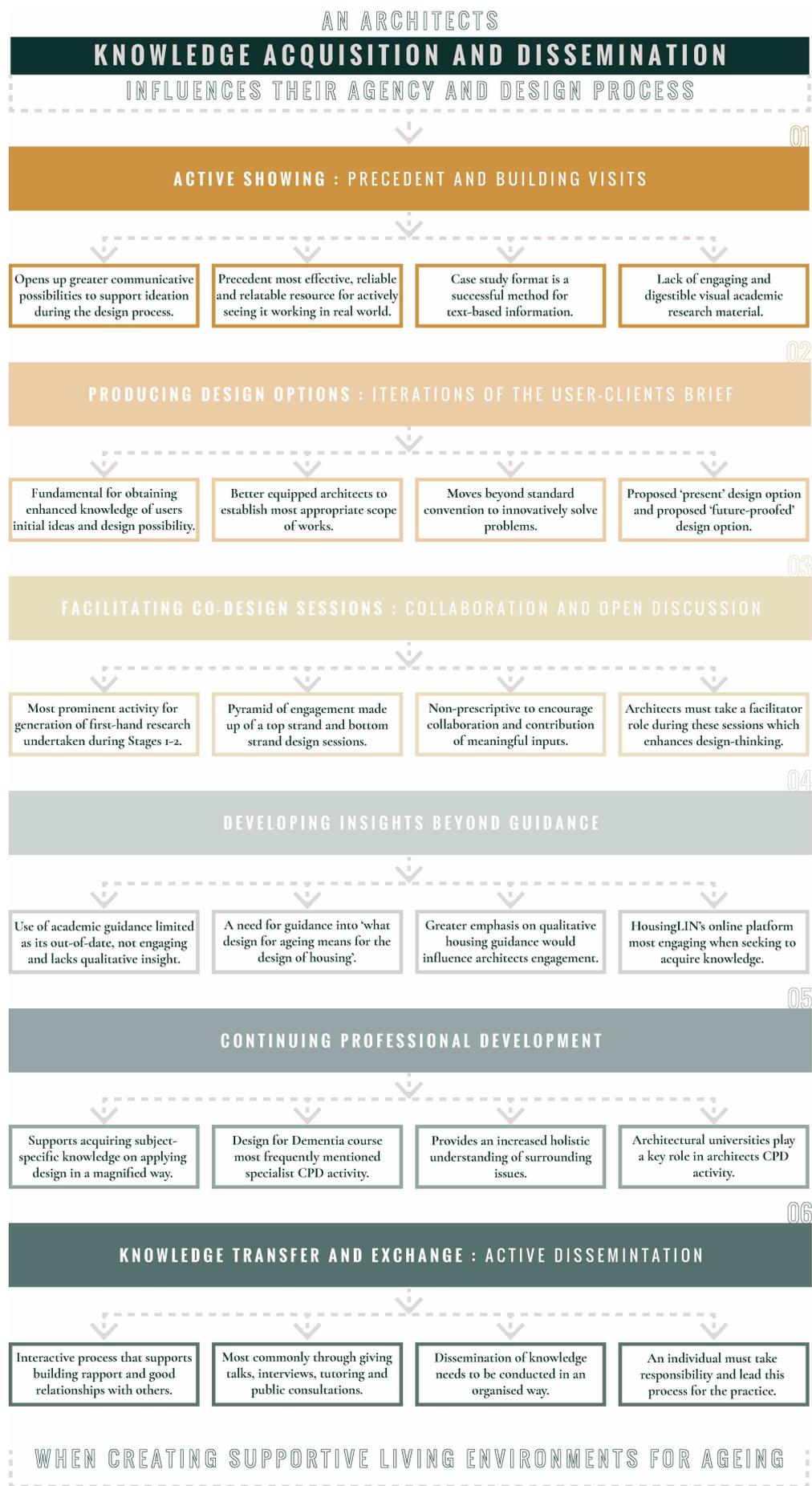
*"We're not very good at sharing the knowledge internally and actually if someone goes to something, our kind of sharing it back around the practice, our internal knowledge sharing is not really very good, it should be a lot better. That's my fault, because I'm supposed to be the one responsible for that."*

*(Participant D)*

This identified the lack of active KTE both within internal practice and external dissemination.

#### **4.7.7 Discussion**

These findings identified that an architect's knowledge acquisition and dissemination was influential to their agency and design process when creating supportive living environments for ageing. It was highlighted that active showing, producing design options, facilitating co-design sessions, developing insights beyond guidance, continuing professional development and knowledge transfer and exchange were specific actions that influenced an architect's ability to acquire and disseminate knowledge successfully (see Figure 4.13). These actions relied upon the interplay between the following actors: architect-architect, architect-user/client, architect-client/developer, architect-other BEPs and architect-ageing experts. This interplay of actors and their embedded knowledge has been described as an individual's 'social constellation' (Van der Linden et al., 2019). Van der Linden et al. (2019) stated that whilst the core of this constellation was with an individual, it was the multiple social layers that shape and provide the knowledge base for the individual architect.



**Figure 4.13 :** Summary of the influence of an architect's knowledge acquisition and dissemination on their agency and design process

- **Active Showing: Precedent and Building Visits**

Actively showing architectural examples through precedent and visiting buildings was found to enhance knowledge acquisition of the architects and the user-clients. The act of showing visual materials (such as precedent) that referenced building type or materialisation were found to provide a means for communicating experiential aspects (Van der Linden et al., 2019). This study added to this assertion which found that actively showing inspiring precedent enhanced the understanding for all involved, and as a result, opened up greater communication between the architect and user-client. McIntyre and Harrison (2016) found that this activity was particularly valuable in the context of designing for the needs of older adults. This supported the finding that active showing was a specific action that had influence when creating supportive living environments for ageing.

The use of architectural precedent was found to be more relatable and reliable when compared to academic research as the visual material provided active seeing of the precedents working effectively in the real world. This corroborated Van der Linden et al.'s (2019) assertion that research publications held a more difficult position within the design process. This finding added fuel to existing discourse that surrounded the current knowledge barrier to effective dissemination of academic research for real world design impact (Collins, 2014; Azevedo and Ramos, 2016; McIntyre and Harrison, 2016; Van der Linden, 2016a; 2019; Hurdley et al., 2017). Whilst this was recognised, an exceptional case was identified in this study whereby the architect placed greater emphasis on the qualitative aspects (through research guidance) rather than surface appearance (visual materials).

This study found that whilst architects heavily relied upon visual materials (such as architectural precedent), the case study format was positively engaged with by architects. The coupling of narratives to material aspects has the potential to engage embodied knowledge, generate a holistic understanding and advance attention towards the users within building design (Van der Linden et al., 2019). It was

identified that this format successfully integrated text-based information with visual materials to support knowledge acquisition.

Visiting buildings was identified as another visual material that supported actively showing examples to user-clients. Visiting 'reference projects' has also been recognised as a strategy for architects to enhance their individual knowledge acquisition and commonly involved study trips to favourite architects' buildings (Van der Linden et al., 2019). Van der Linden et al. (2019) highlighted that these visits supported the 'active' acquisition of embodied knowledge about user experience. This study added to this notion, finding that building visits supported the acquisition of contextual knowledge with regards to specific design characteristics in the real world. This resonated with Van der Linden et al.'s (2019) assertion that this provided a shared understanding of the context, an 'ap/deprediation' of buildings and design strategies. This study found that active showing successfully supported convincing user-clients during the design process.

- **Producing Design Options: Iterations of the User-client Brief**

Design options were found to enhance design possibility beyond the user-clients initial ideas, particularly during Stage 2 of the RIBA Plan of Work. Makstutis (2018) has described this iterative process as a series of design propositions that provide initial attempts at defining solutions to the identified problems. Crilly et al. (2008) stated that this required the cognitive flexibility (lateral thinking) of an architect in order to evaluate, reflect deeply, and generate innovative alternatives to support complex social issues. It was highlighted in this study that this process supported the evolution of the user-clients predetermined ideas through their acquisition of knowledge on design possibility. Deutsch (2020) stated that this process supported creative thinking that encouraged innovative ways to positively influence existing situations. This study found that this could be supported by architects placing integral value on sharing the produced design options with the user-clients and not jumping to the first obvious conclusion. In doing so, this constantly pushed the parameters of creativity through the architect's multifaceted and multi-skilled process (Cohen et al.,

2005). This was highlighted to encourage the design process to move beyond standard convention in order to innovatively solve given problems.

Interestingly, this study found that producing a proposed 'present' design option and a proposed 'future-proofed' design option showcased the best possible design opportunities for the user-client when creating supportive living environments for ageing. Architects highlighted that this advanced the user-clients design knowledge of how the proposed design option could be flexibly adapted for longevity. This finding identified the call to arms made by Heylighen et al. (2017) for greater responsive design approaches that support sustained inclusivity in relation to the built environment (Heylighen et al., 2017). Hadjri et al. (2019) found that designing with flexibility and adaptability in mind supported the age-friendly narrative that encouraged ageing-in-place.

Whilst this study identified a positive move towards producing design options with a twofold purpose, it was highlighted that time pressures as a result of financial constraints prevented standard architectural practice from fully developing this iterative process. Van der Linden et al. (2019) stated that limited time resources exacerbated the challenges architects faced during the design process and that this influenced taking into account users perspectives when producing design options. Architects within this study corroborated this assertion, however highlighted that this process was critical for successfully creating supportive living environments for ageing.

- **Facilitating Co-design Sessions: Collaboration and Open Discussion**

Co-design facilitation was found to be the most prominent activity used for the generation of first-hand qualitative research. This participatory approach has been highlighted to offer rich insights into preconditions and solutions through discussing them first-hand with the users (Heylighen et al., 2017). This study highlighted two forms of co-design involvement: with user-clients only, or with user-clients, other BEPs, subject specialists and local communities. The latter was identified as a

pyramid of engagement made up of a series of workshop sessions. McCall et al. (2020) found that conflicted priorities and power dynamics of the different actors created tensions which resulted in continuous negotiation and difficulties in implementation within the context of suitable housing for older adults. However, it was important to note that McCall et al.'s (2020) study did not involve architects in the co-design process and that they recognised that there was the need to include 'visionary individuals' during this process. This provided an example of Minder and Lassen's (2019) assertion that designers are largely being ignored within the concept of facilitation and thus, called for awareness of designers influence during the collaboration process.

This study provided awareness that architects were best placed as the facilitator of the co-design sessions. The facilitator role has been highlighted to evoke active dialogue and provide a fulfilment level during the collaborative process (Minder and Lassen, 2019). Minder and Lassen (2019) stated that this role added 'consultant authority' which orchestrated pioneering spirit through vision and meaningful inclusion of actors. The competency of architects as facilitators during the co-design sessions was highlighted to enhance participant involvement through design-thinking. This identified that architects who demonstrated competence as the facilitator of co-design sessions gained greater agent ability to lead negotiations between conflicting priorities and power dynamics of those involved in the sessions.

The facilitation of co-design sessions was found to provide rich qualitative data that informed architects about the practicalities of everyday living for the user-client. This disproves Van der Linden et al.'s (2019) assertion that many architects conducted a design process based on implicit assumptions of users. However, it is fair to say that this juxtaposition could be a result of the different types of architects and projects in question. The architects within this study placed greater emphasis on designing appropriate solutions to create supportive living environments for ageing. Thus, placed greater emphasis on understanding users. This study found that facilitating co-design sessions with user-clients developed greater in-depth discussions which

evolved collaborative thinking to solve design problems. Collaborative thinking has been highlighted to support diversity of opinions, insights or inputs which supported contextual knowledge of the given problem (Deutsch, 2020). It was identified in this study that the co-design sessions were required to be non-prescriptive in order to support collaborative thinking and meaningful inputs.

- **Developing Insights Beyond Guidance**

The development of insights beyond guidance was identified to better support architects and user-clients to acquire enhanced knowledge. In 2016, Van der Linen et al. stated that guidance was commonly 'static information' which was misaligned with the design process (Van der Linden et al., 2016a). This study added to this notion, finding that the majority of guidance tends to be out-of-date, not engaging and lacking qualitative information. Cohen et al. (2005) found that engagement with most architectural guidance reduces creativity to meet the strategic, market and managerial demands. Van der Linden et al. (2016a) stated that this required architects to think in new ways in order to generate knowledge to innovate.

Whilst this study corroborated with this discourse, architects identified a handful of guidance which was noted as useful resources when creating supportive living environments for ageing. However, Rooney et al. (2013) stated that BEPs must grasp that these resources set out the minimum inclusivity standards and that there was a need to acquire the knowledge and willingness to implement further accessible design strategies within architectural practice. It was identified in this study that engagement with the HousingLIN platform supported architects to develop insights beyond guidance. This shared-network was found to be successfully engaged with as a result of its online presence and accessible format. This corroborated McIntyre and Harrison's (2016) assertion that there was a clear preference expressed by BEPs for access to resources via online and PDF formats. Importantly, they found that there was an unmet desire for a 'simple one-stop source for designers and regulators'.

Whilst HousingLIN was identified as a successful resource, this was a cross-disciplinary platform which touched upon a range of topics as opposed to the specific topic of design for BEPs. This study found that there was a need for developing greater insights into 'what design for ageing means to the design of housing' and that this would be useful for both architectural practice and the external market. This highlighted the specific lack of guidance into the architectural design process for creating supportive living environments for ageing. This corresponded with existing discourse which emphasised the lack of guidance surrounding architects and ageing in the built environment (Cohen et al., 2005; Vansunilashorn et al., 2012; Liddle et al., 2014; Van der Linden et al., 2016a; 2019; Heylighen et al., 2017; Van Hoof et al., 2020). Homes England were identified in this study as influential to the trajectory of qualitative housing guidance and architects engagement with guidance.

- **Continuing Professional Development**

Continuing professional development (CPD) through training courses, practice seminars, university events and conferences were highlighted to support architects to acquire subject-specific knowledge and expertise. Wigglesworth (2005) stated that undertaking disciplined training enhanced critical thinking that was both contingent and responsive to specific context settings that confronted the architect. This study found that engaging with specialist CPD activity increased architects holistic understanding of the issues in a specific context. It is important to emphasise the notion of 'specialist' CPD activity. McIntyre and Harrison (2016) highlighted that a problem with some of the CPD activities BEPs received was that they were commercially driven and as a result, 'glorified sales events' that were not engaging and possessed a bias agenda to sell a product.

This study acknowledged the 'Design for Dementia' training course as the most frequently mentioned specialist CPD activity in relation to design for ageing. McIntyre and Harrison (2016) found that undertaking specialist CPD activity influenced BEPs design decisions and attitudes towards design regardless of building type. This study corroborated this assertion, finding that specialist CPD activity (such as Design for

Dementia) supported architects to acquire knowledge on applying design principles back into their design process more generally. This was irrespective of if these design principles were needed or not, and in doing so, supported the design of better housing overall. This added to Rooney et al.'s (2013) assertion that CPD activity was imperative for architects to acquire specific knowledge to successfully implement into design practice.

Importantly, architects within this study highlighted that there were discrepancies with terminology being used during specialist CPD activities (such as conferences) relating to ageing in the built environment. For example, BEPs struggled to understand the difference between 'accessible environments and inclusive environments' and 'housing and home'. McIntyre and Harrison (2016) stated that to provide 'good' CPD activity, trainers must have the practical and research experience to lead and engage BEPs correctly. Five years on from their assertion, the study finding of contested terminology highlighted that there was still a clear lack of knowledgeable trainers providing specialist CPD activity. This added to Samuel et al.'s (2013) call to arms that there is a need for enhanced recognition of research through CPD activity.

This study found that whilst an architect may acquire subject-specific knowledge, they must contextually understand the topic and be able to communicate this research explicitly. Existing evidence has found that architects have difficulty with understanding, engaging and communicating knowledge both in practice and externally (Watson, 1999; Wigglesworth, 2005; Collins, 2014; Raisbeck and Tang; 2009; McIntyre and Harrison, 2016; Van der Linden et al., 2016a; Van der Linden et al., 2019). The use of specialist CPD activity was highlighted to support this understanding and thus, an architect's confidence to speak out about issues related to ageing within the built environment. Whilst specialist CPD successfully supported knowledge acquisition, architects highlighted that reduced engagement with this activity was due to its expense. As a result, engagement with local university events (such as public lecture series) took precedence as it was a more feasible activity.

Gera (2012) declared that strategies aimed at tackling knowledge barriers were needed to support knowledge sharing between academia and industry. This study found that the public lecture series developed by the Department of Architecture at a university was a successful strategy to support knowledge transfer between researchers and BEPs.

- **Knowledge Transfer and Exchange: Active Dissemination**

Knowledge transfer and exchange (KTE) was identified as an interactive process that involved a range of actors (such as users, other BEPs and researchers). This cross-disciplinary exchange establishes a 'multi-agency' collaborative approach which has been identified in existing research to be lacking within the remits of planning for ageing in the built environment (Robinson et al., 2019). Collins (2014) found that this ineffective KTE between actors (such as architects and researchers) was a result of an underlying perception that the majority of academic research was irrelevant to practice. Architects within this study highlighted that effective KTE supported their ability to build rapport and enhance good relationships with other actors. McIntyre and Harrison (2016) stated that this relied on 'good communication' and 'structured knowledge' both within internal and external practice for effective real-world impact.

This study highlighted that there was greater emphasis placed on external (as opposed to internal) KTE. Interestingly, Van der Linden et al. (2016a) found that within internal practice, there are communication problems which are hindering knowledge flow. This study corroborated this assertion, finding that there was a lack of active internal KTE and that this required an individual to take ownership of this role within practice. It was identified that the inclusion of a research director in architectural practice successfully consolidated their KTE activity which enhanced collective thinking within internal practice. Bandura (2000) stated that this 'collective power' enhanced agentic capabilities by working together through shared knowledge. In addition, this study found that the role of a research director within architecture

practice better communicated subject-specific themes that emphasised their external messaging.

However, across the majority of interviews, the inclusion of a research director was identified as an exceptional case. It was highlighted that external KTE was best achieved through giving talks, interviews, tutoring within a university setting and public consultations. With reference to the latter, public consultations were highlighted as an important component to an architect being granted planning approval and thus, identified local authority as influential to an architect's agency and design process. This finding provided recognition that local authority are actively seeking to address the call to arms within existing research to lead the way towards necessary reform with regard to ageing within the built environment (Rosenthal, 2009; Liddle et al., 2014; Robinson et al., 2019; Van Hoof et al., 2020).

### **PART III: Design Reflections of Living Environments for Ageing**

The design reflections of living environments for ageing provides insights from the experts in practice — the experienced architects working in designing supportive living environments for ageing. Whilst this output stems from an architect's agency and design process, it was the building design which determined the final output. Within the context of this research study, the most prevalent design reflections related to the following:

- Internal Functionality: Transitions, Appropriate Flexibility, Familiarity, Connection to the Outside
- Delivering Affordances: Social Interaction, Connection with Nature and Different Types of Living Options
- Intergenerational Design Paradigm: Communities, Neighbourhoods, Co-Developments, the Home and Activities within
- Future-proofing: Spatial Adaptation at a Later Stage

These design reflections highlighted the architect's perspective of the successes, challenges and limitations coming from everyday design practice. These reflections on building design were identified to specifically influence whether a supportive living environment fulfilled its function for the users. This was associated with the internal functionality of supportive living environments for ageing which related to the ease at which the internal environment was used by the occupants.

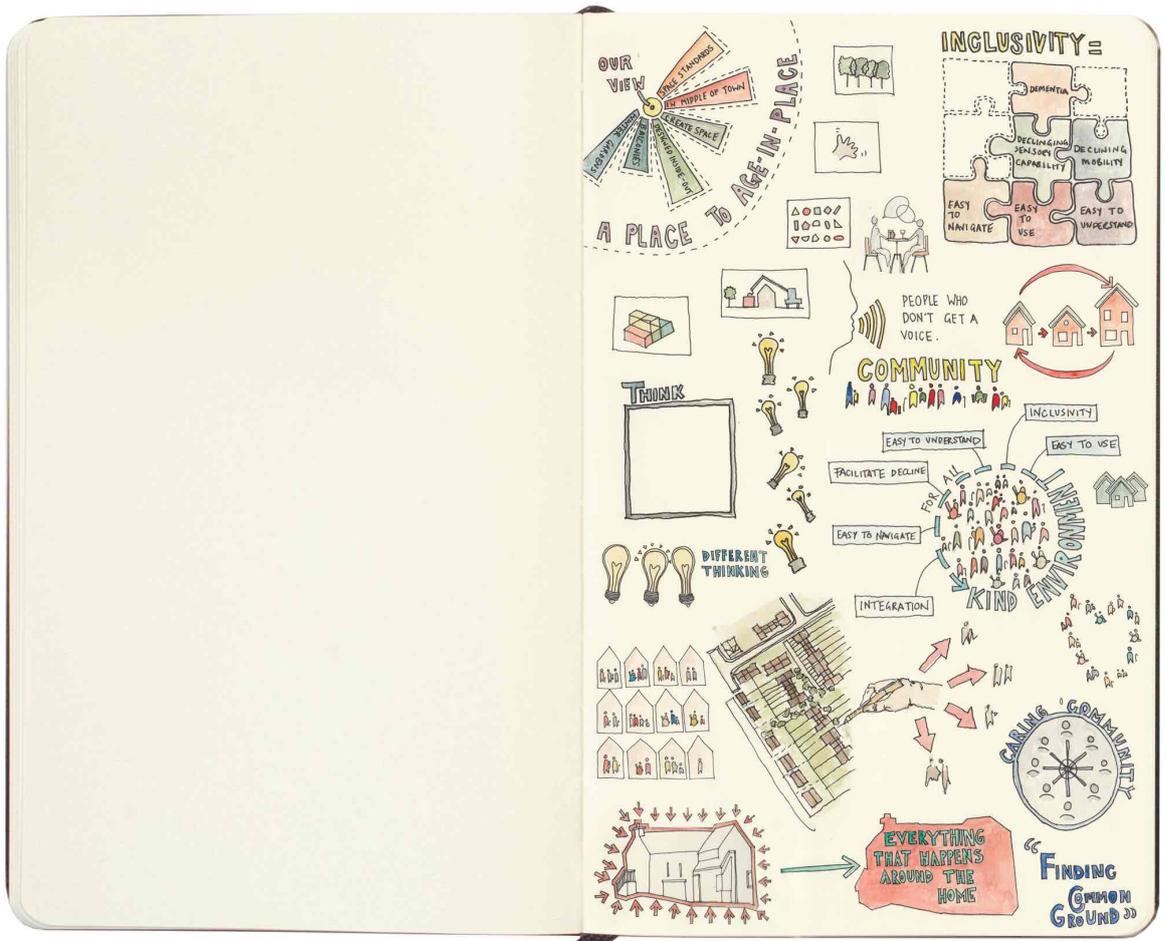
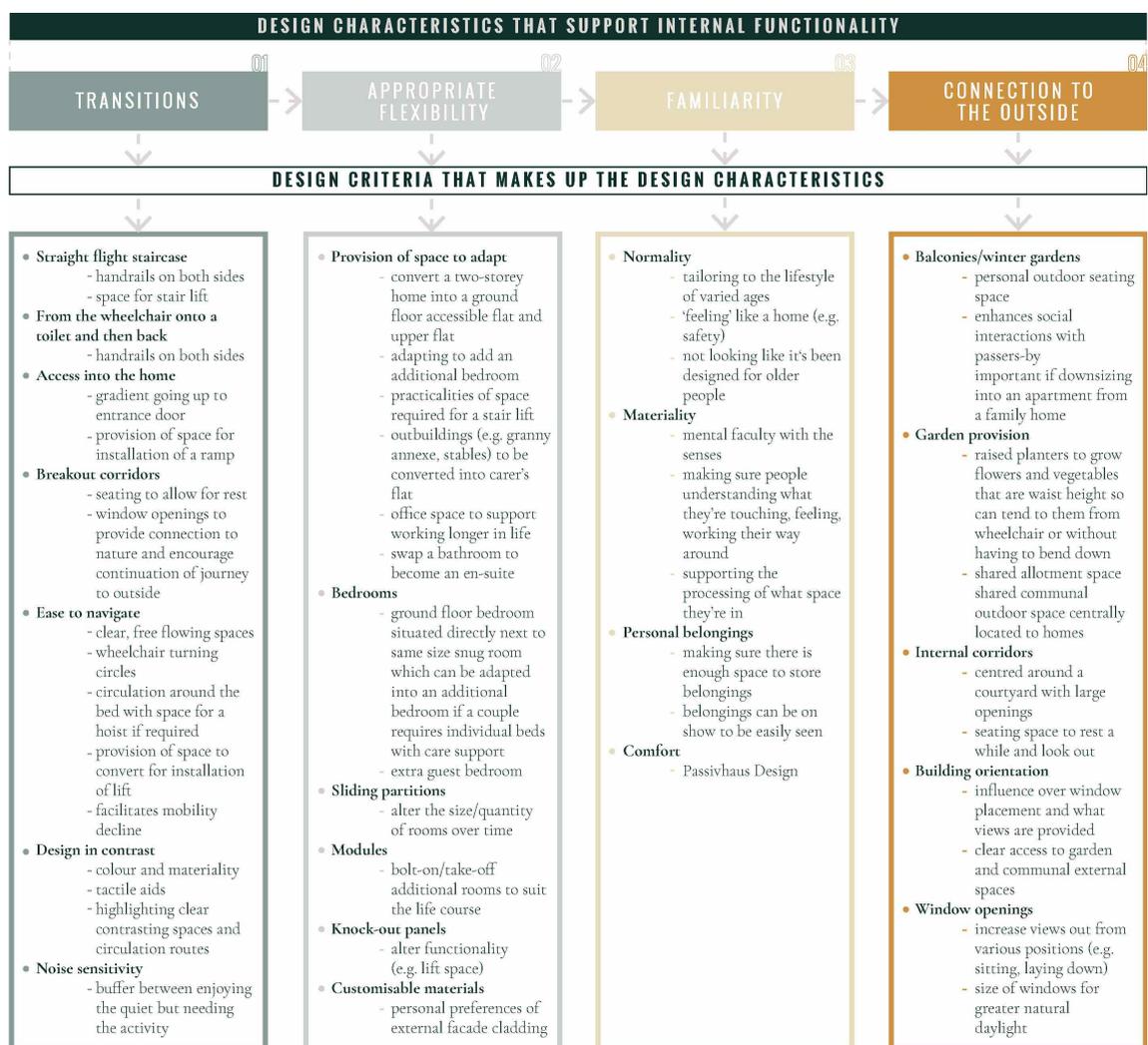


Figure 4.14 : 'Design Reflections' abstracted from the researcher's SRM

## 4.8 Internal Functionality: Transitions, Appropriate Flexibility, Familiarity, Connection to the Outside

Across all the interviews, architects reflected on a variety of key design characteristics that supported the design of internal functionality within the context of creating supportive living environments for ageing. These design characteristics were identified by participants through undertaking deep interrogation of the user-clients. At a macro level, these included: transitions, appropriate flexibility, familiarity and connection to the outside. Within each of these design characteristics, a micro criterion emerged from the participants data (see Figure 4.15).



**Figure 4.15** : Design characteristics that support internal functionality

By distilling these design characteristics, architects reflected that internal living environments became more functional which supported the liveability to age-in-place. Participant G explained:

*“There is of huge importance on the home to fulfil more functions rather than just somewhere you go sleep at night.”*

*(Participant G)*

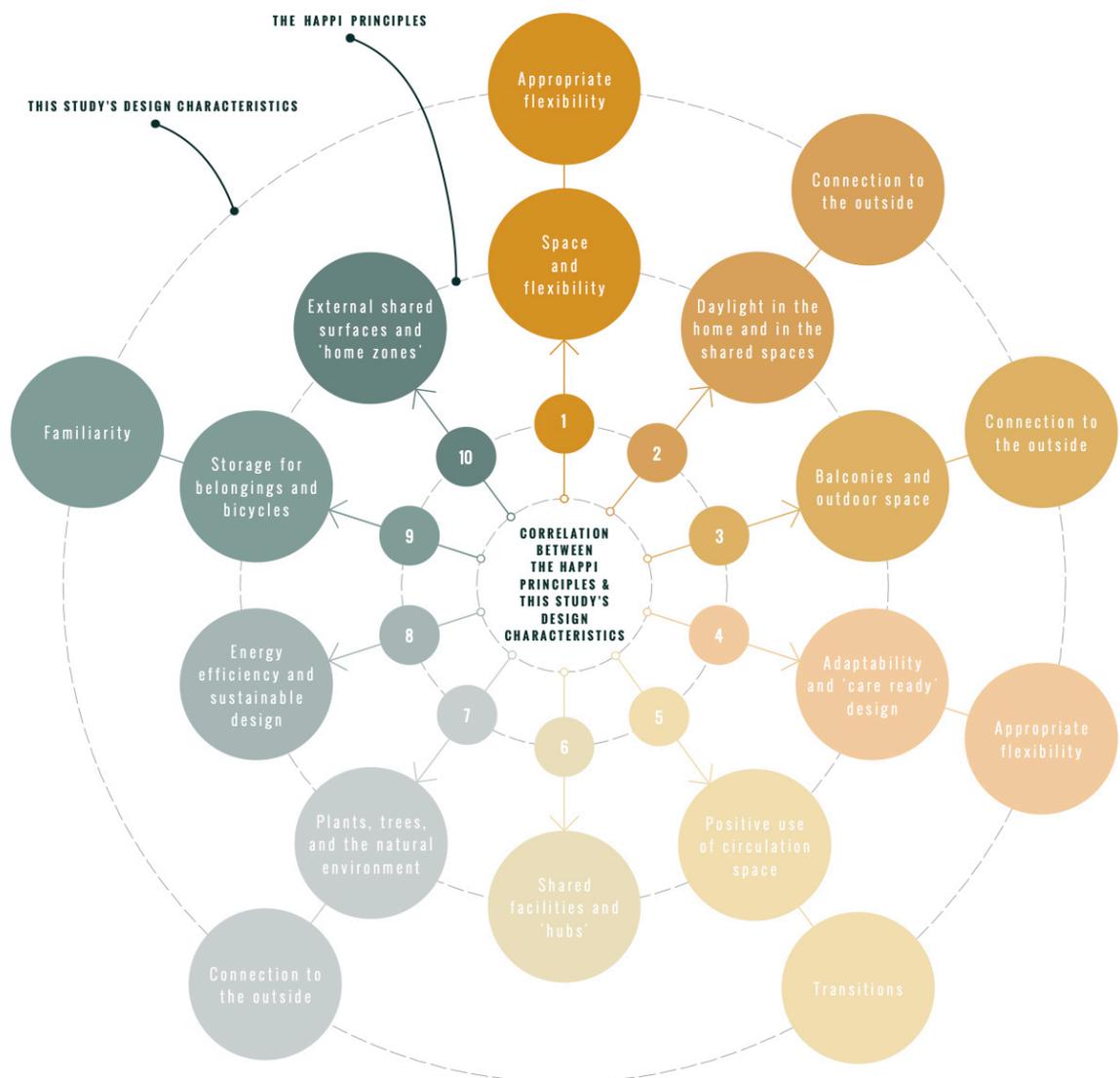
These design characteristics were highlighted to support inclusivity within the design of internal spaces through their outward thinking processes which moved beyond an inward facing mentality. An inward mindset was criticised by architects as being inappropriate for successful internal functionality of supportive living environments for ageing. This mindset was found to place less emphasis on specific design aspects that support users daily activities within the internal living environment. Participant E explained:

*“So especially for designing for the elderly, it's about what their day-to-day experience is going to be...I'd rather get the internal spaces right, get the basics right and then the other things [external design], if we get those right than that's a bonus.”*

*(Participant E)*

Participants (A, E) highlighted that this was best achieved through designing from the 'inside-out' which focused attention on the liveability of a space before the external aesthetics. Specifically, the importance of the design characteristics identified in Figure 4.15 in order to support internal functionality. The understanding of how users occupied their existing environments was noted to be a fundamental component to designing functional internal spaces. This heavily relied upon an architect's ability to undertake deep interrogation during the design process. It was identified that placing emphasis on designing for internal functionality focused architects priorities on the practicalities of space in order to deliver affordances to the users.

It was identified that the design characteristics in Figure 4.15 aligned with the principles found within the HAPPI guidance. The most prominent correlation was with the design characteristic 'connection to the outside' and following this, 'appropriate flexibility' (see Figure 4.16). Interestingly, when the identified design characteristics were discussed in reference to the HAPPI guidance, participating architects erred on the side of caution. When probed further, Participants (E, F, I) highlighted that they had difficulty with convincing user-clients to implement the principles and thus, carry them all out as a collective.



**Figure 4.16** : Correlation between the HAPPI principles and this study's design characteristics

Whilst caution was given to the HAPPI design guidance, there was clear recognition that the principle 'balconies and outdoor space' had been actively engaged with in architectural practice. This principle aligns with the design characteristic identified by the participating architects of 'connection to the outside'. Whilst there were correlations found with the design characteristics of 'transitions' and 'familiarity, these were subtle and did not fully align with the HAPPI principles. This suggested a lack of inquiry into these areas that influence the internal functionality of living environments for ageing. Participant G expressed the importance of transitioning and familiarity within supportive living environments for ageing:

*“So, if we were looking at an interior design for housing...Things like designing in contrast, designing in easy access into the kitchen space and free flowing space, but also familiarity of materials and making sure that people understand what they're touching, feeling, working their way around.”*

*(Participant G)*

As highlighted, transitions support the ease, accessibility and clarity between internal spaces. The familiarity of space was based upon the interplay between materiality and the human senses. This identified that the sensory experience of buildings played a role on the internal functionality of living environments. Participant C viewed the design characteristics of transitions and familiarity as creating 'normality' within the design of supportive living environments. They stated:

*“Normality, I think. So things not looking like they've been designed for older people and you can do that quite cleverly now, with grab rails and things like that and still feeling like a home and not an institution I think. That's probably the main thing when designing something that's a bit more age-friendly because you don't think about how you transition from the wheelchair onto the toilet and then back. Even just where the placement of a railing is can totally scupper that whole thing.”*

*(Participant C)*

This identified that 'normality' influenced the sense of familiarity and how transitioning was experienced by user-clients within the design of functional internal spaces. This highlighted the influential role of the design characteristics on user experiences. Thus, delivering affordance was highlighted as necessary in order to enhance positive experiences within the supportive living environment for ageing.

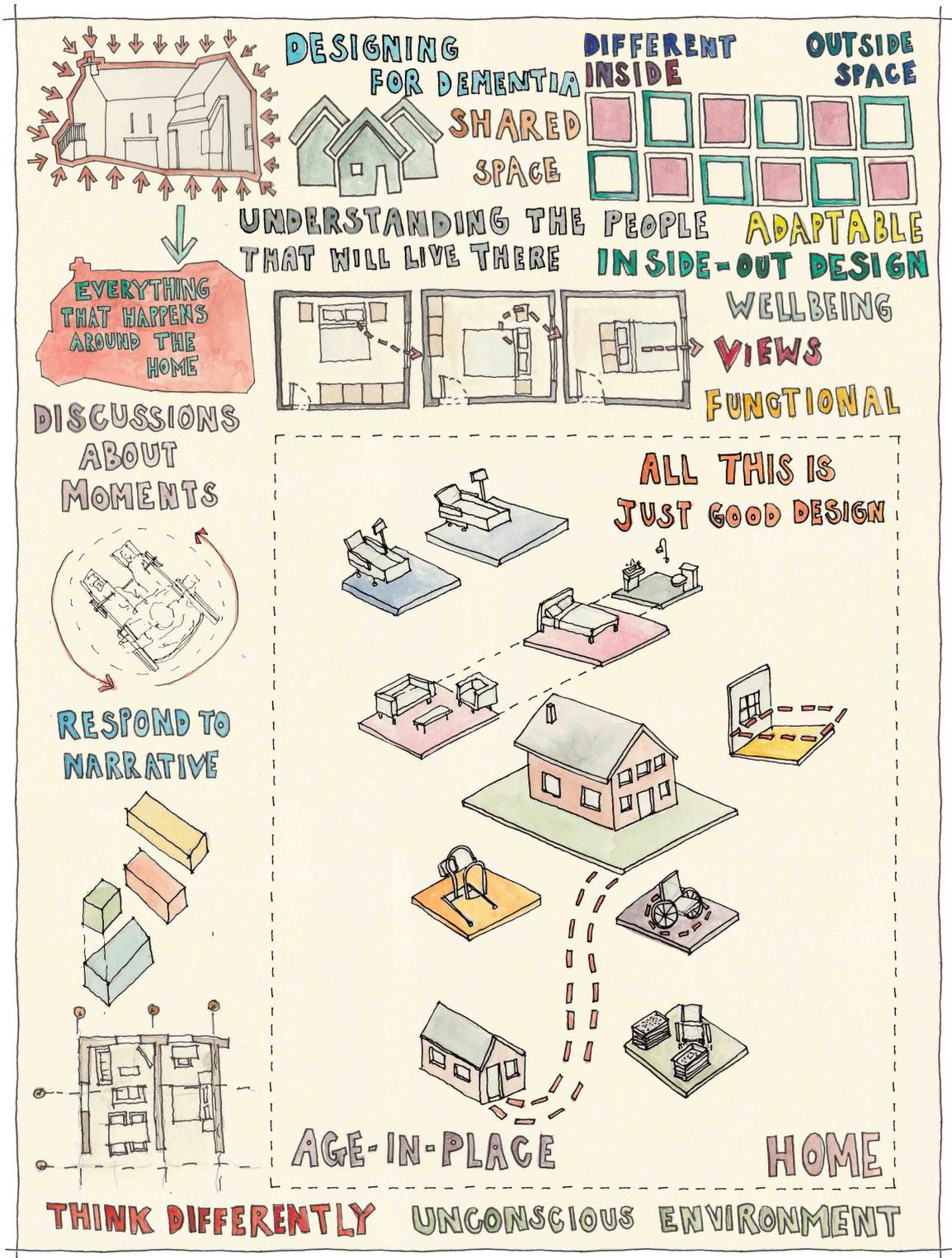


Figure 4.17 : 'Internal Functionality' abstracted from the researcher's SRM

#### **4.9 Delivering Affordances: Social Interaction, Connection with Nature and Different Types of Living Options**

The delivery of affordances through the design of supportive living environments was identified as influential to user-clients' experiences. The notion of affordances has been recognised as the possibilities for action provided by the environment (Gibson, 1986). The types of affordances ranged in scale, from having the ability to socially interact, to connect with nature, and to decide between different types of living environments that supported healthy ageing. It was highlighted across the interviews that delivering these affordances for the user-clients was crucial when creating supportive living environments.

The affordance to socially interact was highlighted as supporting encounters with residents in communal spaces, people of different ages, and neighbours on a walkable street. Participants (A, B, C, D, E, F, I) all made reference to the importance of delivering the affordance to socially interact with others through the design characteristics of supportive living environments. Participant D communicated that the internal functionality of floor plans should be designed with appropriate flexibility to accommodate a second bedroom to support friends and family to come and stay if desired (see Figure 4.15). Alternatively, Participant I highlighted that they were in the process of delivering a co-housing intergenerational community whereby 25 homes had been designed around a central shared external space which incorporated a communal building that accommodated additional bedrooms for guests. Participant I explained:

*“So, the communal house, people don't live there but they can cook there and us it as different spaces. There are some bedrooms there, but that's for guests. So, you don't necessarily have to have a spare bedroom, people can stay in there.”*

*(Participant I)*

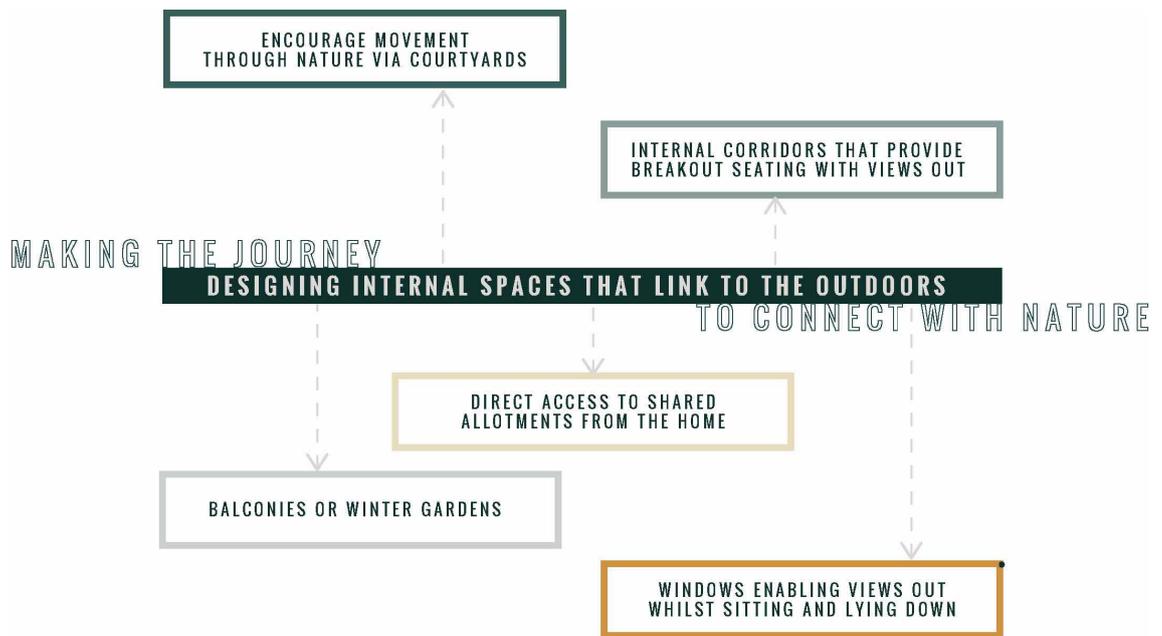
A communal house that was located centrally within a community was pointed out to deliver affordance to support social interactions through accommodating friends and family. In addition, it was also highlighted to provide additional spaces (such as cooking space) to use with neighbours which further enhanced affordance to social interact within the community. Participant D conveyed that delivering this affordance must be sustained across the life course:

*“You look at how they are operating their lives, and yes, she doesn’t work, she’s retired, but actually she’s no less active or busy or engaged with society than someone that’s half her age.”*

*(Participant D)*

The affordance to connect with nature was highlighted as supporting the opportunity to interact with varied outdoor spaces (such as personal balconies/winter gardens and shared allotment spaces) and the ability to view out of windows (such as when sitting and laying down). Participants (A, B, E, F, G) emphasised that delivering affordance to connect to nature through the design characteristics was fundamental when creating supportive living environments for ageing. It was highlighted that designing with transitions in mind supported the occupants ease of connecting with nature.

For example, Participant F stated that designing internal spaces that linked through outdoor spaces that encouraged movement through nature and internal corridors that provided breakout seating with views out to the garden supported the user to ‘make the journey’ to connect with nature (see Figure 4.18).



**Figure 4.18** : Design criteria that supports internal spaces to link to the outdoors

The connection to the outside through window openings was discussed by Participant E:

*“She doesn’t move around a lot and she talks about her view from her window and she obviously spends a lot of time just looking out that window and it does make you think, well, if you’ve got a terrible view, that has a huge effect on your wellbeing and everything else. So just creating those opportunities and understanding how things like orientation are going to affect people...It’s trying to magnify and amplify the opportunities for interacting with those outdoor spaces.”*

*(Participant E)*

It was identified that this connection was particularly influential to individuals who were downsizing (such as from family homes into apartments). Participant G explained:

*“There will be a lot of people who are downsizing from family homes with a garden where they've had a lot of control over that interior. Sometimes when you try to sell the downsizing experience to people, knowing that they can still get access to outside helps...People are more positive about that transition, rather than feeling like they're going into something less than what they had.”*

*(Participant G)*

It was highlighted by participating architects that users connection to the outside helped to provide familiarity of the internal spaces which supported a 'more positive' relocation experience when down-sizing. Participant A stated that apartments needed to be designed from the inside-out to support the internal functionality of space to connect with nature. They added that within the context of apartment typologies, this was best placed through balcony provision and that these needed to be oriented to provide the ability to socially interact by waving at passers-by. This highlighted the importance of supportive living environments being connected to the 'real world' urban scale, as opposed to being located on the edge of towns away from communities. It was identified that this connectedness can be supported by making the apartment typology age-friendly and thus, inclusive of all, regardless of age or ability. Participant A stated:

*“And importantly, so it feels not an institutional old persons space. It's whoever wants to live. So whatever life throws at you, you can live here...A place to age in place.”*

*(Participant A)*

By creating supportive living environments that are inclusive for all, greater affordance was given to decide between different types of housing. For example, the age-friendly apartment could be situated in a co-housing development or an intergenerational development that supports healthy ageing across the life course. Thus, increasing choice between different types of apartments. Across all interviews,

it was emphasised that there was a need for different types of supportive living environments for ageing. Participant A expressed:

*“[There is the need for]...Many opportunities for different kinds of living, all within a walkable community, all on an axis that enables us to start to, consolidate around a town centre, providing great, affordable, fantastic housing on a village street again...The types of plan form, the types of accommodation typologies need to be as wide as we can possibly make it because people come in every shape and every form.”*

*(Participant A)*

It was identified that implementing the design characteristics highlighted in Figure 4.15, supported being able to deliver the affordances of social interaction, connection with nature, and the ability to decide between different types of housing typologies. Importantly, this was identified to create different types of living environments for ageing across the life course, inclusive of all ages and abilities. This highlighted an intergenerational paradigm when creating successful supportive living environments for ageing.

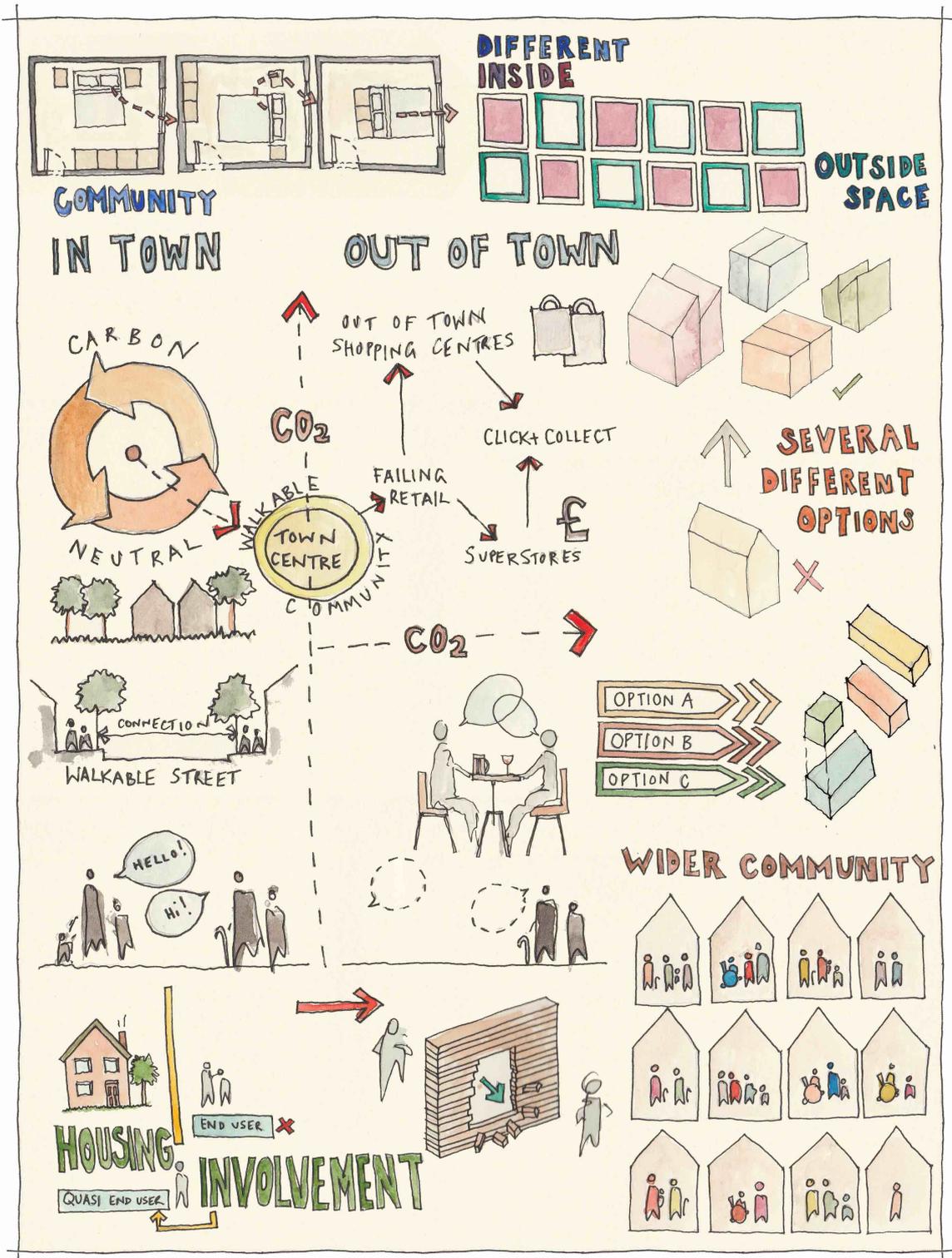


Figure 4.19 : 'Delivering Affordances' abstracted from the researcher's SRM

#### **4.10 Intergenerational Design Paradigm: Communities, Neighbourhoods, Co-developments, the Home and Activities within**

An intergenerational paradigm related to a range of macro, micro, and nano scale intergenerational design tactics for creating supportive living environments for ageing. These included: intergenerational communities, living on an intergenerational street, intergenerational co-living/co-working developments, intergenerational housing typologies, and intergenerational activities within the home. At a macro scale, Participants (A, B, D, E, G, H, I) identified that designing at a spatial masterplan level provided communities that were attractive for all and as a result, these would become demographically diverse and more resilient. Participant H communicated:

*“Again, touching on the ideas of flexibility, but making sure that those communities are mixed. So you're not just having streets and streets of retirees. It is mixed with younger professionals that is mixed with families and trying to build something that has a bit more resilience into it because obviously if something happens to one particular demographic or one particular elements of society, your type of housing would be affected if that's what you're focusing on. Whereas if you've got a better blended mix, then obviously you're building in something that has a better chance of adapting as communities and environments evolve, especially looking at the challenges around climate change and climate crisis and things like that. It's making sure that you've got something that isn't creating a well meaning ghetto.”*

*(Participant H)*

It was highlighted that the design of these intergenerational communities needed to be a blended approach of different types of housing in order to cater for a variety of demographics. Participant D stated that intergenerational design at a macro scale provided greater vitality of life which was in contrast to the commonly found age-specific communities. They added:

*“Surely the vitality of life is mixed communities and the fact that you interact with people of different ages. Away from these granny ghettos where it’s a certain type of demographic because you’ve got to have a certain amount of money to live there.”*

*(Participant D)*

Across the majority of interviews, architects highlighted that they were involved in designing a range of intergenerational communities. This scale of intergenerational design was highlighted most commonly by architects, as opposed to a single intergenerational home. For example, Participant A explained that they were in the process of developing an intergenerational community made up of 1500 homes, whereby 50% were a range of affordable housing for older adults. This project was made up of an intergenerational paradigm of mixed communities, intergenerational housing and co-living/co-working initiatives. It is worth noting that the importance of ‘community’ was consistently emphasised when discussing this intergenerational community. Participant A explained:

*“If what you mean by community is what we mean by community, namely a community is a place that looks after all of those people, least able to look after themselves. The very young, the very old, the sick. If the community you’re talking of wraps itself around those people and looks after them, that’s the kind of community we want to be part of.”*

*(Participant A)*

The emphasis on ‘community’ within intergenerational design related to the ability to have a natural social support and care system within the community. Participant B stated:

*“It was thinking about this business of how can you actually organise for natural social support and caring within a community rather than always thinking somebody out there is going to come in and do it. So how can you reduce the need for care and how can you broaden the base for caring within the community.”*

*(Participant B)*

It was highlighted by Participants (A, B, E, I) that designing homes in ‘clusters’ emphasised ‘community’. This was acknowledged as the most prominent design strategy at a masterplan level of intergenerational communities. Participant B explained:

*“What we were doing was working with clusters of housing, with the idea that in each cluster there would be a whole series of different house types. So there would be the starter home for the people just out of university, through to the first family home, through to the larger family home through to, I need to actually draw back, I need less accommodation. The little clusters are designed so that there was space at the back that could have a community as a cluster, where they would decide what you used it for.”*

*(Participant B)*

At a micro level, Participants (C, D, F, G, H, I) discussed the design of intergenerational homes when creating supportive living environments for ageing. This scale of intergenerational design was most commonly associated with flexible and adaptable internal spaces. Participant H stated:

*“So, I think the association that there is a level of flexibility within designs... About housing that's then going to adapt as people's lifestyles and needs change...That is adaptable and it's got that built in from the start, and is more about intergenerational...I would have that in my mind from the outset.”*

*(Participant H)*

The flexibility and adaptability of internal spaces relates to the design criteria found in the design characteristic of appropriate flexibility (see Figure 4.15). This design characteristic was identified as crucial for successfully creating supportive living environments for ageing. Whilst emphasis was placed on the flexibility and adaptability of internal spaces, this was also achieved externally. For example, Participant I discussed a co-housing intergenerational community they were developing and highlighted that each occupant was able to change the external facade of their home if and when required. They stated:

*“This area is all a timber shell and this area is hung tiles, reclaimed tiles and you can customise it. It is all customisable. So for different ages and different people with different needs. And you can change it over time as well.”*

*(Participant I)*

The inclusion of flexible and adaptable design both internally and externally was highlighted to cater for an intergenerational audience at a micro level of the individual home. This highlighted that the architects recognised the importance of individuality when creating supportive living environments for ageing. At a nano level, it was highlighted that the design of intergenerational homes enhanced the possibility of intergenerational interactions. These interactions were identified to assist social cohesion between neighbours which sought to further enhance a supportive network within the intergenerational community. Participant C explained:

*“Even just to sit and watch TV for an hour on an evening or sit and read a book, but in company. It's not different to what you do in your own home. It's just with different people.”*

*(Participant C)*

It was highlighted by Participant E, that an understanding of these ‘soft issues’ supported the success of the intergenerational paradigm and creation of a humane community that would care for one another. As identified across the interviews, an

intergenerational paradigm across the macro, micro, and nano scales were reflected upon when discussing the design of supportive living environments for ageing. The integration of intergenerational design was highlighted to enhance inclusivity and diversity which has the potential to future-proof communities.

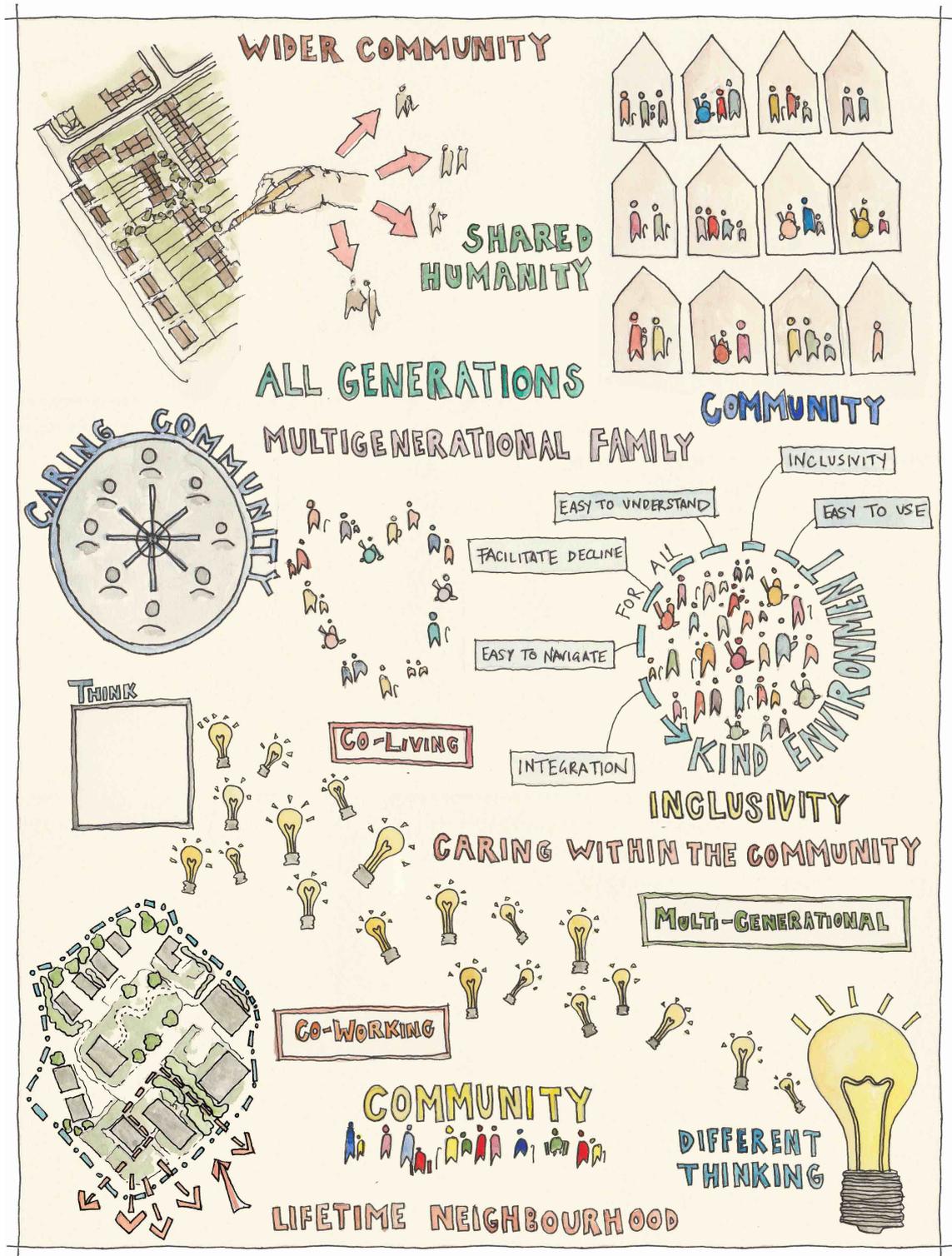


Figure 4.20 : 'Intergenerational Design Paradigm' abstracted from the researcher's SRM

#### 4.11 Future-proofing: Spatial Adaptation at a Later Stage

There was a clear consensus across all interviews that the future-proofing of supportive living environments for ageing relied upon an intergenerational design paradigm that incorporated the design characteristics of transitions, appropriate flexibility, familiarity and connection to the outside (see Figure 4.15). These design characteristics must flexibly adapt across the life course in order to meet changing needs and desires to age-in-place. By achieving this, the supportive living environment was classed as future-proofed. An extract taken from Participant I explained:

*“Understanding how a client wants to live there and future-proofing it...Things will happen for younger families you know, they might have one child or they might have no child, or they're going to have more children and being able to future-proof it over that time as a family grows, and they might leave and that kind of thing...We've never kind of imagined generally to put a lift in a house, but we do quite a bit or you have the ability to be able to put a lift in, so you've prepared for it, you've future-proofed it and adapted it. But that's the same whether it's older or younger families.”*

*(Participant I)*

Within architectural practice, it was this understanding of how living environments supported the changing life course which was fundamental to future-proofing. Participant C explained that to support the ability to future-proof, architects were required to 'design it all' into a proposed spatial plan. They communicated:

*“We basically just designed it all and we've actually got the proposed plan and then a future-proofed plan, so things like there's enough room for 1500 turning circles all around the bed and that's on the ground floor, the master bedroom and then they'll be enough room for a hoist if that needs to go in and even the level of the windows. So, if you're lying in bed, if you're bed-ridden, you can see out of the windows.”*

*(Participant C)*

This best supported user-clients to understand how they could spatially adapt their living environment at a later stage in order to future-proof. It was highlighted that architects who emphasised a narrative based approach of 'what if' something were to happen at a point across the life course were most successful at future-proofing the design of living environments. Participant A stated:

*“So, how can we find plan forms that would respond to that narrative. You have midlife terrible accident. How can we make sure you don't have to leave your community and move when you're at your most vulnerable. Suddenly, if you're downsizing, how can we make sure that there's enough space for you to bring your favourite books or whatever it is that keeps you on the straight and narrow? If husband and wife, or partner and partner have something terrible happen to them, can we get a module to drop into that back garden so that we can, without having to totally reshape things, make life plausible.”*

*(Participant A)*

It was identified that by taking a 'what if' approach from the outset, architects designed more functional and adaptable living environments that supported the occupants changing needs and lifestyles. This was highlighted to strengthen the age-friendly narrative within supportive living environments for ageing. Participant G communicated:

*“I think the future is probably more about the way you would sell to the young professional and tailoring it to their needs and their lifestyle. I think age friendly housing needs to be selling that experience tailored for the lifestyle of people who are not on the shelf at 60. You've got a large portion of your life in that 60, 70, 80 through to 100 even...Going away from care homes and propping somebody up towards facilitating a quality of life in the last quarter of their existence.”*

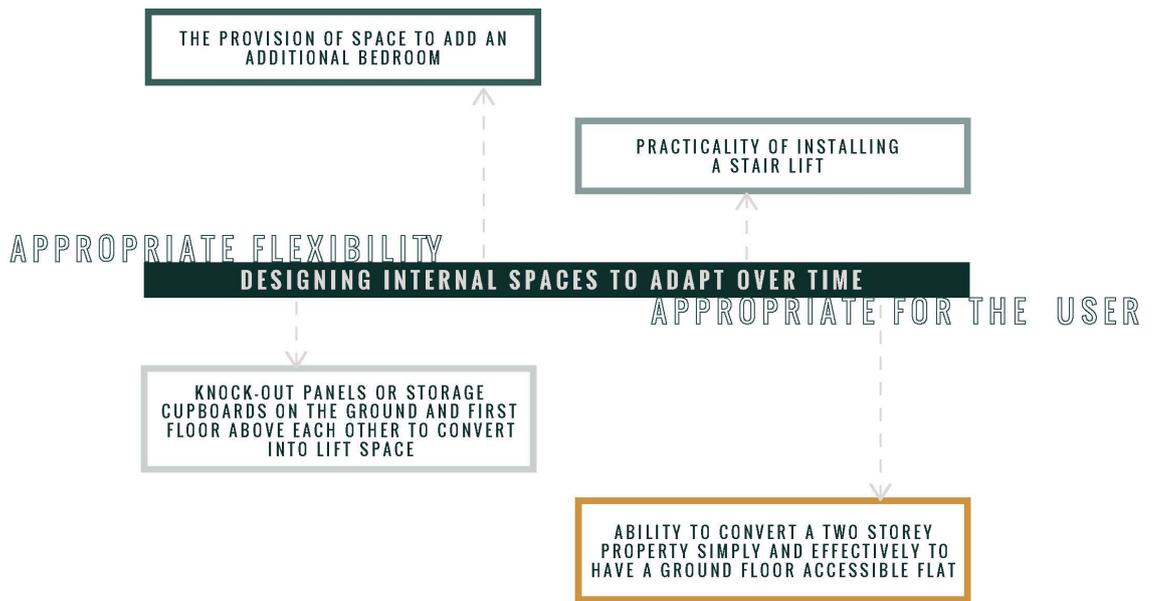
*(Participant G)*

This highlighted the importance of an individual's changing needs and lifestyles when designing with future-proofing in mind. Interestingly, whilst this corresponds with flexible and adaptable spatial considerations, it relied upon an 'appropriate' amount of flexibility. Participant H explained:

*“I think it's about tying in the flexibility because you don't know how somebody's health or mobility is going to change over time. Everybody's different and everybody's situation is going to be different. So, you can't predict for absolutely every requirements and it's not perhaps the best thing to just say, well, we'll put everything to the very highest standard and make sure everything's absolutely wheelchair accessible, when only 3% of the population are in wheelchairs. So, it's making sure that you've got that level of appropriate flexibility within the design and capturing that at the early stages.”*

*(Participant H)*

This highlighted the importance of an architect's agency and design process in order to gain an understanding into the specific design aspects most appropriate for the user-client. By achieving this appropriate flexibility, the internal functionality of the space was better prepared to adapt over time (see Figure 4.21).



**Figure 4.21** : Design criteria that supports appropriate flexibility of internal spaces

Whilst it was recognised by Participant H that ‘you cannot make everything work for everybody’, inclusive environments were advocated as the most feasible solution for being able to mitigate potential challenges that came with ageing (such as mobility decline, social inclusion and functionality). These design considerations ensured that architects were designing supportive living environments that would be future-proofed.

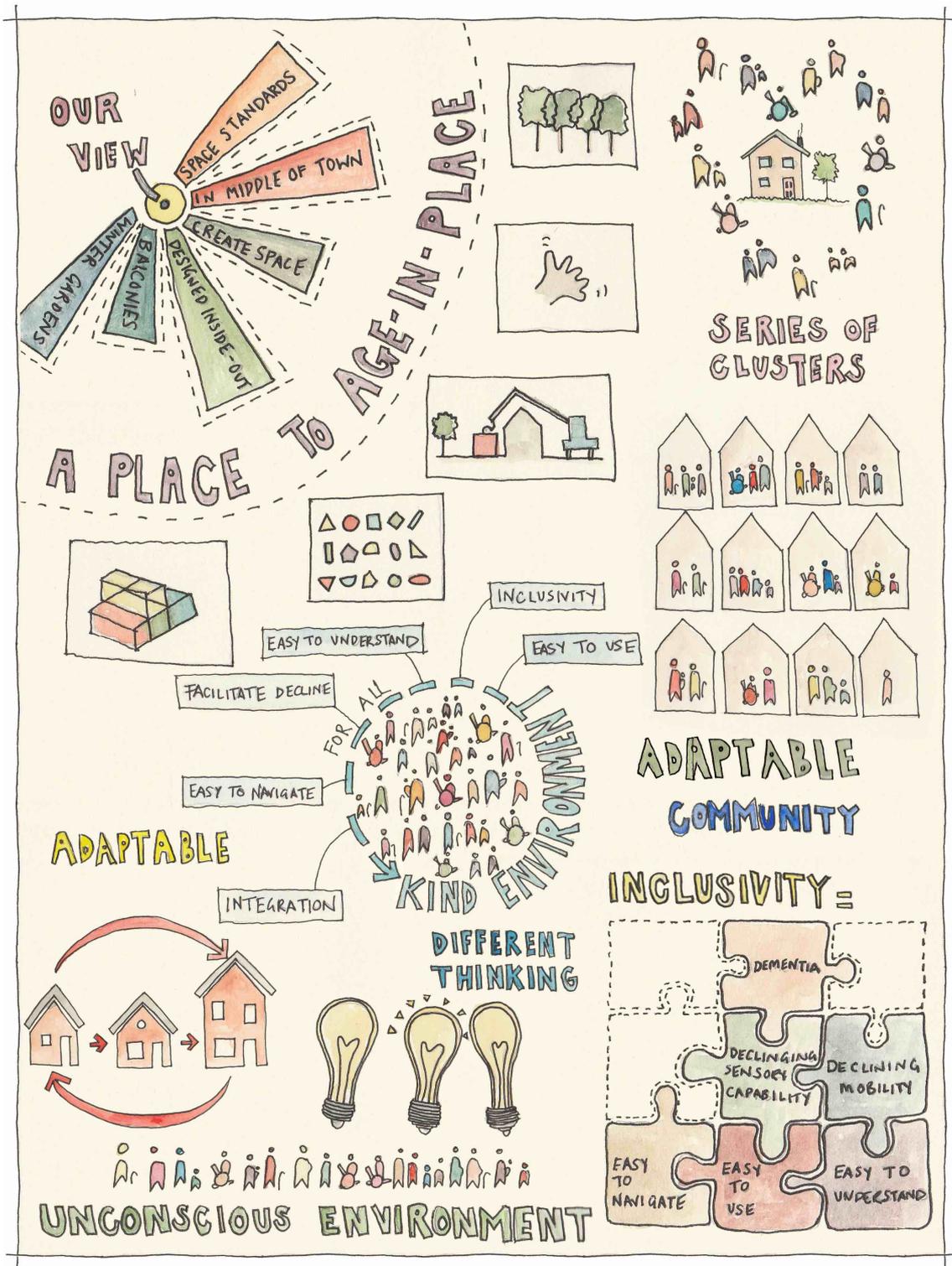


Figure 4.22 : 'Future-proofing' abstracted from the researcher's SRM

## 4.12 Discussion

These design reflections provided insight from experienced architects working in designing supportive living environments for ageing. This was based on existing evidence which found limited studies offered insight into the accounts of architects working within real world design practice (Cuff, 1992; Cohen et al., 2005; Van der Linden et al., 2016a; 2019). In the words of Cuff (1992, pg.7):

*“If we are to offer sound advice about how architectural practice ought to function, we must know more about how it functions now.”*

*(Cuff, 1992, pg.7)*

The insights provided by architects within this study highlighted that internal functionality, delivering affordances, intergenerational paradigm, and future-proofing were fundamental to the success of these supportive living environments for ageing. Specifically, they influenced whether a supportive living environment fulfilled its function for the users. Van Hoof et al. (2020) asserted that it was this practical functionality of buildings which supported the needs of older adults. Yet, they found that all too often, the artistic design took precedence as a result of ‘implicit ageism’. The design reflections in this study highlighted the architects’ perspectives of the successes, challenges and limitations coming from everyday design practice.

- **Internal Functionality: Transitions, Appropriate Flexibility, Familiarity, Connection to the Outside**

The internal functionality of supportive living environments relied upon the design characteristics of transitions, appropriate flexibility, familiarity, and connection to the outside. A correlation between these design characteristics and some of the HAPPI principles was identified. However, when the HAPPI guidance was discussed, architects highlighted a difficulty with convincing user-clients to implement the 10 principles and to carry them all out collectively. This is noteworthy, given that it was a decade since the APPG brought out the ‘HAPPI: Plan for Implementation’ report (Best and Porteus, 2012). More recently, Heylighen et al. (2017) found that across

the majority of architectural practice, there was uncertainty as to what was required to design inclusively. Building upon the HAPPI design principles, this study provided further emphasis and clarification of specific design characteristics and a criteria that architects identified from working on designing supportive living environments for ageing.

Transitions that provided ease of access, navigation, and visual and sound sensitivity were identified as essential when creating supportive living environments for ageing. McIntyre and Harrison (2017) stated that spatial legibility, interconnectedness, traversability, diversity and aesthetics impact the wellbeing of older adults. Appropriate flexibility supported the provision of space to adapt to suit the requirements of occupants. This correlated with Schneider and Till's (2005) definition that spatial flexibility of housing is designed for change over its lifetime (Schneider and Till, 2005).

Moreover, Schneider and Till (2005) found that flexibility was determined through in-built adaptability capable of varied social use and flexible to different physical arrangements. Familiarity required the living environment to 'feel' like a home based upon normality of everyday functions and safety. Rooney et al. (2017) asserted the importance of feeling safe at home and that this could be achieved through design measures and greater inclusion within the local community.

In addition, the sensory experience (through material recognition and seeing belongings) was recognised by architects as important when designing supportive living environments for ageing. Designing experiences that engage with more of the senses has been identified to influence the social, cognitive and emotional wellbeing of an individual (Spence, 2020). Connection to the outside through balconies, garden provision, corridors and window openings were supported through building orientation. This connection has been identified to play a therapeutic role that contributes to the wellbeing of older adults (Chalfont, 2006).

However, whilst these design characteristics have been identified, it was recognised that architects were required to acknowledge inclusive design as a necessity in their daily practice when engaging with the design of supportive living environments for ageing (Wauters et al., 2014; Heylighen et al., 2017; Van der Linden et al., 2019). It was highlighted in this study that architects were required to move beyond an inward facing mentality in order to place greater emphasis on design characteristics that supported users daily activities within the internal living environment. This added to Van der Linden et al.'s (2019) assertion that there was a commonality between an architect's design practice based on 'implicit assumptions' and the impact on user experience within the built environment.

To support this, designing from the 'inside-out' was highlighted within this study to enhance internal functionality of supportive living environments for ageing. An inside-out approach to design has been described as designing environments based upon the desired potential experiences of space, as opposed to initial specification of real surfaces (Benedikt, 1979). Schneider et al. (2013) added to this notion, stating that designing from the inside-out was based upon user perspectives. This study found that inside-out design focused attention on the liveability of a space before the external aesthetics. However, an understanding of how users occupied their existing environments was fundamental to achieving successful inside-out design for internal functionality.

Moreover, this added to Van der Linden et al.'s (2019) assertion that there was a need for architects to immerse themselves into users everyday environments in order to understand the context and to meet the needs through practical architecture. Participants within this study highlighted the importance for architects to prioritise the practicalities of space through implementing the design characteristics of transitions, appropriate flexibility, familiarity, and connection to the outside.

- **Delivering Affordances: Social Interaction, Connection with Nature and Different Types of Living Options**

The delivery of affordances through the design of supportive living environments was identified as influential to user-clients' experiences. The ability to social interact, connect with nature and decide between different types of living options were highlighted to deliver particular affordances within supportive living environments for ageing.

This corresponds with existing evidence that identified 'Five Ways to Wellbeing' through connecting to other adults, being physically active, learning new skills, giving to others, and paying attention to the present moment (NEF, 2008). Thus, creating supportive living environments that delivered affordances enhanced the occupants wellbeing. In addition, the WHO's (2007) framework of eight interconnected domains of age-friendliness were reflected within the affordances identified within this study. This identified that the appropriateness of the design of supportive living environments in order to meet the age-friendly agenda.

The design of internal spaces offered social affordances both within the living environment (interactions with family, friends and other residents) and surrounding community (encounters with neighbours on the street). This added to existing evidence which has identified that the built environment (specifically living environments) plays an influential role on the social connectivity of occupants, particularly older adults (McIntyre and Harrison, 2017; Rooney et al., 2018; Van Hoof et al., 2020; Wang et al., 2020). Architects within this study emphasised the importance of designing living environments and/or communal buildings to accommodate guests and other social interactions.

This supported Rooney et al.'s (2017) design recommendation of the need to provide guest room facilities in order to support relationships with others. Architects highlighted that balconies provided further social affordance by being able to wave at passers-by. This highlighted the importance of the supportive living environments

connectedness to the real world urban scale. This added to existing evidence which identified the demand for supportive living environments to be within a 5-10 minute walks to neighbourhood, town or urban centre amenities (Park et al., 2016). In addition, centralising supportive living environments within town centres has been identified to play an influential role in the revival of high streets (Phillips et al., 2021).

Delivering the affordance to connect with nature through internal (through window placement) and external (through balconies, winter gardens, and allotment space) design was identified by participating architects. This affordance has been linked in existing research to improved physical and mental health of older adults (Mulliner et al., 2020). The design characteristic of transitions was identified as relevant when creating supportive living environments to connect with nature. The ease of transitioning through interconnected spaces with views out supported the occupant to continue to make the journey to connect with nature. McIntyre and Harrison (2017) stated that the visual and acoustic connection of openings, open plan layouts and convergence of routes contributes to the spatial interconnectedness of living environments. This connection was highlighted to provide greater familiarity of internal spaces and thus, positive experiences of the occupants. This was through nature assisting the ability to maintain selfhood, prompt self expression through memories and symbolic use of nature, and the facilitation of sensory stimulation (Chalfont, 2006).

The design of supportive living environments that emphasised inclusivity supported the affordances to decide between different types of housing options. This supported addressing the wealth of existing evidence that has identified the need for increased housing options for older adults (Means, 2007; Park et al., 2016; Means, 2017; Hajri et al., 2019). This can be supported through the implementation of the identified design characteristics which enable living environments to designed to support healthy ageing. For example, architects highlighted that age-friendly apartments provided diverse options (such as co-housing developments and intergenerational developments) to support healthy ageing across the life course. This supported

Hadjri et al.'s (2019) assertion that apartments are one of (but not limited to) the suitable housing options that can enable ageing-in-place if designed appropriately. This will support the creation of a heterogeneous housing market based upon ageing-well and inclusivity (Means, 2007).

• **Intergenerational Design Paradigm: Communities, Neighbourhoods, Co-developments, the Home and Activities within**

The intergenerational design paradigm was made up of a range of macro, micro and nano scale intergenerational tactics for designing supportive living environments for ageing. Existing evidence has made a call to arms for new architectural and design paradigms that act in harmony with human perceptions and functions, particularly those of older adults (Chrysikou, 2018). This study provided an architectural and design paradigm that emphasised intergenerational as essential to creating supportive living environments for ageing. Architects identified that intergenerational communities, living on an intergenerational street, intergenerational co-living/co-working developments, intergenerational housing typologies, and intergenerational activities within the home make up this paradigm. Intergenerational living environments have been identified as an 'enabler' within the context of supporting healthy ageing-in-place (Hadjri et al., 2019).

The emphasis placed on a variety of scales within the intergenerational design paradigm was highlighted as important across the interviews. Existing evidence has recognised that focusing attention on different 'spatial scales' from large to small (city, street, community, and housing levels) best promoted an age-friendly built environment (Chao, 2018). Furthermore, emphasised the importance of 'walkability' between the different spatial scales in order to support the core concept of ageing-in-place. Van Hoof et al. (2021) stated that spatial scales expands an older adult's living environment to the town/city-level environment which supported their individual health and wellbeing. Whilst this study corroborated the importance of spatial scales from macro to nano, architects emphasised that designing at a spatial masterplan level (macro scale) provided the essential foundations to constructing the

intergenerational tactics that created supportive living environments for ageing. It was this macro scale that established the possibilities for the micro and nano scale design tactics.

The notion of 'community' was identified as important when considering the intergenerational design paradigm. This was referred to as the ability to have a natural social support and care system within the community. This added to Buffel et al.'s (2014; 2019) concept of 'active caring communities' which stated that whilst attention to help, care, support, and reciprocity are important, attention must also be given to place attachment, social engagement, community cohesion and safety. It was further evidenced that a sense of community created by intergenerational living supported the ability to act as a societal care model (Hadjri et al., 2019). It was highlighted by architects that designing homes into clusters emphasised this sense of community. This required implementation at a masterplan level of the intergenerational design paradigm. This supported existing evidence which acknowledged that designing in clusters creates attractive and accessible streetscapes that promote increased walking and interaction within the public realm (Park et al., 2016).

At a micro level, the individual living environment within the intergenerational design paradigm required emphasis on the flexibility and adaptability of internal spaces. This relates back to the internal functionality through the design characteristics previously discussed. This added to existing discourse that housing design must be flexible and adaptable to an individual's life-course (Means, 2007; Park and Ziegler, 2016; Adams, 2017; Arentshorst and Peine, 2018; Hadjri et al., 2019; Robinson et al., 2019). Architects within this study highlighted that creating supportive living environments that were flexible and adaptable catered for an intergenerational audience. This can support a heterogeneous housing market based upon the inclusion of all ages and abilities to healthy age-in-place (Means, 2007).

Moreover, it was identified that catering to a diverse audience enhanced the possibility of intergenerational interactions. There was a wealth of existing evidence that highlighted the influence of social interactions on the wellbeing of older adults (Cattan et al., 2005; Hawkey and Cacioppo, 2010; Dickens et al. 2011; Tuckett et al., 2017) and the important role the built environment has on these interactions (Felix et al., 2015; Park et al., 2016; Al horr et al., 2017; McIntyre and Harrison, 2017). It was highlighted in this study that the intergenerational design paradigm had the potential to assist social cohesion between neighbours which further enhanced a supportive network within the intergenerational community. This advocated the intergenerational design paradigm of supportive living environments as a potential solution needed to support healthy ageing-in-place (Hadjri et al., 2019).

- **Future-proofing: Spatial Adaptation at a Later Stage**

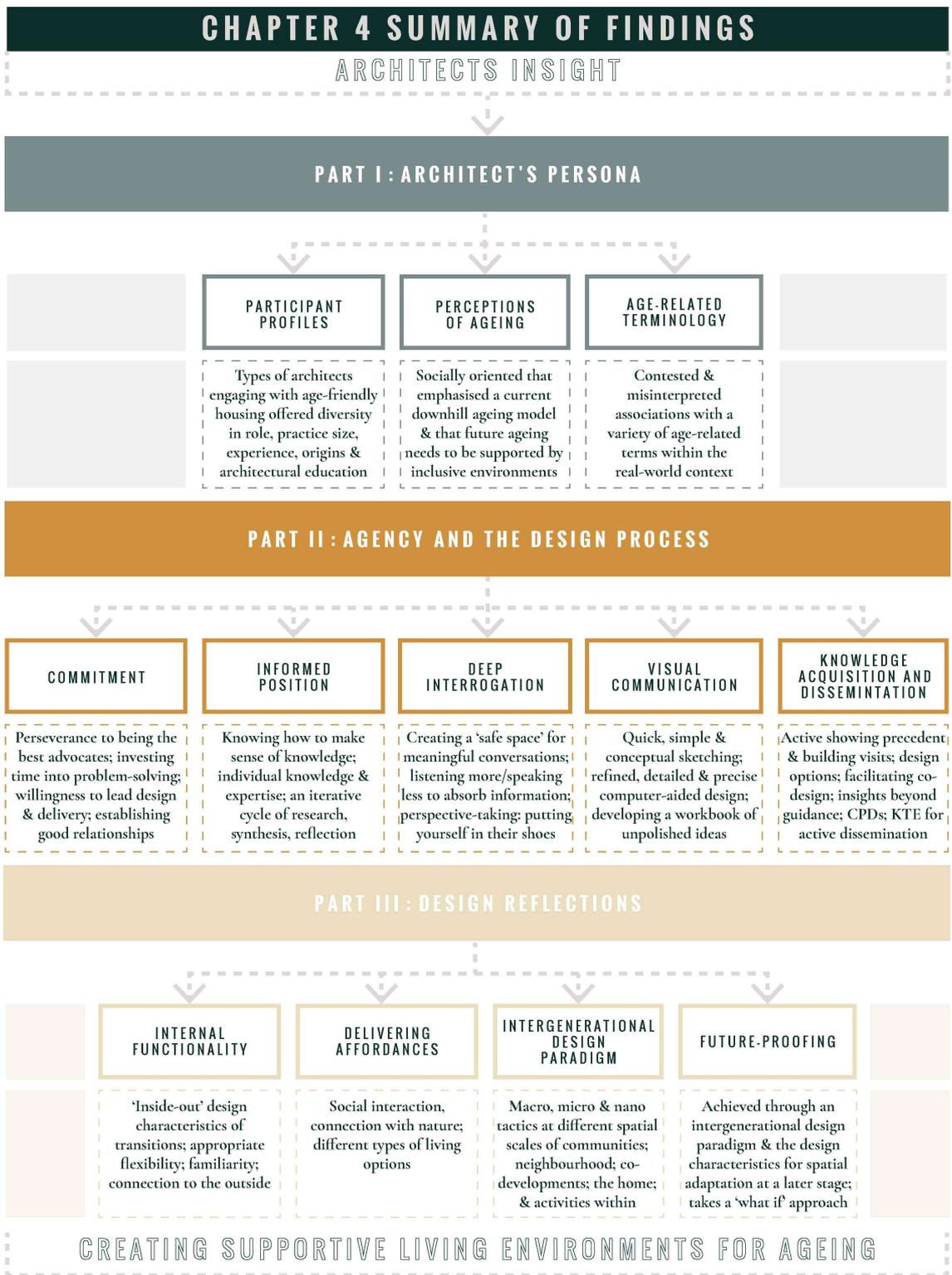
The future-proofing of supportive living environments for ageing relied upon an intergenerational design paradigm that incorporated the design characteristics of transitions, appropriate flexibility, familiarity and connection to the outside. Heylighen et al. (2017) stated that designing environments which focused on supporting diversity, equality, and social inclusion ensure the longevity of new homes. These design characteristics emphasised this assertion and were identified by architects as essential for future-proofing supportive living environments for ageing. It was this socially responsible orientation to housing design that ensured the sustainability (both socially and environmentally) of living environments (Heylighen et al., 2017).

The ability to spatially adapt the supportive living environments for ageing at a later stage required architects to essentially design it all into the proposed spatial plan. This required architects to acquire the knowledge and willingness to implement the design characteristics into their design proposals (Rooney et al., 2013). Taking a 'what if' approach from the outset of designing spatial plans made proposals more functional and adaptable to suit changing needs and lifestyles. This advocated the importance that an individual's changing needs (such as the result of ageing) should not be a barrier to sustained or improved health and wellbeing, nor should it prevent

individuals from continuing to carry out everyday activities in their living environments (PHE, 2019). Architects within this study emphasised that this relied upon an appropriate amount of flexibility that came from understanding the user-clients during the design process. Existing discourse stated that achieving flexibility within housing design cannot be overlooked by architects and other BEPs (Schneider and Till, 2005). The creation of supportive living environments for ageing were identified as inclusive environments that were feasible solutions to mitigate potential challenges that arose within ageing, and as a result, future-proofed for an individual's life-course.

### **4.13 Summary**

As illustrated in Figure 4.23, this chapter presented the empirical findings from the interviews carried out with nine architects. The first section (see sub-chapter 4.1-2) offered insight into the 'Architect's Persona' which highlighted their architectural background and perceptions of ageing. In addition, it shone a light on contested age-related terminology. The second section (see sub-chapter 4.3-7) provided insights into the five categories of: 1.) Commitment, 2.) Informed Position, 3.) Deep Interrogation, 4.) Visual Communication, and 5.) Knowledge Acquisition and Dissemination, which were found to be most influential to an architect's 'Agency and the Design Process' when creating supportive living environments for ageing. The third section (see sub-chapter 4.8-12) offered 'Design Reflections' from the experts in practice — the experienced architects working in designing supportive living environments for ageing. Specifically, the successes, challenges, and limitations of Internal Functionality, Delivering Affordances, Intergenerational Paradigm, and Future-proofing which were identified as the most prevalent design reflections within this research context. A discussion of these empirical findings was provided with reference to the existing evidence-base (as stated in Chapter 2), which supported an holistic understanding of the interrelationship between an architect's agency and the design process when creating supportive living environments for ageing.

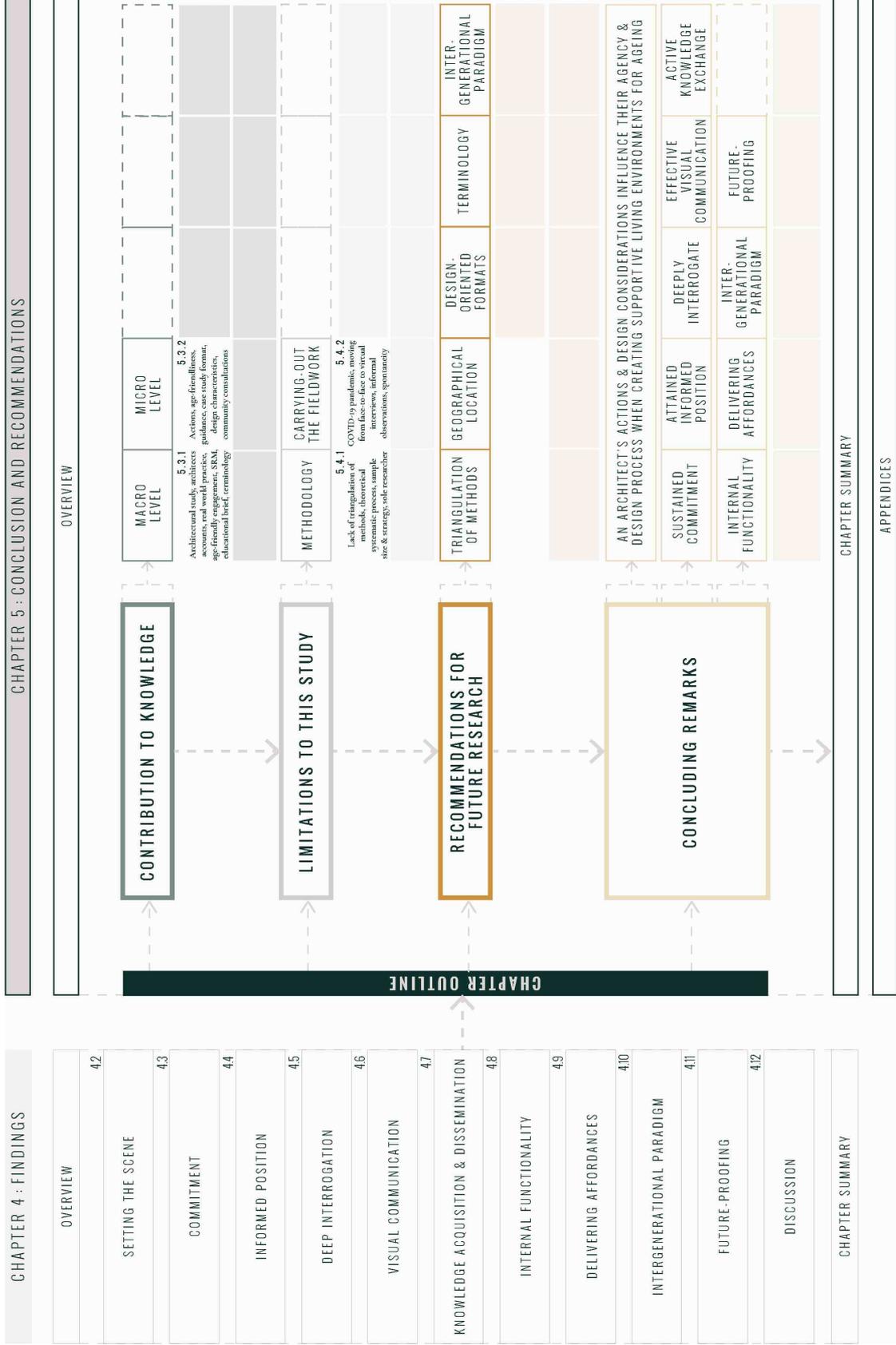


**Figure 4.23** : Summary of empirical findings uncovered during this research study

## **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**

### **5.1 Overview**

This chapter, concludes this thesis which gives an overview of the study carried out to answer the research question — *'How does agency and process of architects influence the design of supportive living environments for ageing?'*. It reflects on the overall research aim and objectives and presents the extent to which they have been addressed through the empirical findings. In addition, this chapter summarises the contribution to knowledge that this study has made to architectural research, practice, policy and education. Moreover, it highlights the limitations of this study and the considerations for future research. Lastly, it provides concluding remarks that outline five specific actions and four design reflections identified as influential to creating supportive living environments for ageing.



**Figure 5.0** : Outline of the Conclusion and Recommendations

## 5.2 Research Overview

**Chapter 1** introduced the topic of housing for an ageing (older) population to which this study situates. This motivated and outlined the research scope of creating supportive living environments for ageing. Whilst there is a growing awareness of the need for the built environment to support healthy ageing, significant gaps remained in current knowledge. As a result, this guided the rationale for this architectural study and posed the research question. In addition, this chapter provided an overview of the study aim and objectives, as well as the thesis structure.

**Chapter 2** presented a review of existing literature on the role that living environments play on ageing. Distilled from examining this evidence-base, this chapter provided four thematic literature reviews that uncovered the context of: 1.) Housing and ageing well, 2.) Design for all, 3.) The architect's process and 4.) Agency to act. In addition, the existing findings from these four literature reviews guided this research study as it outlined and defined the gap in knowledge.

**Chapter 3** described the constructivist research philosophy that informed this research study which developed the conceptual framework implemented. Aligning with this philosophy, it introduced the CGT methodology adopted for accomplishing the overall research aim and objectives of the study. It described the inductive research design strategy that was followed by the researcher when carrying-out the fieldwork. Finally, this chapter outlined the purposeful sampling strategy adopted and discussed the interviewing method for data collection. In addition, how the data was collected through audio recordings and analysed twofold through CAQDAS Dedoose and SRM, with consideration to any ethical issues that arose as a result of this research.

**Chapter 4** presented the analysis of empirical findings from the interviews carried out with nine architects. The first section offered insight into the 'Architect's Persona' which highlighted their architectural background and perceptions of ageing. In

addition, it shone a light on contested age-related terminology. The second section provided insights into the five categories of: 1.) Commitment, 2.) Informed Position, 3.) Deep Interrogation, 4.) Visual Communication, and 5.) Knowledge Acquisition and Dissemination which were found to be most influential to an architect's 'Agency' and their 'Design Process'. The third section offered 'Design Reflections' from the experts in practice — the experienced architects working in designing supportive living environments for ageing. Specifically, the successes, challenges and limitations of Internal Functionality, Delivering Affordances, Intergenerational Design Paradigm, and Future-proofing which were identified as the most prevalent design reflections within this research context. A discussion of these empirical findings was provided with reference to the existing evidence-base (as stated in Chapter 2), which supported an holistic understanding of the interrelationship between an architect's agency and their design process when creating supportive living environments for ageing.

Based on these Chapters 1-4, this last chapter draws conclusions and provides recommendations for future research related to the research aim and objectives.

### **5.3 Contribution to Knowledge**

This study has contributed new knowledge into the existing discourse on housing for healthy ageing. As identified in Chapter 2 (see Figure 2.15), significant knowledge gaps existed within the themes of 'Agency to Act' and 'The Architect's Process'. This recognised the need for research into these two specific themes within the context of creating supportive living environments for ageing. The majority of knowledge contributed by this research study has reduced the gaps within these two specific themes (see 'micro level knowledge contribution' in Figure 5.1). In relation to the work of others (as stated in Chapter 2), the empirical findings identified in this study provided specific methodological, practice, policy and educational contributions which have added to the debate, expanded knowledge and positioned this study with existing research.

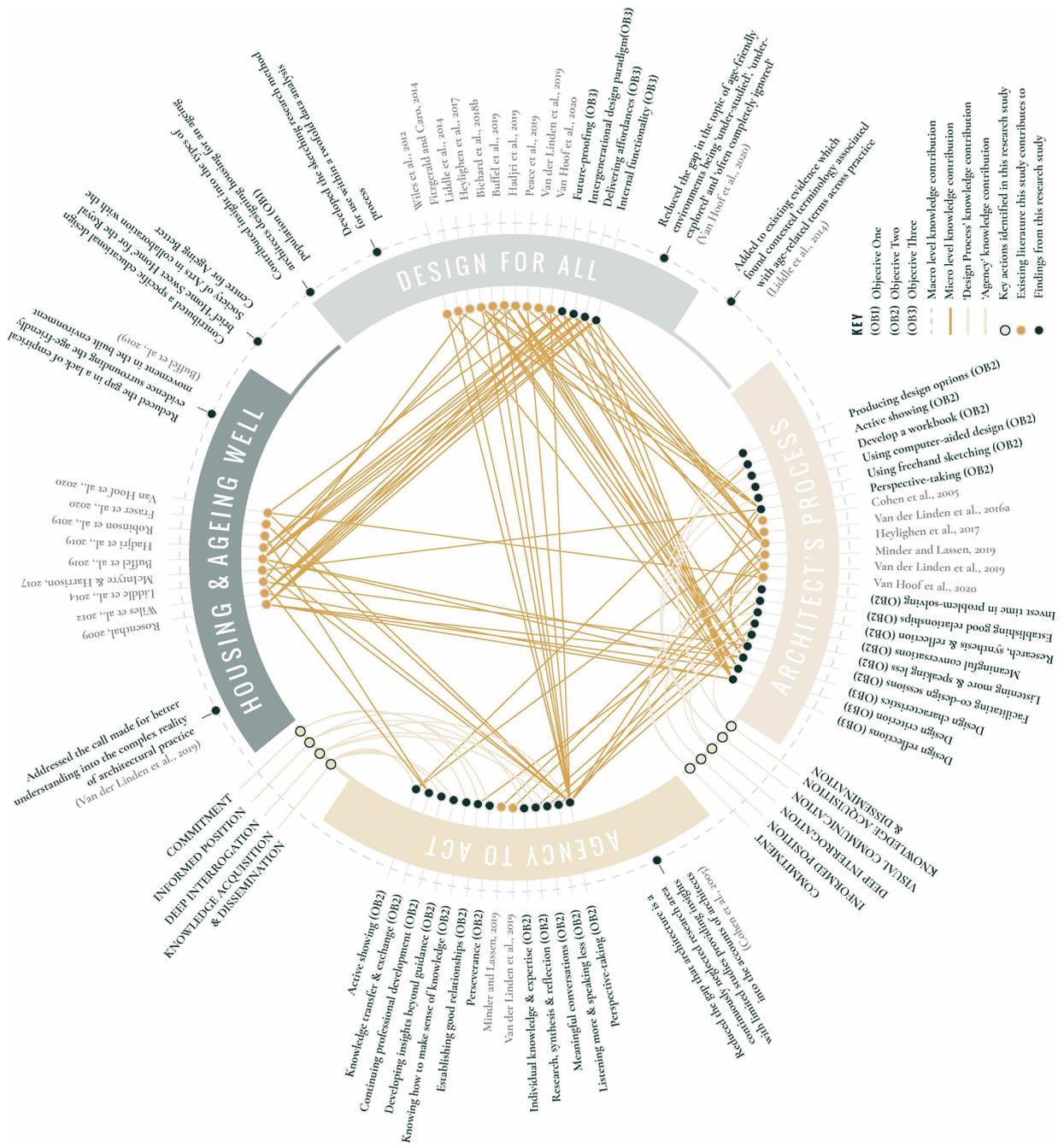


Figure 5.1 : Overview of this study's contribution to knowledge

### **5.3.1 Macro level knowledge contribution**

At a macro level (see Figure 5.2), this architectural research study explored the experiences of architects on the frontline of creating supportive living environments for ageing. This reduced the gap previously identified that architecture was a continuously neglected research area with limited studies providing insights into the accounts of architects (Cohen et al., 2005). Specifically, this study focused on generating an original theoretical contribution to knowledge with regard to the influence of an architect's agency and the design process within real world design practice. This supported the call to arms made by Van der Linden et al. (2019) for greater understanding into the complex reality of architectural practice through the dynamic mechanisms of people and materials.

The objectives (as stated in Chapter 1) summarised in context of the contributions this research makes (see below for micro level), provide theoretical insight in to the ways in which architects are demonstrating increased engagement with age-friendly design when creating supportive housing for healthy ageing. This provides understanding towards the calls made by the RIBA (2019a) for architects to prioritise age-friendly design in order to support inclusive housing for all, regardless of age or ability. In addition, the objectives of this study have reduced the gap previously identified in the lack of empirical evidence surrounding the age-friendly movement within the built environment (Buffel et al., 2019). As a result, the empirical findings contributed insights into the topic of age-friendly environments which was previously identified to be 'under-studied', 'under-explored' and often 'completely ignored' by architects and other BEPs (Van Hoof et al., 2020).

In addition, an educational brief 'Home Sweet Home' for the Royal Society of Arts (RSA) and in collaboration with the Centre for Ageing Better was developed from the emergent findings of this research study (Sedgewick, 2020c). This educational contribution provided students with the opportunity to engage with the topic of supportive living environments for ageing. In addition, this educational resource was used to shape a design competition aimed at providing the future generation of

designers with the understanding of the importance of age-friendly design. Furthermore, the researcher presented a seminar for the RSA based on the study findings and was involved in judging the design submissions to further evolve the age-friendly discourse and contribution to education.

Methodologically, this thesis added to the existing study of Bollo and Collins (2017) which advocated the use of Grounded Theory methods for achieving architectural qualitative research outcomes. Specifically, the success of interviews for generating rich insight into multiple viewpoints on specific phenomena. In addition, this study developed a novel methodological approach which used a twofold analytical process comprised of computer-assisted qualitative data analysis software Dedoose (text analytics) and the sketching research method (visual analytics). The SRM process was found to provide an innovative way of thinking and visualising the emergent data that added further rigour to the data analysis process. This transformed how the emergent findings unfolded which offered the discovery of surprising patterns that contributed and strengthened the consecutive research stages. Several existing studies have identified that architects have difficulty in understanding, engaging and communicating knowledge, and that this had exacerbated as a result of the current knowledge barrier between practice and academia (Raisbeck and Tang, 2009; Collins, 2014; McIntyre and Harrison, 2016; Van der Linden et al., 2016a; 2019). This study has identified the SRM as a legible, succinct and visually appealing technique that can be understood by all and thus, a method to better communicate and document research to effectively disseminate for real world design impact. The SRM has the potential to act as a mediator between academia and non-researchers (e.g. architects, policymakers, end-users) in order to bridge the knowledge exchange gap.

Moreover, existing research found that within local authority, there was a tendency to portray the 'age-friendly narrative' as one that sits within 'age-segregated environments' (Liddle et al., 2014). This study added to this discourse which identified contested terminology associated with a variety of age-related terms across

real world practice. This highlighted a notable issue beyond local authority and the need for greater educational contributions to mitigate these discrepancies.



**Figure 5.2 :** Macro level contribution to knowledge this study makes

### **5.3.2 Micro level knowledge contribution**

At a micro level (see Figure 5.3), existing evidence has found that ageist perspective-taking is still evident across social constructs, and that the built environment is required to play a critical role in understanding older adults' everyday experiences (Heylighen et al., 2017). This study provided specific insights into the actions architects were taking to understand older adults' experiences when creating supportive living environments for ageing. Specifically, finding that undertaking 'deep interrogation' that involved creating a 'safe space' for meaningful conversations, listening more and speaking less, and perspective-taking by putting themselves in their shoes enhanced an architect's understanding of older adults' everyday experiences.

Moreover, existing research has found that age-friendliness encourages an architect's socially engaged urban practice which endorses a participatory model that supports them to become more experimental, participative and empowered by engaging with older adults to understand their experiences (Buffel et al., 2019). This study identified that architects who invested time into acting as a facilitator during collaborative processes (such as co-design sessions) better understood the users by drawing on their experiences and championing their involvement during the design process. The inclusion of co-design sessions were found to be the most successful design tool that provided a specific way of knowing about the users. In addition, contrary to the work of Minder and Lassen (2019), and Van der Linden et al. (2019), which found that architects continued to distance themselves from users during the design process, this study found that instead, architects who were engaged with creating supportive living environments for ageing actively involved users. This conscious decisions-making was found to correspond with an architect's agency which ensured strategic and ongoing age-friendliness during the design process to support active healthy ageing within these inclusive environments (Liddle et al., 2014). However, existing studies identified that a lack of design-oriented information formats were fuelling the limited understanding of the importance of adopting inclusive design into an architect's process and called for this to be addressed (Van

der Linden et al., 2016a). This was corroborated by this study, which found that the majority of guidance tended to be out-of-date, not engaging and lacked qualitative information. In addition, it identified the case study format as a successful tool architects engaged with when seeking text-based information and thus, a potential format for integrating academic research. This provided a solution to support a move away from prescriptive building code solutions commonly associated with quantitative aspects, and more towards inclusively designed solutions based on qualitative aspects (Ormerod and Newton, 2005).

The key five actions (commitment, informed position, deep interrogation, visual communication, and knowledge acquisition and dissemination) identified in this study as influential to an architect's agency and the design process contributed to existing discourse into the ways that architects were supporting health and wellbeing (McIntyre and Harrison, 2017; Bichard et al., 2018b), ways they were enhancing inclusivity (Bichard, 2018a; Peace et al., 2019), ways they were reducing age-segregated neighbourhoods through intergenerational solidarity (Fitzgerald and Caro, 2014; Buffel et al., 2019; Fraser et al., 2020), and ways they were emphasising practical functionality (Van Hoof et al., 2020). It was identified during design reflections, that these actions were best supported with use of the key design characteristics (transitions, appropriate flexibility, familiarity and connection to the outside) which were found to support internal functionality, delivering affordances, intergenerational design paradigm, and future-proofing when creating supportive living environments for ageing. This contribution to knowledge provides solutions to the call to arms for how architects can take action in ensuring that living environments for healthy ageing are designed to enable diversity, equality and social inclusion (Rosenthal, 2009; Heylighen et al., 2017), connectedness, familiarity and choice (Wiles et al., 2012; Buffel et al., 2019), and safety, independence, a sense of community, and a heterogenous housing market (Hadjri et al., 2019).

Furthermore, several studies have found that housing policy has impacted ageing-in-place through the lack of implementation of adequate housing (Means, 2007; Rosenthal, 2009; Vasunilashorn et al., 2009; Wiles et al., 2012; Liddle et al., 2014; Hadjri et al., 2019; Robinson et al., 2019; McCall et al., 2020). Robinson et al. (2019) found a 'notable implementation gap' between the principles and priorities of housing policy when investigating a North East case study. This study identified an initial positive move being made by local authority within the North East to support addressing the lack of appropriate housing options for older adults. Specifically, implementing the requirement for architects to submit a statement of community consultation alongside planning documentation in order to progress through planning approval. Whilst this evidenced local authority acting at a community level, architects' positive engagement with this action of knowledge transfer provided greater contextual knowledge from users which enhanced their informed positions to design appropriately for use. Consequently, influencing their agency and the design process when creating supportive living environments for ageing. As a result, this finding added to existing discourse to emphasise the crucial role policy must and can play in enforcing further requirements at a community level during an architect's design process. This has the potential to further support the implementation of more appropriate housing for healthy ageing and suggests greater collaboration between architects and local authorities could support the future success of creating supportive living environments for ageing. This corroborates Robinson et al.'s (2019) finding that greater multi-agency collaborative approaches could be developed when planning for housing.



Figure 5.3 : Micro level contribution to knowledge this study makes

## **5.4 Limitations of this study**

There are several limitations that were identified upon reflection of this research study. It is important to acknowledge these limitations in the instance that this research is developed further within future work or applied within other contexts.

### **5.4.1 Limitations in the Methodology**

The in-depth accounts of architects provided insight into how their agency and the design process influenced creating supportive living environments for ageing. However to retrieve this insight, the study only relied upon the interview method as opposed to a triangulation of methods (such as observation, surveys and interviews) which has been recognised to provide further validity, clarity and rigour (Robson and McCartan, 2016). Whilst this was noted, the research design followed a CGT framework which achieved a comprehensive level of theoretical saturation for validation. This process was found to be complicated and time consuming due to the theoretical systematic process necessary (Charmaz, 2006). However, this limitation was acknowledged during the methodological literature review conducted at the initial research stage when developing the research design. As a result, the researcher factored this in and allocated sufficient time to this process in order to achieve the comprehensive level of theoretical saturation.

In addition, the sample size of nine purposefully selected architects provided rich accounts until theoretical saturation was reached in order to answer the research question. This was opposed to a larger sample number which would have provided surface level insights as a result of time constraints. If time and resources were not so constrained for the sole researcher, further sampling could have been conducted to explore additional interesting avenues (beyond the research question) which emerged from the findings. However, the research scope was to conduct fieldwork until theoretical saturation of the findings was achieved to specifically answer the research question. Therefore, this sample size was appropriate for the research purpose under the time and resource constraints. Furthermore, an additional limitation of the sampling strategy was that the majority

of the participants were male and there was a lack of ethnically diverse (black, Asian, and minority ethnic) representation. However, it was unsurprising that seven out of nine participants were male, given that the most recent ARB report highlighted that only 29% of females made up the Architects Register (ARB, 2020b). In addition, the lack of ethnically diverse (black, Asian, and minority ethnic) architects represented within this study's cohort of participants reflected the finding that only 1% of architects came from ethnically diverse backgrounds (ARB, 2020b).

The significant shortfall of diversity across the industry influenced the ability to achieve an ethnically diverse sample within the specific context of designing supportive living environments for ageing within the geographical location of the North East. Additionally, the COVID-19 pandemic exacerbated the limitations of the sampling strategy as recruitment response rates were impacted upon due to this stage being undertaken during the height of the COVID-19 pandemic. Nevertheless, there was diversity in the role, experience, origins and education of participants which provided a varied set of perspectives to explore the multiple diverse experiences of architects across various RIBA Plan of Work stages when creating supportive living environments for ageing.

#### **5.4.2 Limitations in Carrying-out the Fieldwork**

Whilst the researcher found the fieldwork to be the most interesting part of the thesis as a result of the diverse discussions held with participants, it was also found to be the most challenging period of the research study due to the COVID-19 pandemic. Initially, the fieldwork was conducted face-to-face at the participating architects practice, however this was no longer possible for the majority of the interviews as a result of the COVID-19 pandemic. This limited the researcher from observing the participants in their natural place of work, as well as the ability to gather contextual information of the context setting (Robson and McCartan, 2016).

In addition, whilst existing evidence found that remote online interviews increased enthusiasm (Rasipuram et al., 2016), this research study found that it reduced the

ability of spontaneity of drawn information. This was a specific limitation within the context of architectural practice, as it was commonplace for architects to think through drawing. As a consequence, this potentially limited serendipitous discovery of unknown moments to present themselves during the fieldwork.

Lastly, as a result of the COVID-19 pandemic, it was necessary for the researcher to conduct a further pilot study prior to carrying-out the remote online fieldwork. This required additional time resource to plan the study, recruit a participant, conduct the interview and analysis the data. As a result, this additional work put greater pressure on the sole researcher's time and efforts prior to being able to continue conducting the main interview sessions. Whilst the unforeseen circumstances of the COVID-19 pandemic were found to be a limitation to carrying-out the fieldwork for the thesis, it did enable the researcher to acquire additional researcher development skills that they would have not gained otherwise (such as attending webinars based on remote online fieldwork and utilising video-conferencing software for interviews).

## **5.5 Recommendations for Future Research**

Future research that involves a triangulation of research methods (such as observations, surveys and interviews) for the retrieval of research data could provide further interesting opportunities to extend the understanding of an architect's experiences of creating supportive living environments for ageing. However, collecting data in this way would require sufficient time and resources which would be best conducted by a research team (as opposed to a sole researcher).

Conversely, whilst this research study focused on the geographical location of the North East in order to provide an extreme and a-typical geographical setting, broadening the scope to include architects across the UK could help to provide further diverse understanding into how an architect's agency and the design

process influences creating supportive living environments for ageing. In addition, this would have the potential to include more ethnically diverse participants during the recruitment process.

In addition, there is the need for a considerable amount of more work into design-oriented formats that support knowledge transfer and dissemination between practice and academia. Further research could assess how academic research could be integrated into the case study format and software (such as BIM), the role that SRM could play in knowledge exchange, and the integration of academic research into other common visual practices of architects. In doing so, this has the potential to further support an architect's engagement with academic knowledge. There is the need for future work to further develop these strategies in order to enhance understanding of the ways to develop greater collaboration for effective real world design impact.

On the subject of collaboration, this research study made it clear that meaningful collaboration with the users (such as through co-design sessions) is a necessity for creating supportive living environments for ageing. It would be interesting to explore the successes and limitations of dialogue, methods and processes used by architects during these sessions. This has the potential to identify possible knowledge resources needed in order to support the architect's role as facilitator during the collaborative process when creating supportive living environments for ageing.

Moreover, this research study identified contested age-related terminology being used across practice. There is the need for further work to develop resources to mitigate these current issues in order to support collective understanding of designing to support healthy ageing for all, regardless of age or ability. This has the potential to impact the ways in which existing guidelines, regulations, reports and CPDs discuss this terminology.

Lastly, it would be noteworthy to explore further the intergenerational design paradigm and how this can influence spatial practices to better design living environments with future-proofing in mind. In addition, it would be worth pursuing ethnographic studies that explored existing intergenerational environments in order to better grasp how proposed environments can improve upon the existing.

## 5.6 Concluding Remarks

This thesis provided understanding into how an architect's agency and the design process influenced creating supportive living environments for ageing. In doing so, it identified five influential actions as follows.

1. **A sustained commitment to the users:** perseverance to being their best advocates, investing time into solving their problems, willingness to take the lead, and establishing a good relationship.
2. **Attain an informed position:** knowing how to make sense of knowledge, actively developing individual subject-specific knowledge and expertise, and ensuring an iterative cycle of research, synthesis and reflection is conducted.
3. **Deeply interrogate the context:** creating a 'safe space' for meaningful conversations with users, making sure to listen more and speak less to absorb information, and putting yourself in their shoes to support necessary perspective-taking.
4. **Effective visual communication:** ability to use freehand sketching for the quick, simple and conceptual graphic, the use of computer-aided design for the refined, detailed and precise graphic, and actively developing a workbook of curated ideas.
5. **Actively acquire and disseminate knowledge:** show precedent and visit buildings, produce design options based on the proposed 'present' and proposed

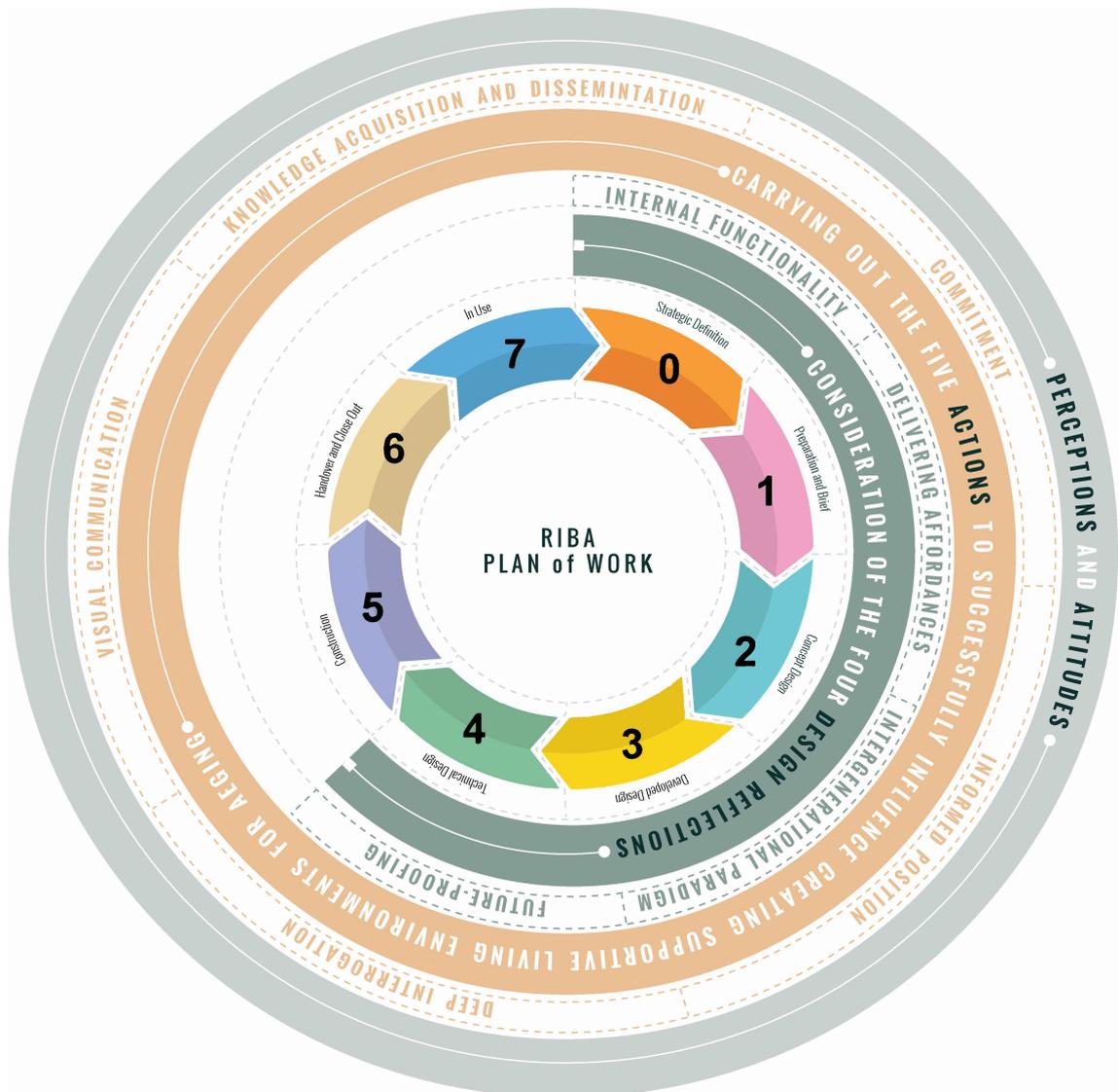
'future-proofed', collaborate by facilitating co-design sessions to support open discussion, develop insight beyond guidance, continuous professional development training, and participate in knowledge transfer and exchange.

By carrying out these five actions, architect's agent abilities and the design process are positively influenced. These actions can be supported by considering the four design reflections most prevalent within the context of this research study.

1. **Internal Functionality:** the importance of designing with transitions, appropriate flexibility, and connection to the outside in mind in order to support users daily activities within the internal living environment which can support the liveability to healthy age-in-place.
2. **Delivering Affordances:** providing enhanced and sustained connectedness across the life course through social interaction, connection with nature, and choice between different types of living options within the real world urban scale.
3. **Intergenerational Design Paradigm:** integrating age inclusive design tactics at various scales of communities, neighbourhoods, co-developments, the home and activities within in order to make the environments attractive, diverse and inclusive of all ages and abilities.
4. **Future-proofing:** ensuring appropriate flexibility to spatially adapt living environments at a later stage in order to meet changing needs and lifestyles of the occupants.

By referring to these four design reflections when architects are taking action during the RIBA Plan of Work stages, the creation of supportive living environments for ageing can be ensured (see Figure 5.4). It is vital that architectural practice gains the understanding of how living environments can support the changing life course and support future-proofing. Whilst it is the building design which determines the final

output, it is the architect's agency and the design process which influences a project's trajectory. For example, whilst the design characteristics identified within this thesis provide the specific design criterion to follow in order to produce internal functionality, it is an architect's agent abilities to lead the design process through a design cycle inclusive of those who will occupy these living environments. Thus, architects must acquire an enhanced understanding of this interrelationship and the specific influences of the built environment on healthy ageing. This endeavour will support architects to design inclusively throughout their everyday design practice and thus, increase their engagement with creating supportive living environments for ageing.



**Figure 5.4 :** The interrelationship between the key actions and design reflections during the RIBA Plan of Work for creating supporting living environments for ageing

## **5.7 Summary**

This chapter concluded this thesis which gave an overview of the research study that was carried out in order to answer the research question — *‘How does agency and process of architects influence the design of supportive living environments for ageing?’*. It reflected on the overall research aim and objectives and presented the extent to which they have been addressed through the empirical findings. In addition, this chapter summarised the contribution to knowledge that this study has made to architectural research, practice, policy and education. Moreover, it highlighted the limitations of this study and the considerations for future research. Lastly, it provided concluding remarks that outlined five priorities for architects to take action and four design reflections to consider within the context of creating supportive living environments for ageing.

## **APPENDICES**

**Appendix A: Research Philosophy**

**Appendix B: Selection Criteria**

**Appendix C: Open-ended Questions**

**Appendix D: Transcript Sample**

**Appendix E: Memo Bank**

**Appendix F: Fieldwork During the COVID-19 Pandemic**

**Appendix G: CAQDAS Dedoose**

**Appendix H: Sketching Research Method**

**Appendix I: Ethical Approval - Phase One**

**Appendix J: Ethical Approval - Phase Two**

**Appendix K: Research Participant Consent Form**

**Appendix L: Information Sheet**

**Appendix M: Recruitment Email**

## **Appendix A: Research Philosophy**

A memo written at the start of the research journey whereby the researcher reflected on their philosophical positioning before selecting appropriate methodologies and approaches to use in this research study.

*28th August*

*Memo 16*

*Faye Sedgewick*

*Doctoral Research in the Dep. of Architecture*

*Northumbria University*

*Supervised by Dr. Lesley McIntyre*

### **My ontological, epistemological, and philosophical position in research**

- I believe that the theory of knowledge is through the human development which is socially situated and that this developed knowledge is constructed through the interaction with others.
- I believe that the growth and structure of knowledge is developed through interactions between people, places, objects and processes.
- I believe that everything in the social world is connected at a mutual level to develop knowledge.
- I believe that theory is generated from the patterns and connections between relevant relationships.
- I believe that a researchers personal stance influences how data is interpreted as a result of their discipline background and experience.
- I believe that socially orientated research should take on a research framework that is flexible and adaptable to be receptive to the changing realities between humans and context in space and time.
- I believe that there are multiple realities exist that influences the development of knowledge and theory.
- I believe that within socially orientated research, researchers are part of the evolving theory.

- I believe that reality is not something that is waiting to be proved, instead, that reality is developed through the generation of theories which is dependent on specific contextual orientations.
- I believe that knowledge acquisition and theory development is driven by the contextually unique data collection phase.
- I believe that theory is development through the constant comparison of data being collected from multiple realities.
- I believe that an individuals knowledge is derived from the context of their social lives and that their meanings of the world are influenced by their social interaction.
- I believe the researcher's perspective is central during the data collection stage and that the researcher's perspective influences how the theory is developed from the participants accounts.
- I believe that a researchers personal experience is of value to the creation of new knowledge.

## Appendix B: Selection Criteria

A sample of the criteria followed to identify potential architectural practices for inclusion in the study:

Architectural Practice	Projects	Status	Located in the North East	Award Nominee
1	Project A	Completed	✓	X
	Project B	Completed		
2	-	-	✓	✓
3	Project C	Completed	✓	X
4	Project D	Completed	✓	✓
	Project E	Concept		
	Project F	In Progress		
5	Project G	Concept/ Planning	✓	X
6	Project H	Completed	✓	X
7	Project I	Concept	✓	✓
8	Project J	Completed	✓	✓
9	Project K	Concept/ Planning	✓	✓
10	Project L	Concept	✓	✓
11	Project M	Completed	✓	X
12	Project N	Completed	✓	✓
	Project O	Concept		
	Project P	Concept/ Planning		

— Architectural practices used for the three pilot studies

— Architectural practices used for the main research study

## Appendix C: Open-ended Questions

Questions asked at the initial interviews:

### Background

1. How long have you been practising Architecture for?
2. What size were these practices?
3. What is your role within [architecture practice name]?
4. What do you feel are the most important aspects of [architecture practice name] identity?
5. Which stage of the RIBA Plan of work do you prefer?

### Design Process

6. What is your involvement during the design process of projects?
7. How do you gather knowledge regarding a project?
8. Where do you find the most inspiration when developing a design?
9. What creative approaches do you use at the initial design stage? (most/least favour?)
10. Do you use any techniques or methods to research a project at the initial stage? (most/least favour?)
11. Do you use any literature to support your design process?
12. Do you include the end-users during the design process?
13. At what stage of the project do you feel is the best time to gather information about the end-users? (0-7 stages)
14. What are the key influences that impact your design approach?
15. How do you share your developing design ideas with the clients/end-users?

### Agency/Management

16. Are there any architects within your practice who have additional specialised knowledge in any particular topic? If so, how and why did they gain this knowledge?
17. Who are the common stakeholders?
18. What are the roles of these stakeholders during the design process?
19. How do you manage the clients expectations during the design process?
20. Do you use any techniques to add more creativity within briefs that have been pre-set out?
21. Do you feel you are constantly negotiating with clients? If so, how do you resolve this?
22. How do you deal with clients who think that they know best?
23. Have you had any experience brief writing with a client? If so, how have you found this process?

24. How often do you have design team meetings for a project?
25. What is the typical process of the design team meeting?
26. Do you have the client/end-users involved during these meetings?
27. Do you hold consultation events with the end-users? If so, what do these tend to entail?

### **Ageing Focus**

28. What age-friendly housing projects have you worked on?
29. What is the main theory/guidance you reference relating to your age-friendly housing projects?
30. Are you familiar with the HAPPI principles? If so, what is your opinion on this?
31. If familiar, do you use anything to support inclusion of these principles?
32. Do you find any limitations with these principles?
33. Do you know of any building requirements that need compliance for age-friendly housing?
34. Do you use any approaches to understand the older end-users?
35. What do you think are the key needs of older end-users for housing design in the 21st century?
36. What do you feel are the key limitations and successes your practice is faced with when designing housing for older people?
37. Have you/anyone in your practice received any training (CPD or similar) to support designing for older people?
38. Do you feel it is important to include older people during the design process? If so, what approaches do you think are best for this inclusion?
39. Describe age-friendly housing in five words.
40. What do you predict age-friendly housing will look like in 10 years?

Questions asked at the final interviews:

### **Personal/Practice Background**

1. How long have you been practising Architecture for?
2. What would you say are the most important aspects of [architecture practice name] identity as a practice? Do you market yourselves in any particular way?
3. Which stage of the RIBA Plan of work do you prefer?

### **Design Process**

4. Where do you find the most inspiration when developing a design?
5. How best do you acquire knowledge to inform the design process?
6. What would be the initial assumptions you make at the start of an age-friendly project?
7. Do you use any specific approaches to involve end-users?
8. Do you use any ageing theory/guidance to support your design process?
9. What do you feel are the barriers to knowledge acquisition?

### **Managing/Collaboration**

10. How best do you think Architects can gain greater control and leadership over the design process?
11. Do you think architects need to take more risks and greater responsibility?
12. Are there any architects at [architecture practice name] who have additional specialised ageing knowledge? If so, how and why did they gain this knowledge?
13. How best do you externally disseminate practice knowledge? How can this be supported?
14. What connections does [architecture practice name] have with more formal-based research outputs? Do you think this is important?
15. Who do you tend to collaborate with most outside the practice and how?
16. Have you had experience of brief writing with a client? If so, how did you find this process?

## Appendix D: Transcript Sample

A sample taken from one of the interviews:

**Researcher:** Do you use any approaches to involve the end users during the design process?

**Participant I:** Yeah. They're ultimately going to be living in it, so it is absolutely crucial to involve them all the way through.

**Researcher:** And how do you do that? Is there any certain things you do when you have design meetings?

**Participant I:** Yeah. You have to help facilitate them so they can almost become designers themselves. It's good because you are going through the process of the things that you think about with them, the reasons why you do things, you've got to explain that to someone who might not necessarily be au fait with that kind of thing. Some clients are massively into designing and that's more a workshop where you can bounce ideas off each other and they understand that process. For others they might not do that at all.

It's important for us as architects to show them what this building might be, but also in the communication as well. Some clients don't know how to read plans, other clients are au fait with it and fine with that. But if they're not, you have to communicate what you need to do, what we think is right and talking about the story.

So if you're talking about contrasting spaces, if you only have one massive space which is absolutely massive in height, say, if it's residential and it's three metre high ceilings, you can't get use of three metre high ceilings. If you have smaller space and larger space and different volumes, then you really get to appreciate the different spaces that is the architectural story of the architecture. So it's helping them buy into that, through the communication and what it is about really. What's important to them,

because it's their house, and it's not for us put in some of our ego or what we might want or something like that. Although, you know, you do put yourself in the position of how you would like to live in that place as a person, but you need to understand the client in order to see how they would. It's really important.

**Researcher:** Yeah, especially because you as a practice, do very much one-off homes, that this is probably for the client, one of the only homes that they are really ever going to design. And because obviously they may envisage that they may want to live there for as long as possible. So then it really means a lot to them.

**Participant I:** Yeah, massively. I think that's really important. Almost looking at the spaces, and then how they would use them, rather than just like, oh, well this could work. What is most important to them as people? What do they want? And what worked with their previous houses and what didn't?

**Researcher:** Okay, great. So you've mentioned about some theory and guidance that you use when you're designing these age inclusive, age-friendly homes, like lifetime homes, I think you mentioned the HAPPI principles. Is there any other main guidance you would look at, that jumps out to you as the most helpful? Or maybe actually some that you read and think No, that's terrible?

**Participant I:** Yeah, I we try and use for example, Passive House experience and reflect upon a fabric-first approach and that kind of thing. I'm trying not to say passive house principal's as you shouldn't say that. Yeah, so fabric-first approach, lifetime homes, national housing standard, like the national sizes for rooms and things like that. Although that's not normally an issue with one-off houses. But obviously for housing, that's really important.

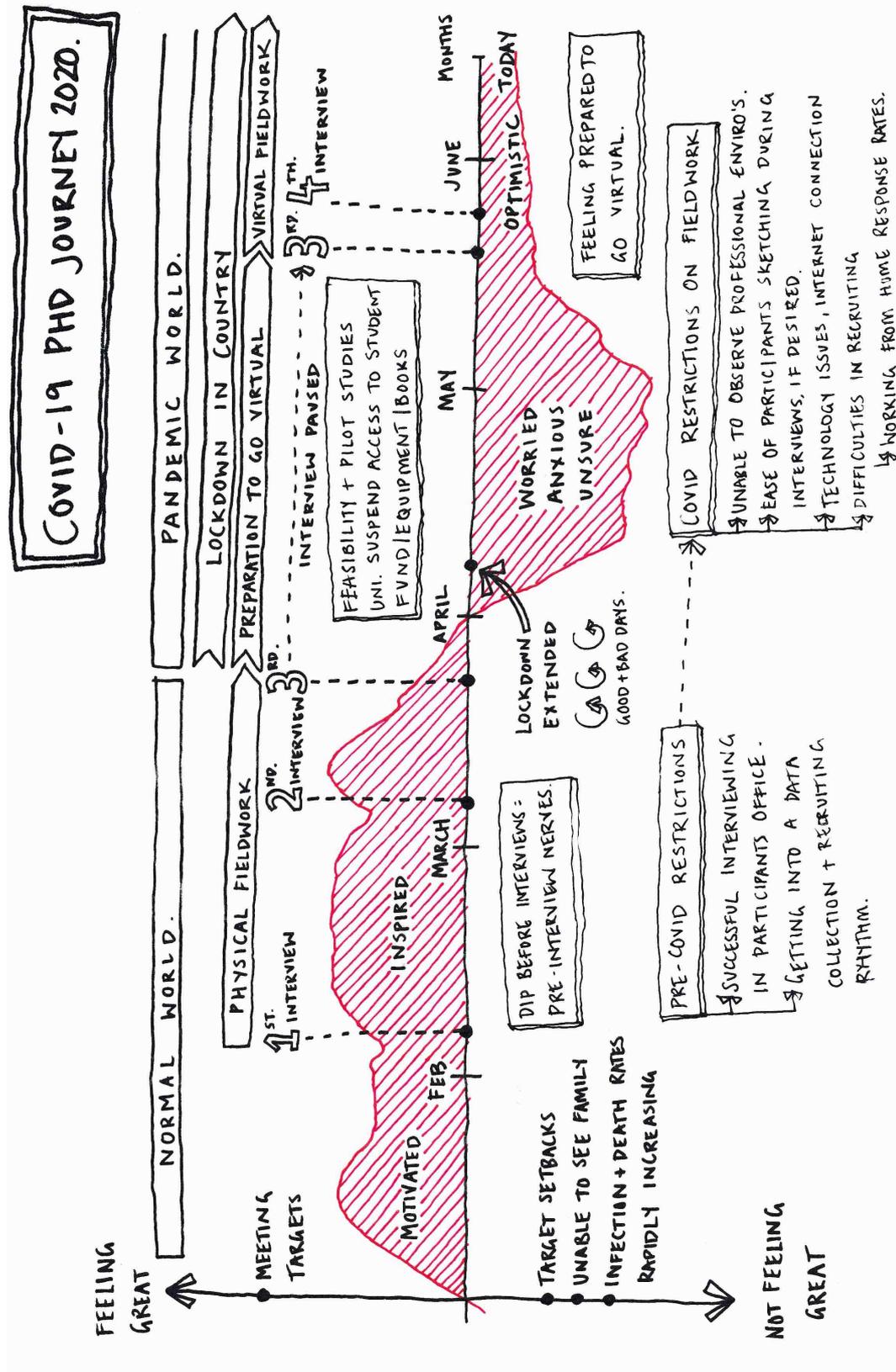
## Appendix E: Memo Bank

A sample of the chronologically ordered memo's written by the researcher across the duration of the research study:

Memo No.	Date Written	Folder Location	Theme	Specifics	Code
1	190320	Yr1	Pilot Study	Reflection	M1-01-190320-PS
2	190430	Yr1	Method Lit Review	Grounded Theory	M2-01-190430-M/LR
3	190501	Yr1	CAQDAS	NVIVO Pros & Cons	M3-01-190501-CAQDAS
4	190503	Yr1	Supervisor Workshop	Thesis refining	M4-01-190503-SW
5	190514	Yr1	Method Lit Review	Social Impact Evaluation	M5-01-190514-M/LR
6	190529	Yr1	CaCHE PhD Summer School	Working Title & Abstract	M6-01-190529-SS
7	190605	Yr1	Pilot Study	Reflection on questions asked	M7-01-190605-PS
8	190612	Yr1	GT & ANT	Methodology	M8-01-190612-GT/ANT
9	190627	Yr1	CaCHE PhD Summer School	Key Points from event	M9-01-190627-SS
10	190627	Yr1	Pilot Study	Potential use of visual methods	M10-01-190627-PS
11	190703	Yr1	Presentation Style	Visually Creative Thesis	M11-01-190703-PRS
12	190730	Yr1	D4H Paper	SSI: Initial Draft	M12-01-190730-D4H
13	190806	Yr1	Research Student	How to be a successful researcher	M13-01-190806-RS
14	190812	Yr1	Annual Progression Review	Notes for submission	M14-01-190812-AP
15	190828	Yr1	Research Question	Overall question of study	M15-01-190828-RQ
16	190828	Yr1	Philosophical position	Ontological and epistemological	M16-01-190828-PHIL
17	190909	Yr1	CAQDAS	NVIVO v's Dedoose	M16-01-190909-CAQDAS
18	190909	Yr1	Data Analysis	Approaching Data Analysis	M17-01-190909-DA
19	190909	Yr1	Creative Methods	Visual quali. Methods	M18-01-190909-CM
...					

# Appendix F: Fieldwork during the COVID-19 pandemic

The researcher's journey:



# Appendix G: CAQDAS Dedoose

A screenshot of the platform in use:

The screenshot displays the Dedoose interface for a project titled "MAIN STUDY: CODING". The top navigation bar includes options for Home, Codes, Media, Excerpts, Descriptors, and Projects. The main content area is divided into several panels:

- Project Summary:** Shows 1 user, 7 media items, 734 excerpts, 22 codes, and 1438 code applications. It includes buttons for "Import Data" and "Export Data".
- Media List:** A table listing document titles, users, and lengths.
 

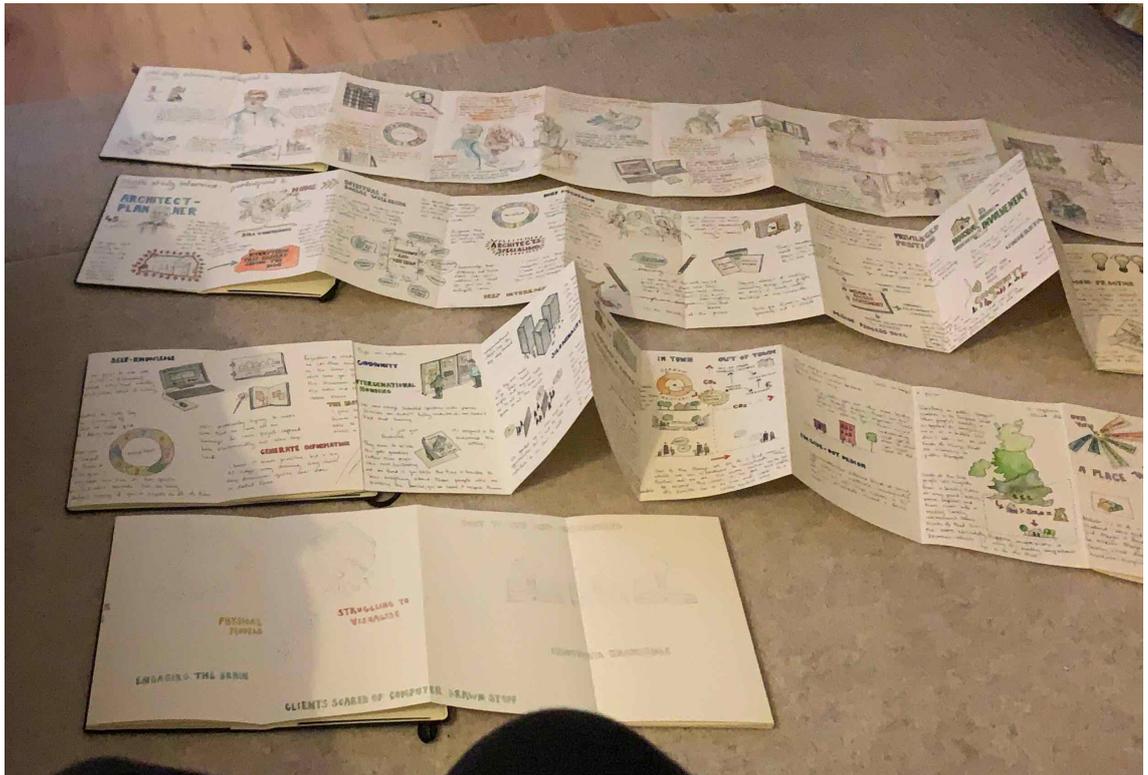
Type	Title	Added	User	# Ex	Length
Document	200204_Interview 01.docx	02/10/2020	fbasedge	155	76770
Document	200313_Interview 02.docx	03/26/2020	fbasedge	127	64447
Document	200527_Interview 03.docx	06/09/2020	fbasedge	231	134777
Document	200529_Interview 04.docx	06/15/2020	fbasedge	99	90204
Document	201012_Interview 05.docx	12/07/2020	fbasedge	55	67033
Document	2011208_Interview 06.docx	06/28/2020	fbasedge	41	96123
Document	210204_Interview 07.docx	08/18/2020	fbasedge	26	61485
- Codes:** A list of codes such as "Being frustrated", "Communicating Knowledge", "Covid-19", "Creating supportive environments", "Decision-making Capabilities", "Deep interrogation", "Dialogue", "Doing Things Differently", "Ego", "Functionality", "GOOD QUOTE", "Gap", "Guidance", "Informed position", and "Knowing the Target Audience".
- Media:** A table showing excerpts with their titles, added dates, users, and the number of codes.
 

Resource	Title	Added	Username	# Codes
200527_Interview 03.docx	Yeah, we basically just designed it all and we've actually got the proposed plan and then a future-proofed plan, so things like there's enough room for 1500 turning circles all around the bed and that's on the ground floor, the master bedroom and then they'll be enough room for a hoist if that needs	09/13/2021	fbasedge	5
200527_Interview 03.docx	It's quite nice when you're working as well, because you're not just churning out the same kind of process, every time. So the design process will always be slightly different. So you know, you're not just churning out the same design and access statements or the same feasibility studies. It's all d	09/13/2021	fbasedge	1
200527_Interview 03.docx	I think it would look less ghettoised in a way. I remember going to visit a great aunt of mine in Australia, about 15 years ago, she lived in a nice retirement villages and had a fence around the outside. At face value is quite pleasant, you know, nicely landscaped and mixture of kind of housing opt	09/13/2021	fbasedge	3
210204_Interview 07.docx	Yeah, I suppose the bigger the projects, there are a lot more people involved. So we're working with other architects as well, like Procor Matthews, and others, which is great, the collaboration is really important. So that's important. We're	08/19/2021	fbasedge	5
- Codes X Descriptor:** A bar chart showing the distribution of codes across descriptors.
 

Field	Percentage
01I040221	10.0%
01A040220	9.1%
01B130320	18.2%
01CD270520	18.2%
01E290520	0.0%
01F121020	9.1%
01GH081220	27.3%
01I040221	18.2%
01A040220	17.0%
- Descriptor Ratios Multi Chart:** Three pie charts showing the ratio of codes for different descriptors: Gender, Practice experience, and Practice scale.

## Appendix H: Sketching Research Method

Additional photographs in progress:



## Appendix I: Ethical Approval - Phase One

Approval to conduct face-to-face interviews:

**Research Ethics: Your submission has been approved**

EthicsOnline@Northumbria: Wed 30/01/2019 11<36

**To:** faye.sedgewick <faye.sedgewick@northumbria.ac.uk> **Cc:** Lesley McIntyre

Dear faye.sedgewick, Submission Ref: 13689

Following independent peer review of the above proposal\*, I am pleased to inform you that **APPROVAL** has been granted on the basis of this proposal and subject to continued compliance with the University policies on ethics, informed consent, and any other policies applicable to your individual research. You should also have current Disclosure & Barring Service (DBS) clearance if your research involves working with children and/or vulnerable adults.

\* note: Staff Low Risk applications are auto-approved without independent peer review.

The University's Policies and Procedures are [here](#)

All researchers must also notify this office of the following:

Any significant changes to the study design, by submitting an 'Ethics Amendment Form'. Any incidents which have an adverse effect on participants, researchers or study outcomes, by submitting an 'Ethical incident Form'. Any suspension or abandonment of the study.

**Please check your approved proposal for any Approval Conditions upon which approval has been made.** Use this link to view the submission: [View Submission](#)  
Research Ethics Home: [Research Ethics Home](#)

Please do not reply to this email. This is an unmonitored mailbox. If you are a student, queries should be discussed with your Module Tutor/Supervisor. If you are a member of staff please consult your Department Ethics Lead.

## Appendix J: Ethical Approval - Phase Two

Approval to conduct remote online interviews:

Ethics amendments for research involving participants

Faye Menzies <faye.menzies@northumbria.ac.uk>

on behalf of

John Woodward <john.woodward@northumbria.ac.uk> Thu 19/03/2020 09:58

To: EE Academic Staff <eeacademicstaff2@livenorthumbriaac.onmicrosoft.com>; EE PGR Students <EEPGRStudents@northumbria.ac.uk>; EE PGR Students <EEPGRStudents@northumbria.ac.uk>

Dear researchers,

In light of Covid-19 and subsequent attempts to reduce face-to-face interactions, the University has announced that all research involving the direct testing of participants (e.g. face-to-face interviews, surveys, experiments etc) be cancelled; and where possible the research transferred to non-direct assessment (ie online surveys, telephone interviews etc). To prevent all researchers (staff or student) individually submitting an ethics amendment to cover this change in data collection, the Faculty has decided to issue a generic ethics amendment to cover all research involving direct testing. If this applies to your research, please do not submit an ethics amendment as you will now be covered by the Faculty amendment. Obviously, if you wish to amend an already approved project to cover a different issue then do so as normal. Please do follow GDPR and data protection guidelines in relation to seeking non face to face participant consent and the recording equipment that you will use.

This does not apply to research which has been approved under IRAS – it only applies to internally approved ethics projects. If you are currently running an IRAS-approved research project then please contact [samantha.king@northumbria.ac.uk](mailto:samantha.king@northumbria.ac.uk) who can advise further

Best Regards

**Professor John Woodward BSc, MSc, PhD, PGHEP, FHEA**

*Professor of Physical Geography and Faculty Pro Vice Chancellor Engineering and Environment*



**Northumbria  
University**  
NEWCASTLE

T: +44 (0)191 227 3048

PA: +44 (0)191 227 4397

M: +44 (0) 7816 547 877

E: [john.woodward@northumbria.ac.uk](mailto:john.woodward@northumbria.ac.uk) W: [northumbria.ac.uk](http://northumbria.ac.uk)

Room D105, Ellison Building, Northumbria University, Newcastle upon Tyne, NE1 8ST,  
United Kingdom

<http://www.northumbria.ac.uk/sd/academic/ee/staff/johnwoodward>

## Appendix K: Research Participant Consent Form

Template of informed consent emailed out to participants:



**Northumbria  
University**  
NEWCASTLE

### RESEARCH PARTICIPANT CONSENT FORM

Project: Architects, Agency and the Design Process: Creating supportive living environments for ageing

Research team: Faye Sedgewick (faye.sedgewick@northumbria.ac.uk).

Name of participant:

Organisation:

Address:

Contact Tel:

E-mail:

#### Statement of participant\* consent

Please read the statements below and tick the boxes to show that you agree with them.

I have been fully informed about this research project and its purpose

I agree to participate in this research project

I have discussed any need for anonymity or confidentiality with the researcher\*\*

I agree to being recorded during the interview

\*\* See the section below for any specific requirements for anonymity or confidentiality.

Signed \_\_\_\_\_ Date \_\_\_\_\_

Please detail any specific requirements for anonymity or confidentiality below:

#### Standard statement by researcher

I have provided information about the research to the research participant and believe that he/she understands what is involved.

Researcher's signature \_\_\_\_\_ Date \_\_\_\_\_

## **Appendix L: Information Sheet**

Template of the information sheet sent out following confirmation of involvement:



### ***Architects, Agency and the Design Process: Creating supportive living environments for ageing***

I am currently developing a research project and would like you to become involved. All I ask is that you talk about your experience of designing housing. The aim of this session is simply to gain insight into your experience working on mainstream housing suitable for older people. This work is being undertaken by Northumbria University in the Department of Architecture and Built and Natural Environment by Faye Sedgewick. This is a safe space to talk about your experience. It will enable you to reflect on current practices, successes and limitations. The method of conversation will be used with you as the expert of your experience. You can ask questions about the research at any point before, during or after the interview.

I hope that taking part in the research will be an interesting and stimulating experience and both academic and professional articles will be developed from the information our research generates. All data will be anonymised, kept in a secure place and will only be accessible by myself. You are free to withdraw your participation at any time during the research and I hope that it will be an enjoyable experience.

Best Wishes,

Faye Sedgewick

[faye.sedgewick@northumbria.ac.uk](mailto:faye.sedgewick@northumbria.ac.uk)

## **Appendix M: Recruitment Email**

Template of the email sent out to potential participants:

Dear **[NAME]**,

My name is Faye Sedgewick, I am an RIBA Part II Architectural Assistant and a current PhD candidate at Northumbria University in the Architecture Department. I am currently developing a research project and would like you to become involved.

### **RESEARCH STUDY BACKGROUND**

The study focuses on age-friendly mainstream housing (defined as general needs housing suitable for older people, such as bungalows, houses, maisonettes) in the North East of England and, in turn, the influence of the Architect's agency and design process. To ensure the future-proofing of UK housing and support older people's health and wellbeing.

### ***[NAME OF RELEVANT PROJECTS]***

I am getting in contact with yourself as I am aware of the Community Housing project you have worked on (as per your website), which looks very interesting and it would be great if it would be possible to hear more about it?

### **YOUR INVOLVEMENT**

I am currently looking for participants who are Architects based in the North East, who have experience (at any RIBA Plan of Work stage) working on new build North East mainstream housing suitable for older people. Participation in the study would involve myself interviewing you for approximately 30-45 minutes at your practice during a convenient time. Involvement with the study would fall under the RIBA Core Curriculum CPD training: 01 Architecture for social purpose; 03 Business, clients and services; 07 Inclusive environments; 08 Places, planning and communities; 10 Design, construction and technology. A sketching research method will be used by the researcher after the

interview has taken place to analyse the interview data. Once developed, a copy of these sketches will be made available to you.

### **YOUR INTEREST**

I would be very grateful if you would be willing to take part in the research study. If you are interested, please contact me at the address below. It would also be great to hear if ***[NAME OF ARCHITECTURE PRACTICE]*** have worked on any further age-friendly housing projects? If you do so, you will have the chance to find out more about the study before coming to any decision. You would be under no obligation to take part.

My research study is supervised by Dr Lesley McIntyre and Dr Tara Hipwood. If required, they can be contacted through both email and telephone as below:

Dr Lesley McIntyre:

Dr Tara Hipwood:

Thank you for your time in reading this email.

Best wishes, Faye Sedgewick

Follow-up email used during the recruitment process:

Subject line: Help improve age-friendly housing

Dear **[NAME]**,

I am writing to follow-up on the email I sent over previously about the architectural research project I am currently undertaking and just wanted to check again to see whether you would be interested in participating in an interview to help improve age-friendly housing.

If you would like to be involved please either reply to this email or contact me on: I look forward to hearing from you.

Best wishes, Faye

## **GLOSSARY OF TERMS**

<b>Age-friendly design</b>	Encourages active ageing by increasing opportunities for health, participation and security to enhance quality of life as people age.
<b>Agency</b>	The ability to act with intention to influence an individual, situation or course of action.
<b>Co-design/participatory design</b>	An approach used to actively involve all stakeholders during the design process to meet their needs.
<b>Commitment</b>	Willing to give time and energy to something which shows an individual is dedicated.
<b>Design process</b>	An iterative activity that relies the stages of research, proposition, analysis and revision in order to generate ideas.
<b>Intergenerational</b>	Brings together diverse age groups to support societal cohesion and values the contributions of all generations who live in a community.
<b>Knowledge</b>	The fact or condition of knowing something through theoretical or practical understanding of a subject.
<b>User-client</b>	The client is discussed as user within the context of this research study.
<b>Collective collaboration</b>	Enlisting and engaging key sectors and stakeholders to work together towards a common goal.
<b>Tacit knowledge</b>	The knowledge, skills, and abilities gained through experience that is commonly difficult to verbalise.

## BIBLIOGRAPHY

Adams, S. (2017). Off the radar: Housing disrepair & health impact in later life. *Care & Repair England. Working With Older People*, 21(4), 224-228.

Age UK. (2015). *One million more older people will be living with multiple conditions by 2020*. Retrieved from [www.ageuk.org.uk](http://www.ageuk.org.uk).

Age UK. (2019a). *Later Life in the United Kingdom*. Retrieved from [www.ageuk.org.uk](http://www.ageuk.org.uk).

Age UK. (2019b). *Mental Health in England*. Retrieved from [www.ageuk.org.uk](http://www.ageuk.org.uk).

Age UK. (2020). *Age Friendly Places: Making our community a great place to grow old*. Retrieved from [www.ageuk.org.uk](http://www.ageuk.org.uk).

Age UK. (2021). *Loneliness and COVID-19*. Retrieved from [www.ageuk.org.uk](http://www.ageuk.org.uk).

Ahuja, S., Nikolova, N., and Clegg, S. (2017). Paradoxical identity - The changing nature of architectural work and its relation to architects' identity. *Journal of Professions and Organization*, 4(3), pp.2-19.

Akin, O. (1986). *Psychology of Architectural Design*. London: Pion Limited.

Akotia, J., and Opoku, A. (2018). Sustainable regeneration project delivery in UK: A qualitative analysis of practitioners' engagement. *Journal of Facilities Management*, 16(1), pp.87-100.

Al horr, Y., Arif, M., Katafygiotou, M. Mazroei, A. Kaushik, A. and Elsarrag, E. (2017). Impact of indoor environmental quality on. Occupant wellbeing and comfort: A review of the literature. *International Journal of Sustainable Built Environment*, 5(1), 1-11.

APPG. (2019). Inquiry into decent and accessible homes for older people. *APPG: Ageing and Older People*. Retrieved from [www.ageuk.org.uk](http://www.ageuk.org.uk).

ARB. (2020a). *Register of Architects*. Retrieved from: [www.architects-register.org.uk](http://www.architects-register.org.uk).

ARB. (2020b). *Annual Report and Accounts, 2019*. London: Architects Registration Board. Retrieved from [www.arb.org.uk](http://www.arb.org.uk).

Arentshorst, M., and Peine, A. (2018). From Niche Level Innovations to Age-friendly Homes and Neighbourhoods: A multi-level analysis of challenges, barriers and solutions. *Technology Analysis & Strategic Management*, 30(11), pp.1325-1337.

Azevedo, A., and Ramos, M. (2016). Drawing close - On visual engagements in fieldwork, drawing workshops and the anthropological imagination. *Visual Ethnography*, 5(1), pp.135-160.

Bailey, C., Foran, T., Scanail, C., and Dromey, B. (2011). Older adults, falls and technologies for independent living: A life space approach. *Ageing and Society*, 31(5), pp.829-848.

Bandura, A. (2000). Exercise of Human Agency through Collective Efficacy. *Current Directions in Psychological Science*, 9(3), 75-78.

Bandura, A. (2006). Toward a Psychology of Human Agency. *Perspectives on Psychological Science*, 1(2), 164-180.

Barac, M. and Park, J. (2009). *Housing our Ageing Population Panel for Innovation (HAPPI) Report*. London: The Homes and Communities Agency. Retrieved from [www.housinglin.org.uk](http://www.housinglin.org.uk).

Benedikt, M. (1979). To take hold of space: isovists and isovist fields. *Environment and Planning B: Planning and Design*, 6(1), pp.47-65.

Best, R. and Porteus, J. (2012). *Housing our Ageing Population: Plan for Implementation (HAPPI2) Report*. London: All Party Parliamentary Group on Housing and Care for Older People. Retrieved from [www.housinglin.org.uk](http://www.housinglin.org.uk).

Best, R. and Porteus, J. (2016). *Housing our Ageing Population: Positive Ideas - Making retirement living a positive choice (HAPPI 3) Report*. London: All Party Parliamentary Group on Housing and Care for Older People. Retrieved from [www.housinglin.org.uk](http://www.housinglin.org.uk).

Bichard, J. (2018a). Inclusive design: Towards social equity in the built environment. *Built Environment*, 44(1), pp.5-8.

Bichard, J., Alwani, R., Raby, E., West, J. and Spencer, J. (2018b). 'Creating an inclusive architectural intervention as a research space to explore community wellbeing' in Langdon, P., Heylighen, A. and Dong, H. *Breaking Down Barriers*. eds. New York: Springer.

Bollo, C., and Collins, T. (2017). The power of words: grounded theory research methods in architecture and design. *Architecture of Complexity*, 0(0), pp.87-94.

Bringer, J., Johnston, L., and Brackenridge, C. (2006). Using Computer-Assisted Qualitative Data Analysis Software to Develop a Grounded Theory Project. *Field Methods*, 18(3), pp.245-266.

Brown, N. (2018). *Video-Conference Interviews: Ethical and Methodological Concerns in the Context of Health Research*. Research Methods Cases Part 2. London SAGE Publications, Ltd.

Bryman, A. (2016). *Social Research Methods*. 5th ed. Oxford: Oxford University Press.

Buffel, T., De Donder, L., Phillipson, C., De Witte, N, Dury, S, and Verté, D. (2014). Place Attachment Among Older Adults Living in Four Communities in Flanders, Belgium. *Housing Studies*, 29(6), pp.800-822.

Buffel, T., Handler, S. and Phillipson, C. (2019). *Age-friendly Cities and Communities: A global perspective*. 1st ed. Bristol: Policy Press.

Buffel, T., Phillipson, C., and Scharf, T. (2013). Experiences of neighbourhood exclusion and inclusion among older people living in deprived inner-city areas in Belgium and England. *Ageing & Society*, 33(1), pp.89-109.

Burgess, G. and Muir., K. (2020). The Increase in Multigenerational Households in the UK: The Motivations for and Experiences of Multigenerational Living. *Housing, Theory and Society*, 37(3), pp.322-338.

Burr, K., and Jones, C. (2010). The Role of the Architect: Changes of the Past, Practices of the Present, and indications of the Future. *International Journal of Construction Education and Research*. 6(2), pp.122-138.

Butler, R. (1969). Age-ism: Another Form of Bigotry. *The Gerontologist*, 9(4), pp.243-246.

CABE. (2008). *The principles of inclusive design: they include you*. Retrieved from [www.designcouncil.org.uk](http://www.designcouncil.org.uk).

Caro, F. And Fitzgerald, K. (eds.) (2016) *International Perspectives on Age-Friendly Cities*. New York: Routledge.

Cattan, M., White, M., Bond, J. and Learmouth, A. (2005). Preventing social isolation and loneliness among older people: a systematic review of health promotion interventions. *Ageing and Society*, 25(1), 41-67.

Centre for Ageing Better (2019a). *The State of Ageing in 2019: Adding life to our years*. London: Centre for Ageing Better. Retrieved from [www.ageing-better.org.uk](http://www.ageing-better.org.uk).

Centre for Ageing Better (2019d). *Non-decent Homes and Later Life in England*. London: Centre for Ageing Better. Retrieved from [www.ageing-better.org.uk](http://www.ageing-better.org.uk).

Centre for Ageing Better. (2019b). *New homes*. Retrieved from [www.ageing-better.org.uk](http://www.ageing-better.org.uk).

Centre For Ageing Better. (2019c). *The future of ageing: Ageing better/Ageing badly?* Event. Retrieved from [www.ageing-better.org.uk](http://www.ageing-better.org.uk).

Centre For Ageing Better. (2019d). *Ageing and Mobility: A grand challenge*. Retrieved from [www.ageing-better.org.uk](http://www.ageing-better.org.uk).

Chalfont, G. (2006). Connection to Nature at the Building Edge: Towards a Therapeutic Architecture for Dementia Care Environments, *PhD thesis*, The University of Sheffield, Sheffield.

Chao, T. (2018). *Planning for Greying Cities: Age-Friendly City Planning and Design Research*. 1st ed. New York: Routledge.

Charmaz, K. (2003). *Grounded Theory: Objectivist and Constructivist Methods*, in N. Denzin & Y. Lincoln (Eds.), *Strategies of Qualitative Inquiry* (2nd ed., pp. 249-291). London: Sage Publications Limited.

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. London: SAGE.

Charmaz, K. (2008a). 'Grounded Theory', in J. A. Smith (ed). *Qualitative psychology: A practical guide to research methods*. 2nd ed. London: SAGE, pp. 81-110.

Charmaz, K. (2008b). *Constructionism and the Grounded Theory*, in J. Holstein and J. Gubrium (Eds.), *Handbook of Constructionist Research*. New York: The Guilford Press, pp. 397-412.

Charmaz, K. (2015). Teaching Theory Construction With Initial Grounded Theory Tools. *Qualitative Health Research*, 25(12), pp.1610-1622.

Chryssikou, E. (2018). Why we need new architectural and design paradigms to meet the needs of vulnerable people. *Environment and Palgrave Communications*, 4(1), pp.1-6.

Clarkson, P., Coleman, R., Keates, S. and Lebbon, C. (2003). *Inclusive Design: Design for the Whole Population*. 1st ed. London: Springer-Verlag.

Coburn, A., Vartanian, O., and Chatterjee, A. (2017). Buildings, beauty, and the brain: a neuroscience of architectural experience. *Journal of Cognitive Neuroscience*, 29(9), pp.1521-1531.

Cohen, L., Wilkinson, A., Arnold, J., and Finn, R. C. (2005) 'Remember I'm the bloody architect!', *Work, Employment and Society*, 19(4), pp. 775-796.

Collins, E (2014). *Architects and Research-Based Knowledge: A Literature Review*. London: RIBA Publishing. Retrieved from [www.architecture.com](http://www.architecture.com).

Committee on Climate Change. (2019). *UK housing: Fit for the future?*. Retrieved from [www.theccc.org.uk](http://www.theccc.org.uk).

Conlon, C., Timonen, V., and Elliott-O'Dare, C. (2020) 'Confused About Theoretical Sampling? Engaging Theoretical Sampling in Diverse Grounded Theory Studies', *Qualitative Health Research*, 30(6), pp. 947-959.

Conlon, C., Timonen, V., Carney, G., and Scharf, T. (2015) 'Emergent reconstruction' in grounded theory: Learning from team-based interview research, *Qualitative Research*, 15(1), pp. 39-56.

Cook, G. and Bailey, C. (2013). Older Care Home Residents' Views of Intergenerational Practice. *Journal of Intergenerational Relationships*, 11(4), pp.410-424.

Corbin, J. and Strauss, A. (1990). *Basics of qualitative research*. Newbury Park, Calif.: Sage Publications.

Corbin, J. and Strauss, A. (1998). *Strategies of Qualitative Inquiry*. Thousand Oaks, CA: SAGE.

- Creswell, J. (2013). *Qualitative inquiry and research design: Choosing among five approaches*. 3rd ed. Thousand Oaks, CA: SAGE Publications Ltd.
- Crilly, D., Schneider, S., and Zollo, M. (2008). Psychological Antecedents to Socially Responsible Behaviour. *European Management Review*, 5(3), pp.175-190.
- Cross, N. (2006). *Designerly Ways of Knowing*. ed. London: Springer.
- Cuff, D. (1991). *Architecture: The Story of Practice*. Cambridge, Mass.: MIT Press.
- D'souza, N. (2021). *The Multi-Skilled Designer: A Cognitive Foundation for Inclusive Architectural Thinking*. 1st ed. New York: Routledge.
- Davies, B. (2014) *For Future Living: Innovative Approaches to Joining up Housing and Health Report*. Newcastle: IPPR North. Retrieved from: [www.ippr.org](http://www.ippr.org).
- Denzin, N. and Lincoln, Y. (2012). *Strategies of Qualitative Inquiry*. 4th ed. London: SAGE.
- Denzin, N. and Lincoln, Y. (2018). *The SAGE Handbook of Qualitative Research*. 5th ed. London: SAGE.
- Designing Buildings Wiki. (2019). *Built environment - Designing Buildings Wiki*. Retrieved from: [www.designingbuildings.co.uk](http://www.designingbuildings.co.uk).
- Deutsch, R. (2020). *Think Like An Architect*. 1st ed. London: RIBA Publishing.
- Dickens, A., Richards, S., Greaves, C. and Campbell, J. (2011). Interventions targeting social isolation in older people: a systematic review. *BMC Public Health*, 11(1), 647.
- Dickson, C. and Hailey, D. (2019). *Just Living*. UK, London: ColladoCollins Architects.
- Drew, L. and Porteus, J. (2019). *Shining a Spotlight on the Hidden Housing Market: a report looking into redefining and rejuvenating the later living sector*. Sheffield: Housing LIN. Retrieved from [www.housinglin.org.uk](http://www.housinglin.org.uk).

- Dunleavy, P. (2015). *Authoring A PhD*. 2nd ed. London: Red Globe Press.
- EAC. (2019). *Making a real difference for older people. Elderly Accommodation Counsel*. Retrieved from: [www.eac.org.uk](http://www.eac.org.uk).
- ESRC. (2019). *Research Ethics Framework*. ESRC. Retrieved from: [www.esrc.ukri](http://www.esrc.ukri).
- Felix, E., De Haan, H., Vaandrager, L. and Koelen, M. (2015). Beyond Thresholds: The Everyday Lived Experience of the House by Older People. *Journal of Housing For the Elderly*, 29(4), pp.329-347.
- Fitzgerald, K., and Caro, F. (2014). An Overview of Age-Friendly Cities and Communities Around the World. *Journal of Aging and Social Policy*, 26(1-2), pp.1-18.
- Fodor, E. (1995). Subclinical manifestations of psychosis-proneness, ego strength, and creativity. *Personality and Individual Differences*, 18(5), pp.635-642.
- Forsyth, A., Molinsky, J., and Ye Kan, H. (2019). Improving housing and neighbourhoods for the vulnerable: older people, small households, urban design, and planning. *Urban Design*, 24(0), pp.171-186.
- Frederick, M. (2007). *101 Things I Learned in Architecture School*. Massachusetts: MIT Press.
- Garrett, H. and Burris, S. (2015). Homes and ageing in England. BRE Briefing Paper. Retrieved from: [www.bre.co.uk](http://www.bre.co.uk).
- Gera, R. (2012). Bridging the gap in knowledge transfer between academia and practitioners. *International Journal of Educational Management*, 26(3), 252-273.
- Gibson, J. (1986). *The ecological approach to visual perception*. New Jersey: Lawrence Erlbaum Associates.
- Glaser, B. (1992). *Basics of Grounded Theory Analysis: Emergence cv Forcing*. California: Sociology Press.

- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory*. Chicago, IL: Aldine.
- Gov, UK. (2014). *Future health trends in the North East and how they might be supported or disrupted by policy changes*. *Foresight*. London: Government Office for Science. Retrieved from [www.gov.uk](http://www.gov.uk).
- Gov, UK. (2016). *Future of an Ageing Population*. *Foresight*. London: Government Office for Science. Retrieved from [www.gov.uk](http://www.gov.uk).
- Gov, UK. (2017a). *Industrial Strategy White Paper: Building a Britain fit for the future*. *White Paper*. London: Department for Business, Energy & Industrial Strategy. Retrieved from [www.gov.uk](http://www.gov.uk).
- Gov, UK. (2017b). Fixing our broken housing market. *White Paper*. London: Department for Communities and Local Government. Retrieved from [www.gov.uk](http://www.gov.uk).
- Gov, UK. (2018). National Planning Policy Framework. Ministry of Housing, Communities & Local Government. Retrieved from: [www.gov.uk](http://www.gov.uk).
- Gov, UK. (2019a). *English Housing Survey: Home Ownership 2017-2018*. Retrieved from [www.gov.uk](http://www.gov.uk).
- Gov, UK. (2019b). *English Housing Survey: Adaptions and Accessibility 2014-2015*. Retrieved from [www.gov.uk](http://www.gov.uk).
- Gov, UK. (2019c). *Industrial Strategy: the Grand Challenges*. London: Department for Business, Energy & Industrial Strategy. Retrieved from [www.gov.uk](http://www.gov.uk).
- Gov, UK. (2020). *Housing Statistics 2020. Homes England*. Retrieved from [www.gov.uk](http://www.gov.uk).
- Gov, UK. (2022). *Inclusive Britain: the government's response to the Commission on Race and Ethnic Disparities*. Retrieved from [www.gov.uk](http://www.gov.uk).

- Grefe, D. (2011). Combating Ageism with Narrative and Intergroup Contact: Possibilities of Intergenerational Connections. *Pastoral Psychology*, 60(1), pp.99-105.
- Groat, L. and Wang, D. (2002). *Architectural Research Methods*. New York: Wiley.
- Groat, L., and Ahrentzen, S. (1997). Voices for Change in Architectural Education: Seven Facets of Transformation from the Perspectives of Faculty Women. *Journal of Architectural Education*, 50(4), pp.271-285.
- Groundwater-Smith, S., and Mockler, N. (2007). Ethics in practitioner research: an issue of quality. *Research Papers in Education*, 22(2), 199–211.
- Hadjri, K., Gadakari, T., Huang, J., & Wang, J. (2018). *Age-Friendly Housing Environments*. *ODESSA Conference Publication (Feb 2018)*. Retrieved from: [www.housinglin.org.uk](http://www.housinglin.org.uk).
- Hadjri, K., Gadakari, T., Huang, J., and Durosaiye, I. (2019). The Role of Housing Design in Achieving Ageing in Place in China. *The Journal of Aging and Social Change*, 9(4), pp.51-75.
- Hadjri, K., Gadakari, T., Huang, J., and Durosaiye, I. (2021). Future Scenarios of “Housing with Care” for the Ageing Population in China. *The Journal of Aging and Social Change*, 11(1), pp.45-65.
- Hagestad, G. and Uhlenberg, P. (2005). The Social Separation of Old and Young: A Root of Ageism. *Journal of Social Issues*, 61(2), pp.343-360.
- Hallberg, L. (2006). The “Core Category” of Grounded Theory: Making Constant Comparisons. *International Journal of Qualitative Studies on Health and Well-being*, 1(3), pp.141-148.
- Hammersley, M. (1989). *The dilemma of qualitative method*. Herbert Blumer and the Chicago tradition. London: Routledge.

Handler, S. (2014). *An Alternative Age-friendly Handbook\**. 1st ed. Manchester: Age UK, RIBA, MICRA, Age-friendly Manchester.

Hannan, R., and Webster, H. (2020). Bringing Care Home: Could Covid-19 kick-start an overhaul of the way we approach support services?. *The Royal Society of Arts Journal*, 2(0), pp.46-47.

Hawkey, L. and Cacioppo, J. (2010). Loneliness Matters: A Theoretical and Empirical Review of Consequences and Mechanisms. *The Society of Behavioural Medicine*, 40(2), pp.218-227.

Heath, S., Chapman, L., and The Morgan Centre Sketchers. (2018). Observational Sketching as method. *International Journal of Social Research Methodology*, 21(6), pp.713-728.

Helleiner, E. (2011). Understanding the 2007-2008 Global Financial Crisis: Lessons for Scholars of International Political Economy. *The Annual Review of Political Science*, 14(0), 67-87.

Hesse-Biber, S., and Leavy, P. (2011). *The practice of qualitative research*. 2nd ed. Thousand Oaks, CA: SAGE.

Heylighen, A. (2014). About the nature of design in universal design. *Disability and Rehabilitation*, 36(16), pp.1360-1368.

Heylighen, A., Neuckermans, H., Casaer, M., and Dewulf, G. (2007). Building memories. *Building Research & Information*, 35(1), pp.90-100.

Heylighen, A., Van der Linden, V., and Van Steenwinkel, I. (2017). Ten questions concerning inclusive design of the built environment. *Building and Environment*, 114(0), pp.507-517.

House of Commons and Local Government Committee. (2018). *Housing for older people: Second Report of Session 2017-19*. Retrieved from [www.parliament.uk](http://www.parliament.uk).

Housing LIN (2018). *Innovative Housing Models for an Ageing Population A Housing LIN briefing on the Industrial Strategy Round Table Discussion held on 1 August 2018*. London: Housing Learning & Improvement Network. Retrieved from [www.housinglin.org.uk](http://www.housinglin.org.uk).

Housing LIN (2019). *Shining a Spotlight on the Hidden Housing Market*. London: Housing Learning & Improvement Network. Retrieved from [www.housinglin.org.uk](http://www.housinglin.org.uk).

HousingLIN. (2013). *BS 9266:2013 - Design of accessible and adaptable general needs housing – Code of practice*. Retrieved from [www.housinglin.org.uk](http://www.housinglin.org.uk).

HousingLIN. (2018). *Rural Housing for an Ageing Population: Preserving Independence (HAPPI 4)*. London: All Party Parliamentary Group on Housing and Care for Older People. Retrieved from [www.housinglin.org.uk](http://www.housinglin.org.uk).

HousingLIN. (2019). *Symposia focusing on intergenerational living; design for ageing well; care and support at home; and smart living and innovative technology*. Event, Housing LIN Annual Conference - Birmingham. Retrieved from [www.housinglin.org.uk](http://www.housinglin.org.uk).

Hurdley, R., Biddulph, M., Backhaus, V., Hipwood, T. and Hossain, R. (2017). Drawing as Radical Multimodality: Salvaging Patrick Geddes's Material Methodology. *American Anthropologist*, 119(4), pp.748-753.

Imrie, R. and Street, E. (2014). Autonomy and the socialisation of architects. *The Journal of Architecture*, 19(5), pp.723-739.

Industrial Strategy Council. (2020). *Annual Report*. Retrieved from [www.industrialstrategyCouncil.org](http://www.industrialstrategyCouncil.org).

Ivory, C. (2004). Client, User and Architect Interactions in Construction: Implications for Analysing Innovative Outcomes from User-Producer Interactions in Projects. *Technology Analysis & Strategic Management*, 16(4), pp.495-508.

- James, F. (2017). The 'third age' perspective: Enrichment and informal modes of learning in an outdoor sketching group for older adults. *International Journal of Lifelong Education*, 36(4), pp.406-421.
- Javaid, M., Haleem, A., Rab, S., Singh, R., and Suman, R. (2021). Sensors for daily life: A review. *Sensors International*, 2(0), pp.1-10.
- Jones, A., and Hyde, R. (2019). *Defining Contemporary Professionalism*. 1st ed. London: RIBA Publishing.
- Jones, M., and Alony, I. (2011) Guiding the use of Grounded Theory in Doctoral Studies - An example from the Australian film industry. *International Journal of Doctoral Studies*, 6(0), pp. 95-114.
- JRF. (2012). *Older people's housing: choice, quality of life, and under-occupation*. Retrieved from [www.jrf.org.uk](http://www.jrf.org.uk).
- Kant, I. (1987). *Critique of Judgement*. Hackett Publishing Co, Inc.
- Kaplan, M., Sanchez, M., and Hoffman, J. (2017). *Intergenerational Pathways to a Sustainable Society*. 1st ed. Cham: Springer.
- Kapp, M. (2006). Ethical and legal issues in research involving human subjects: do you want a piece of me?. *Journal of Clinical Pathology*, 59(4), 335-339.
- Kessler, E., and Bowen, C. (2020). COVID ageism as a public mental health concern. *The Lancet, Healthy Longevity*, 1(1), pp.12.
- Kimmerle, J., Cress, U., and Held, C. (2010). The interplay between individual and collective knowledge: Technologies for organisational learning and knowledge building. *Knowledge Management Research and Practice*, 8(1), pp.33-44.
- Kirk, R., Clarke, J. and Maudsley, C. (2015). 'Housing support - independent living and housing an older population', in Jowsey, E. *Real Estate Concepts: A handbook*. London: Taylor & Francis, pp. 398-401.

Kirkeby, I. (2010). Knowledge in the making. *Architectural Research Quarterly*, 13(3-4), pp.307-313.

Knight Frank. (2018). *Retirement Housing: Market Update*. Knight Frank Research. Retrieved from [www.knightfrank.com/research](http://www.knightfrank.com/research).

Knight, C., Haslam, C., and Haslam, A. (2010). In home or at home? How collective decision making in a new care facility enhances social interaction and wellbeing amongst older adults. *Ageing and Society*, 30(8), pp.1393-1418.

Kossak, F., Petrescu, D., Schneider, T., Tyszczuk, R., and Walker, S. (2010). *Agency: Working with Uncertain Architectures*, ed. New York: Routledge.

Kvale, S. and Brinkmann, S. (2008). *Interviews: Learning the craft of qualitative research interviewing*. 2nd ed. Thousand Oaks, CA: SAGE.

Law, J. (2004). *After method: Mess in social science research*. London: Routledge.

Leavy, P. (2017). *Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches*. New York: The Guilford Press.

LGA. (2017). *Housing our ageing population: Learning from councils meeting the housing need for our ageing population*. London: Local Government Association. Retrieved from [www.local.gov.uk](http://www.local.gov.uk).

Liddle, J., Scharf, T., Bartlam, B., Bernard, M., and Sim, J. (2014). Exploring the age-friendliness of purpose-built retirement communities: Evidence from England. *Ageing and Society*, 34(9), pp.1601-1629.

Luciano, A., Pascale, F., Polverino, F., and Pooley, A. (2020). Measuring Age-Friendly Housing: A Framework. *Sustainability*, 12(848), pp.1-35.

- Luck, R. and McDonnell, J. (2006). Architect and user interaction: The spoken representation of form and functional meaning in early design conversations. *Design Studies*, 27(2), pp.141-166.
- Ludden, G., Van Rompay, T., Niedderer, K., and Tournier, I. (2019). Environmental Design for Dementia Care - Towards more meaningful experiences through design. *Maturitas*, 128, pp.10-16.
- Lupton, D. (2020) COVID-19 and doing virtual fieldwork. Webinar: NVIVO.
- MacMillan, K., and Koenig, T. (2004). The wow factor: Preconceptions and expectations for data analysis software in qualitative research. *Social Science Computer Review*, 22(2), 179–186.
- Makowska, B. (2019). Freehand drawings and hybrid drawing techniques: Skills for the 21st Century architect. *World Transactions on Engineering and Technology Education*, 17(3), pp.392-397.
- Makstutis, G. (2018). *Design Process in Architecture: From Concept to Completion*. London: Laurence King Publishing Ltd.
- McCall, V., Ziegler, F., Robertson, J., Lovatt, M., Phillips, J., Porteus, J., McIntyre, Z., Rutherford, A., Sixsmith, J., Woolrych, J., Eadie, J., Wallman, J., Epinosa, M., Harrison, E., and Wallace, T. (2020). Housing and Ageing: Let's Get Serious — “How Do You Plan for the Future while Addressing Immediate Chaos?”. *Social Inclusion*, 8(3), pp.28-42.
- McIntyre, L. and Harrison, I. (2016). Knowledge exchange methods in practice: Knowing how to design for older adults. *Architectural Research Quarterly*, 20(3), pp.271-280.
- McIntyre, L. and Harrison, I. (2017). The effects of built environment design on opportunities for wellbeing in care homes. *International Journal of Architectural Research: ArchNet-IJAR*, 11(1), pp.138-156.

- Means, R. (2007). Safe as houses? Ageing in place and vulnerable older people in the UK. *Social Policy and Administration*, 41(1), pp.65-85.
- Meyer, K. (2016). Technology in Architectural Practice: Transforming Work with Information, 1960s-1990s. *Information & Culture*, 51(2), pp.249-266.
- Michelle, F. (2019). A Decline in Drawing Ability?. *International Journal of Art & Design Education*, 39(2), pp.319-332.
- Miles, M. and Huberman, M. (1994) *Qualitative Data Analysis*. 2nd ed. London: SAGE.
- Minder, B., and Lassen, A. (2019). The Designer as Facilitator of Multidisciplinary Innovation projects. *Design Journal*, 21(6), pp.789-811.
- Moos, R., and Lemke, S. (1994). *Group Residences for Older Adults: Physical Features, Policies, and Social Climate*. New York: Oxford University Press.
- Mulliner, E., Riley, M., and Maliene, V. (2020). Older People's Preferences for Housing and Environment Characteristics. *Sustainability*, 12(14), pp.1-25.
- Myerson, J. (2018). 'Are designers ready for ageing?' in Park, J. and Porteus, J. Age-friendly housing. 1st ed. London: RIBA Publishing, pp. 116-117.
- Nazroo, J. (2015). *Addressing Inequalities in Healthy Life Expectancy*. UK's Government Foresight Future of An Ageing Population: Evidence Review. Retrieved from [www.gov.uk](http://www.gov.uk).
- NEF. (2008). *Five Ways to Wellbeing*. London: The New Economic Foundation. Retrieved from [www.neweconomics.org](http://www.neweconomics.org).
- Nelson, C., Treichler, P.A., and Grossberg, L. (1992). *Cultural Studies*. In: Grossberg, L., Nelson, C., and Treichler, P.A. (eds), *Cultural studies* (pp.1-16). New York: Routledge.

Newell, A., and Herbert, S. (1972). *Human Problem Solving*. Englewood Cliffs, N.J.: Prentice-Hall., Inc.

NHS. (2018). Falls. NHS. Retrieved from: [www.nhs.uk](http://www.nhs.uk).

NHS. (2020). Dementia. NHS. Retrieved from: [www.nhs.uk](http://www.nhs.uk).

Northumbria University. (2019). Ethics and Governance. [online] Northumbria University. Retrieved from [www.northumbria.ac.uk](http://www.northumbria.ac.uk).

Northumbria University. (2020). Fieldwork Code of Practice. [online] Northumbria University. Retrieved from [www.northumbria.ac.uk](http://www.northumbria.ac.uk).

O'Reilly, K. (2009). Sampling. In: *Key Concepts in Ethnography*. London: Sage Publications, pg. 194-201.

OECD. (2015). Ageing in Cities. Retrieved from [www.oecd-ilibrary.org](http://www.oecd-ilibrary.org).

Oliver, M. (1983). *Social Work with Disabled People*. 1st ed. Basingstoke: Macmillan.

Oliver, M. (2013). The social model of disability: Thirty years on. *Disability and Society*, 28(7), pp.1024-1026.

ONS. (2017). Principal Projection - UK Population in Age Groups. Office For National Statistics. Retrieved from [www.ons.gov.uk](http://www.ons.gov.uk).

ONS. (2018a). Living longer: how our population is changing and why it matters. Office For National Statistics. Retrieved from [www.ons.gov.uk](http://www.ons.gov.uk).

ONS. (2018b). Household Projections in England. Office For National Statistics. Retrieved from [www.ons.gov.uk](http://www.ons.gov.uk).

ONS. (2019). Estimates of the number of households (and people in households) by the mix of age groups and number of people aged 65 and over, UK, 2019. Office For National Statistics. Retrieved from [www.ons.gov.uk](http://www.ons.gov.uk).

ONS. (2021). Exploring local income deprivation: A detailed picture of disparities within English local authorities to a neighbourhood level. Office For National Statistics. Retrieved from [www.ons.gov.uk](http://www.ons.gov.uk).

Ormerod, M. and Newton, R. (2005). Moving Beyond Accessibility: The Principles of Universal (inclusive) Design as a Dimension in nD Modelling of the Built Environment. *Architectural Engineering and Design Management*, 1(2), pp.103-110.

Oswald, F. , Wahl, H. , Schilling, O. , Nygren, C. , Fange, A. , Sixsmith, A. , Sixsmith, J. , Szeman, Z. , Tomsone, S. and Iwarsson, S. (2007). Relationships Between Housing and Healthy Aging in Very Old Age. *The Gerontologist*, 47(1), pp.96-107.

Park, A. , Ziegler, F. and Wigglesworth, S. (2016). *Designing with Downsizers: The next generation of 'downsizer homes' for an active third age (DWELL)*. Sheffield: University of Sheffield and Housing LIN. Retrieved from [www.housinglin.org.uk](http://www.housinglin.org.uk).

Park, A. and Ziegler, F. (2016). A Home for Life? A Critical Perspective on Housing Choice for "Downsizers" in the UK. *Architecture\_MPS*, 9(2), pp.1-21.

Park, J. (2017). *One Hundred Years of Space Standards: What Now?*. London, Levitt Bernstein.

Park, J. and Porteus, J. (2018). *Age-friendly housing*. 1st ed. London: RIBA Publishing.

Paterson, B., Gregory, D. and Thorne, S. (1999). A Protocol for Researcher Safety. *Qualitative Health Research*, 9(2), pp.259-269.

Pavese, C. (2018). Know-how, action, and luck. *Synthese*, 198(7), pp.1-23.

Peace, S. and Holland, C. (2001). *Inclusive Housing in an Ageing Society: Innovative Approaches*. 1st ed. Bristol: The Policy Press.

Peace, S., Katz, J., Holland., and Jones, R. (2019). 'The age-friendly community: a test for inclusivity'. In: Buffel, T., Handler, S., and Phillipson, C. (eds), *Age-friendly Cities and Communities: A global perspective*. 1st ed. Bristol: Policy Press, pp. 251-271.

PHE. (2017). *Public Health Profiles*. Retrieved from <https://fingertips.phe.org.uk>.

Phillips, E. and Pugh, D. (2010). *How To Get a PhD: A handbook for students and their supervisors*. 4th ed. Berkshire: Open University Press.

Phillips, J., Walford, N., Hockey, A., and Sparks, L. (2021). Older People, Town Centres and the Revival of the 'High Street'. *Planning Theory and Practice*, 22(1), pp.11-26.

Phillips, J., Walford, N., Hockey, A., Foreman, N, and Sparks, L. (2013). Older people and outdoor environments: Pedestrian anxieties and barriers in the use of familiar and unfamiliar spaces. *Geoforum*, 47(0), pp.113-124.

Phillipson, C. (2007). The 'elected' and the 'excluded': Sociological perspectives on the experience of place and community in old age. *Ageing and Society*, 27(3), pp.321-342.

Pink S. (2003) Representing The Sensory Home: Ethnographic Experience and Anthropological Hypermedia. *Social Analysis*, 47(3), pp.46-63.

Pink S. (2012) Domestic Time in the Sensory Home: The Textures and Rhythms of Knowing, Practice, Memory and Imagination. In: Keightley E. (eds) *Time, Media and Modernity*. Palgrave Macmillan, London.

Rasipuram, S., Rao, P., and Jayagopi, D. (2016) Asynchronous video interviews vs. Face-To-face interviews for communication skill measurement: A systematic study. *ICMI 2016 - Proceedings of the 18th ACM International Conference on Multimodal Interaction*, 0(0), pp. 370-377.

RCUK. (2017). *Good Research Conduct. Policy and Guidelines*. RCUK. Retrieved from [www.ukri.org](http://www.ukri.org).

- Rendell, J., Hill, J., Fraser, M., and Dorrian, M. (2007). *Critical Architecture*. 1st ed. London: Routledge.
- RIBA. (2013a). *Home Improvements: Housing Research in Practice*. London: Royal Institute of British Architects. Retrieved from [www.architecture.com](http://www.architecture.com).
- RIBA. (2013b). *Research in Practice Guide*. London: Royal Institute of British Architects. Retrieved from [www.architecture.com](http://www.architecture.com).
- RIBA. (2014). *Design for an Ageing Population*. London: Royal Institute of British Architects. Retrieved from [www.architecture.com](http://www.architecture.com).
- RIBA. (2019a). *A Home for the Ages: Planning or the Future with Age-friendly Design*. London: Royal Institute of British Architects. Retrieved from [www.architecture.com](http://www.architecture.com).
- RIBA. (2019b). *England's Hidden Housing Crisis*. London: Royal Institute of British Architects. Retrieved from [www.architecture.com](http://www.architecture.com).
- RIBA. (2019c). *RIBA Housing Policy Statement*. Retrieved from: [www.architecture.com](http://www.architecture.com).
- Riley, M. and Riley, W. (2000). Age integration: conceptual and historical background. *The Gerontologist*, 40(3), pp.261-308.
- Rizzolatti, G., Semi, A., and Fabbri-Destro, S. (2014). Linking psychoanalysis with neuroscience: The concept of ego. *Neuropsychologia*, 55(0), pp.143-148.
- Robinson, D., Green, S., and Wilson, I. (2019). Housing options for older people in a reimagined housing system: a case study from England. *International Journal of Housing Policy*, 20(3), pp.344-366.
- Robson, C. and McCartan, K. (2016). *Real world research*. 4th ed. Chichester: Wiley.
- Rogers, A. Castree, N. and Kitchin, R. (2013). *A Dictionary of Human Geography*. Oxford University Press.

- Rooney, C., Hadjri, K., and Craig, C. (2013). *Assessing lifetime homes standards and Part M building regulations for housing design in the UK*. *Design Journal*, 16(1), 29-50.
- Rooney, C., Hadjri, K., Faith, V., Rooney, M., McAllister, K., and Craig, C. (2017). *Living Independently*. *HERD: Health Environments Research & Design Journal*, 11(2), 56-71.
- Rosenthal, L. (2009). The Role of Local Government: Land-Use Controls and Aging-Friendliness. *Journal of the American Society on Aging*, 33(0), pp.18-25.
- Roth, L., Kaffenberger, T., Herwig, U., and Brühl, A. (2014). Brain activation associated with pride and shame. *Neuropsychobiology*, 69(2), pp.95-106.
- Rowe, P. (1987). *Design Thinking*. Cambridge, Mass.: MIT Press.
- Roys, M., Nicol, S., Garrett, H., and Margoles, S. (2016). *The Full Cost of Poor Housing*, BRE Press.
- RSA. (2020). *Student Design Awards 20/21: Brief 6 Home Sweet Home*. The Royal Society of Arts. Retrieved from: [www.thersa.org](http://www.thersa.org).
- Rubinstein, R. and Parmelee, C. (1992). 'Attachment to Place and the Representation of the Life Course by the Elderly' in Altman, I., and Low, S. *Place Attachment*. eds. New York: Plenum Press.
- Saldana, J. (2015). *The Coding Manual for Qualitative Researchers*. 3rd ed. Thousand Oaks, CA: SAGE Publications Ltd.
- Salkind, N. (2010). *Encyclopedia of Research Design*. Thousand Oaks, CA: Sage Publications.
- Samuel, F. (2018). *Why Architects Matter: Evidencing and Communicating the Value of Architects*. New York: Routledge.
- Samuel, F., Awan, N., Butterworth, C., Handler, S., and Lintonbon, J. (2015). *Cultural Value of Architecture in Homes and Neighbourhoods*. Project Report. Arts and Humanities Research Council. Retrieved from <http://research.gold.ac.uk>.

São José, J., Amado, C., Ilinca, S., Buttigieg, S., and Larsson, A. (2019). Ageism in Health Care: A Systematic Review of Operational Definitions and Inductive Conceptualizations. *The Gerontologist*, 59(2), pp.98-108.

Schenk, P. (2014). Inspiration and Ideation: Drawing in a Digital Age. *Design Issues*, 29(4), pp.1-5.

Schneider, S., Kuliga, S., Hölscher, C., Conroy-Dalton, R., Kunert, A., Kulik, A., and Donath, D. (2013) Educating architecture students to design buildings from the inside out: Experiences from a research-based design studio, in Kim, Y., Park, H., and Seo, K. (eds.), *Proceedings of the Ninth International Space Syntax Symposium 2013*, 31-3 November, Seoul, South Korea.

Schneider, T. and Till, J. (2005). Flexible housing: opportunities and limits. *ARQ*, 9(2), pp.157-166.

Seawright, J. (2016). The Case for Selecting Cases That Are Deviant or Extreme on the Independent Variable. *Sociological Methods & Research*, 45(3), pp.493-525.

Sebastian, K. (2019). Distinguishing Between the Types of Grounded Theory: Classical, Interpretive and Constructivist. *Journal for Social Thought*, 3(1), pp.1-9.

Sedgewick, F. (2018a) Capturing The Everyday Lived Experience of a Care Home. Design for Health Conference Sheffield.

Sedgewick, F. (2018b) Induction to my PhD Doctoral Research. NorthLab Doctoral Research Seminar. Newcastle, University of Northumbria.

Sedgewick, F. (2018c) Who Cares? We Care! The Lessons Learnt from Living in a Care Home. The Care Homes Reading Project Blog [online]. Accessed: <http://readingproject.exeter.ac.uk>.

Sedgewick, F. (2019a) Posters: An Architectural Inquiry of Housing Design for Later Life. Design Research for Change 2019. London, London Design Festival.

Sedgewick, F. (2019b) Agency in Architecture: Architects and The Design Process of Age-friendly Housing. Developments in Housing Research. CaCHE PhD Summer School. Sheffield, University of Sheffield.

Sedgewick, F. (2019c) 'Housing Design for Later Life', in Rodgers, P. Design Research for Change 2019. Lancaster: Lancaster University, pp. 50-51.

Sedgewick, F. (2019d) An Intergenerational Initiative: The Community that Cares. PhD Doctoral Research Seminar. Newcastle, University of Northumbria.

Sedgewick, F. (2019e) Architects and The Design Process of Age-friendly Housing. PGR Teaching Seminar. Newcastle, University of Northumbria.

Sedgewick, F. (2020a) An Intergenerational Initiative: The Community that Cares. Newcastle Age-friendly City Group. Newcastle.

Sedgewick, F. (2020b) Alumni Talks: 2020. PhD Doctoral Research Seminar. Newcastle, University of Northumbria.

Sedgewick, F. (2020c) Age-friendly Design: How might we harness age-friendly design to support our ageing population to actively age-in-place?. RSA Student Design Awards: Educational Brief Writing. London, Royal Society of Arts. Retrieved from <https://www.thersa.org>.

Sedgewick, F. (2020d) Dear The Next Generation of Architects: Truly yours, The Housing Crisis. RIBA Future Architects Writing Competition [online]. Accessed: [www.ribaj.com](http://www.ribaj.com).

Sedgewick, F. (2020e) The Architects Influence on Designing Age-friendly Housing: Pilot Study Insights. Design for Health Conference Amsterdam.

Selbie, D. and Dixon, A. (2019) Foreword. In: PHE. *A consensus on healthy ageing*. London: PHE Publications. Retrieved from [www.gov.uk/phe](http://www.gov.uk/phe).

Skelton, D., Bailey, C., Howel, D., Cattan, M., Deary, V., Coe, D., Jong, L., Gawler, S., Gray, J., Lampitt, R., Wilkinson, J., and Adams, N. (2016). Visually Impaired Older People's Exercise Programme for Falls Prevention (VILOET): a feasibility study protocol. *BMJ Open*, 6, 1-10.

Smith, E. (2001). The role of tacit and explicit knowledge in the workplace. *Journal of Knowledge Management*, 5(4), pp.311-321.

Sopp, L. and Wood, L. (2001). *Consumer and industry views of Lifetime Homes*. JRF. Retrieved from [www.jrf.org.uk](http://www.jrf.org.uk).

Spence, C. (2020). Senses of place: architectural design for the multisensory mind. *Cognitive Research: Principles and Implications*, 5(1), pp.1-26.

Stam, L., Verbeek, P., and Heylighen, A. (2020). Between specificity and openness: How architects deal with design-use complexities. *Design Studies*, 66(0), pp.54-81.

Strauss, A. (1987). *Qualitative analysis for social scientists*. Cambridge: Cambridge University Press.

Sussman, A., and Hollander, J. (2021). *Cognitive Architecture: Designing for How We Respond to the Built Environment*. 2nd ed. New York: Routledge.

Sutherland, J. and Tarbatt, J. (2016). The Design of Mainstream Housing for Downsizers. *Journal of Housing for the Elderly*, 30(2), pp.214-235.

Sutrisna, M. and Setiawan, W. (2016). 'The application of grounded theory methodology in built environment research' in Ahmed, V., Opoku, A. and Aziz, Z. *Research Methodology in the Built Environment*. 1st ed. New York: Routledge, pp. 229-231.

Thackara, J. (2005). *In the Bubble: Designing in a Complex World*. Cambridge: MIT Press.

The Guardian. (2019). Health of older people suffering in poor housing, MPs warn. The Guardian. Retrieved from: [www.theguardian.com](http://www.theguardian.com).

Thomson, H., and Thomas, S. (2015). Developing empirically supported theories of change for housing investment and health. *Social Science & Medicine*, 124, 205–214.

Till, J. (2009). *Architecture Depends*. Cambridge: MIT Press.

Tuckett, A., Banchoff, A., Winter, S. and King, A. (2017). The built environment and older adults: A literature review and an applied approach to engaging older adults in built environment improvements for health. *International Journal of Older People Nursing*, 13(1), 1-9.

Uhlenberg, P. (2000). Integration of Old and Young. *The Gerontologist*, 40(3), pp.276-279.

Uhlenberg, P. and De Jong Gierveld, J. (2004). Age-segregation in later life: an examination of personal networks. *Ageing and Society*, 24(01), pp.5-28.

UK Parliament. (2017a). *Building for Equality: Disability and the Built Environment*. Retrieved from <https://publications.parliament.uk/>.

UK Parliament. (2017b). *Housing for Older People Inquiry*. Retrieved from <https://publications.parliament.uk/>.

UK Parliament. (2022). *Referendums held in the UK*. Retrieved from: [www.parliament.uk](http://www.parliament.uk).

Unwin, S. (2005). Analysing architecture through drawing. *Building Research and Information*, 35(1), pp.101-110.

Van Der Linden, V., Doug, H., and Heylighen, A. (2016a) Capturing architects' designedly ways of knowing about users: Exploring an ethnographic research approach, *Design Research Society*, 8(0), pp. 0-15.

Van Der Linden, V., Doug, H., and Heylighen, A. (2016b) From Accessibility to Experience: Opportunities for Inclusive Design in Architectural Practice, *Nordic Journal of Architectural Research*, 28(2), pp. 33-58.

Van Der Linden, V., Doug, H., and Heylighen, A. (2018) Architects' attitudes towards users: A spectrum of advocating and envisioning future use(rs) in design, *ARDETH*, 2(0), pp. 197-216.

Van Der Linden, V., Doug, H., and Heylighen, A. (2019) Tracing Architects' Fragile Knowing About Users in the Socio-material Environment of Design Practice, *Design Studies*, 63(0), pp. 65-91.

Van Hoof, J., Dikken, J., Buttigieg, S., Hoven, R., Kroon, E., and Marston, H. (2020). Age-friendly cities in the Netherlands: An explorative study of facilitators and hindrances in the built environment and ageism in design. *Indoor and Built Environment*, 29(3), pp. 417-437.

Van Hoof, J., Marston, H., Brittain, K., and Barrie, H. (2019). Creating Age-Friendly Communities: Housing and Technology. *Healthcare*, 7(130), 1-6.

Van Hoof, J., Marston, H., Kazak, J., and Buffel, T. (2021). Ten questions concerning age-friendly cities and communities and the built environment. *Building and Environment*, 199(0), pp. 1-26.

Vasunilashorn, S., Steinman, B., Liebig, P., and Pynoos, J. (2012). Aging in Place: Evolution of a Research Topic Whose Time Has Come. *Journal of Aging Research*, 00, pp.1-6.

Wallick, K. (2012). Generative Processes: Thick Drawing. *International Journal of Art and Design Education*, 31(1), pp.19-29.

Wang, J., Pan, Y., and Hadjri, K. (2018). Creative Housing Design: Promoting sustainable living in Choosing community in the UK. *Environment-Behaviour Proceedings Journal*, 3(8), pp.129-140.

- Wang, J., Pan, Y., and Hadjri, K. (2021). Social Sustainability and Supportive Living: Exploring Motivations of British Cohousing Groups. *Housing and Society*, 48(1), pp.60-86.
- Watson, D. (1999). Improving practice through knowledge and research. *ARQ*, 3(1), 9-14.
- Wauters, H., Vermeersch, P., and Heylighen, A. (2014) Reality Check: Notions of Accessibility in Today's Architectural Design Practice, in Lim, Y., Niedderer, K., Redström, J., Stolterman, E. and Valtonen, A. (eds.), *Design's Big Debates - DRS International Conference 2014*, 16-19 June, Umeå, Sweden.
- Wigglesworth, S. (2005). Critical Practice. *Journal of Architecture*, 10(3), 335-346.
- Wigglesworth, S., and Wernick, J. (2002). Clearwater Garden: Design Research and Collaboration. *ARQ*, 6(3), 214-229.
- Wiles, J., Leibling, A., Guberman, N., Reeve, J., and Allen, R. (2012). The Meaning of "Aging in Place" to Older People. *The Gerontologist*, 52(3), pp.357-366.
- Wilson, G., Aitken, D., Hodgson, P., and Bailey, C. (2019). The hidden impact of home adaptations: Using a wearable camera to explore lived experiences and taken-for-granted behaviours. *Health and Social Care in the Community*, 0(0), pp.1-12.
- Wilson, G., Aitken, P., Hodgson, P., and Bailey, C. (2019). The hidden impact of home adaptations: Using a wearable camera to explore lived experiences and taken-for-granted behaviours. *Health and Social Care in the Community*, 00, pp.1-12.
- Wolcott, H. (1994). *Transforming qualitative data: Description, analysis, and interpretation*. Thousand Oaks, CA: SAGE Publications Ltd.
- World Health Organisation. (2018). *Ageing and health*. Retrieved from [www.who.int](http://www.who.int).
- World Health Organisation. (2020a). *Ageing: Healthy ageing and functional ability*. Retrieved from [www.who.int](http://www.who.int).

World Health Organisation. (2020b). *Ageing and life-course*. Retrieved from [www.who.int](http://www.who.int).

World Health Organization. (2007). *Global Age-Friendly Cities: A Guide*. World Health Organization: Geneva, Switzerland.

Yin, R. (2003). *Case Study Research: Design and Methods*. 3rd ed. California: SAGE Publications Ltd.

