How can live projects stimulate progress in education, research, and practice?

The establishment of live project / designbuild / community design education as a global and rigorous field of activity and inquiry.

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PhD by Published Work

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PhD by Published Work

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This work is dedicated to the memory of Magnus Desmond Smyth, 2007-2018.

Contents of Critical Appraisal

List of Figures

1. Abstract

This critical appraisal presents 16 publications on live project education and examines their methodologies, findings and contribution to knowledge within the context of an emerging global field of live project / designbuild / community design education. The publications are discussed in relation to each other in order to demonstrate how they form a coherent body of work. The published work can be broadly summarised as being concerned with the following questions:

- How has the emerging field of live project education developed to date?

- What can we learn from live projects about education, research, practice, society and the design process?

- How has our expanded knowledge progressed live project education?

The publications were produced at a time when the practices and boundaries of live project education were unclear and contested. There was also an increase in activity and dialogue that stimulated the emergence of live projects as a field of inquiry. Therefore the thesis includes a chronological literature review in order to capture an overview of activity at this time, thereby demonstrating how the publications fit within this context and how they contribute to knowledge and the development of the field.

The principal contributions to knowledge in the published work concern architectural education, research, practice, society, the design process and the relationship between them that is revealed by live project education. This critical appraisal articulates the ways in which the published work contributed to the development of live project education as a field of inquiry in itself. It evaluates the impact and influence of the published work on practice and inter-disciplinary pedagogy. It concludes with an assessment of the significance and limitations of the work, considering scope for further work that would enrich the development of the field.

2. Introduction

Live project education has been adopted by an increasing number of architectural educators in recent years, with a notable increase internationally since 1990 in both live project activity and academic inquiry into live project education (Pearson, 2002; Brown, 2012; Canizaro, 2012; Salama, 2015a). The innovation and significance of live projects to contemporary architectural education has provoked a need to understand the what, where, why, when, who and how of live project education. Contributing to understanding of this and forming an overall body of research are the 16 publications (hereto referred to as the 'published work') that are discussed in this critical appraisal.

It is important to note that live project education occurred in different forms, in different places for different reasons and under different names, before 1990. Brown (2012, p. 26) identified UK architectural live project activity in the 1950s as well as in medicine, law and planning education. Many commentators, particularly those writing from a US designbuild education perspective, identify a continuum from radical initiatives of the 1960s and 1970s (Salama, 2015b, p. 12). Stonorov extends this lineage back to the Bauhaus (Stonorov, 2018, pp. 10-15) and Canizaro extends back to Ruskin in Oxford (Canizaro, 2012, p. 21). A particularly fascinating origin story concerns Open City at Valparaíso, Chile which sprang from 1950s post-colonial optimism, survived authoritarianism and continues today (Rispa, Pérez de Arce and Pérez Oyarzún, 2003; Leon, 2012).

Live project is the term widely used in the UK. *Designbuild* is a term commonly used in architectural education in North America to describe projects involving construction. Europe, Australia and South Africa make use of both terms. Other terms include *service learning*, *design + make, 1:1 projects* and *construction projects*. Live projects are often undertaken within courses teaching specific methods used in practice such as *community design*, *public interest design* or *development and emergency practice* and may be named after these practices rather than labelled as live project education. For clarity and simplicity and because the published work is concerned with the full spectrum of activity, this critical appraisal will use *live project* as an 'umbrella term' (Kraus, 2017, p. 29) unless specifically discussing different terminology or when quoting sources that use different terminology*.*

The development of live project education occurred via several parallel evolutions internationally, often originating at the margins or in reaction to the mainstream (Salama, 2015a, p. 12) and as a response to issues perceived to be 'neglected, urgent or emergent' (Anderson, 2019a, p. 6) in education, practice and / or society. Knowledge was held in silos constrained by different national, disciplinary and terminological boundaries and its dissemination was further hampered by a lack of dialogue and means of communication between these silos. This slowed mutual recognition between different actors (Pawlicki, 2020, p. 27), hindering the establishment of live projects as a global field of practice or inquiry.

I recognised this as being problematic and addressed it by identifying common traits between these silos. This included the testing and development of a definition of live projects that was sufficiently flexible to include diverse activity while also improving understanding of the nature of live project education:

> A Live Project comprises the negotiation of a brief, timescale, budget and product between an educational organisation and an external collaborator for their mutual benefit. The project must be structured to ensure that students gain learning that is relevant to their educational development (Anderson and Priest, 2014, p. 13).

Fundamental to the published work is the contribution made by its strategy to adopt an open, international and inclusive perspective that views live projects as an emerging field that requires a holistic approach and method of inquiry. This expanded perspective on what constitutes the field of live project education also enables the contribution of the published work to be judged against, and make connections with, a complex and diverse spectrum of live project activity.

The published work comprises 12 peer reviewed publications, a professional body report and three online open access databases, one of which records my own live project practice work (Anderson, 2008). The databases hold large data sets of live project case study information that have been used for evidence-based analysis and reflective practice-based research. The databases were used to compile a definition and taxonomy of live projects that were sufficiently inclusive and flexible to encompass disparate practices and actors internationally, despite the complexity that this created. Other published works draw upon multi-disciplinary knowledge that was generated via research methods ranging from the theoretical to practice-based.

The critical appraisal demonstrates how these published findings from the field of live project inquiry have connected a previously disparate field, accelerating and informing its development internationally and inter-disciplinarily. It also demonstrates the wider relevance of these findings to aspects of contemporary architectural education, research, practice and society as well as bringing new insights to the understanding of the design process.

3. Aims, Objectives, Structure and Methodology of the Critical Appraisal

3.1. Aims of the Critical Appraisal

The aim of this critical appraisal is to demonstrate and explain the contribution of the published work to the emerging field of live project education. This includes contributions made to the pedagogy, practice and research of live projects.

3.2. Objectives of the Critical Appraisal

1. To review and critique the development of live project education within the architectural discipline internationally since 1990 via the literature review, a chronological reading of texts and a coded thematic analysis of the texts. See Section 4.

2. To explain the contribution of the published work to the development of live projects as a field of pedagogy, practice and research by reviewing the published work in relation to the findings from the literature review. See Section 5.

3. To explore the contribution to knowledge that live project inquiry has made to the understanding of architectural education, research, practice and the design process and to explain my contribution to that improved understanding via a coded thematic analysis of the published work. See Section 6.

4. To describe how the published work has influenced the practice and policy of architectural and inter-disciplinary education as well as the architectural profession via citations and contribution to external activities related to live project dissemination and development. See Section 7.

3.3. Structure of the Critical Appraisal

Figure 1 locates the objectives and published work within the structure of the critical appraisal.

Section	Objective	Published work
Section 4 Review: Live project literature	Objective1 To review and critique the development of live project education within the architectural discipline internationally since 1990 via the literature review, a chronological reading of texts and a coded thematic analysis of the texts.	N/A
Section 5 Contribution: Developing live projects as a field of pedagogy, practice and inquiry	Objective 2 To explain the contribution of the published work to the development of live projects as a field of pedagogy, practice and research by reviewing the published work in relation to the findings from the literature review.	(Anderson, 2008) (Anderson, 2014a) (Anderson, 2017b) (Anderson and Priest, 2012a) (Anderson and Priest, 2014) (*Design for the Common Good*, 2017)
Section 6 Contribution: Expanding understanding of architectural education, practice, research and the design process	Objective 3 To explore the contribution to knowledge that live project inquiry has made to the understanding of architectural education, research, practice and the design process and to explain my contribution to that improved understanding via a coded thematic analysis of the published work.	(Anderson, 2014a) (Anderson, 2014b) (Anderson, 2017a) (Anderson, 2017b) (Anderson, 2017c) (Anderson, 2019b) (Anderson, Godiksen and Harriss, 2016) (Anderson and Priest, 2012b) (Anderson and Priest, 2014) (Anderson and Priest, 2017)
Section 7 Improving inter-disciplinary and professional understanding of live project education	Objective 4 To describe how the published work has influenced the practice and policy of architectural and inter-disciplinary education as well as the architectural profession via citations and contribution to external activities related to live project dissemination and development.	(Anderson, 2008) (Anderson, 2012) (Anderson, 2017a) (Anderson, 2017b) (Anderson, 2019a) (Anderson, 2019b) (Anderson, Godiksen and Harriss, 2016) (Anderson and Priest, 2012a) (Anderson and Priest, 2012b) (Anderson and Priest, 2014)

Figure 1. Location of objectives and published work in the critical appraisal

The literature review charts the development of live project education, practice and inquiry, with a particular focus on literature published since 1990, a period of increased live project activity and research. It identifies key ideas as they emerged, making it possible to identify what the published work introduced and / or contributed to the field of live projects and also how it furthered the development of live projects as a field of inquiry. The literature review itself provides a further contribution to knowledge because it is conducted from an inclusive international perspective, bringing together sources that have not been considered together before.

The critical appraisal identifies three distinct strands within the published work. Firstly, several of the publications analyse what live projects are, how they work and their relevance to the development of architectural education, research and practice as well as bringing new insights to the understanding of the design process.

Secondly, in order to establish a theoretical basis for the study and practice of live projects, many of the publications identify, analyse and develop relevant pedagogies and theories. Several of the publications contribute to this endeavour by adopting an inter-disciplinary or collaborative approach to augment architectural disciplinary knowledge. Other publications diversify the knowledge-base by the use of varied research methodologies to interrogate the evidence such as design research; discourse analysis; coding; and qualitative and quantitative data analysis.

Thirdly, some publications generate knowledge that is relevant to the wider educational or architectural professions and have influenced policy in those areas.

3.4. Methodology of the Critical Appraisal

The literature review included different search terms that were used by often unconnected branches of disparate live project activity (see Appendix A). This means that texts are considered together that were viewed within separate spheres previously. The review therefore represents an international and inclusive range of sources, reflecting the wider perspective of what constitutes live projects that the published work also espouses.

The literature review includes a chronological reading and analysis of 139 texts published since 1990, enabling the development of live project inquiry to be seen and analysed. This is augmented by a comparative analysis of nine key texts that are significant because they include an overview of the field of live projects (see Appendix B).

A spreadsheet was kept during the chronological reading of the 139 texts. This summarised the contents of each text, noted its relevance to the published work, charted the first appearance of an idea and recorded citations of the published work. This literature review of diverse material enables the emergence and development of the field of live projects to be charted and the contribution of the published work to be identified within that context. The published work was included in the chronological reading of the 139 texts but excluded from analysis of citations of the published work.

The published work was analysed and themes were identified (see Appendix C). These themes were used to analyse and compare the nine key texts, the 139 chronologically read texts and the published work via coding, revealing differences and connections between them. Coding and analysis were undertaken using NVivo software.

As a participant in an emerging field of live project activity and inquiry, the published works were informed by my engagement in a range of participatory and collaborative events such as conferences, live projects, peer review, awards, exhibitions and the formation of networks. The relationship between my teaching, research and practice activities and the published work is shown in diagrammatic form in Figure 2.

Teaching / Practice outcomes

RESOURCES

3 open access databases
1 professional body report

Action in research

Action in field

SECONDARY RESEARCH

Data collection
Data analysis
Archival research
Literature review

PRIMARY RESEARCH

Interviews
Case studies
Field work
Observation
Correspondence

COLLABORATION

Co-authorship
Network partners
Peer
Inter-disciplinary
Community

SCHOLARLY ACTIVITY

15 conferences
4 exhibitions
2 awards
Editorial board
Peer reviewing

PUBLICATIONS

12 Peer reviewed publications

Research outcomes

RESESARCH QUESTIONS

1. How has the emerging field of live
project education developed to date?
2. What can we learn from live projects
about education, research, practice,
society and the design process?
3. How has our expanded knowledge
progressed live project education?

Action in research

CONTRIBUTION

29 OB1 LIVE live projects
3 databases
Live project definition
Live project taxonomy
Methodology for analysis
Theoretical basis for live projects
Connect + develop field of live projects
Inter-disciplinary live projects
Pedagogical theories for live projects
Understanding of design process

Research outcomes

Figure 2. The relationship between teaching, research and practice activities and the published work

9

3.5. Co-authorship

Statements from co-authors can be read in Appendix D. Contributions made by co-authors are described in Figure 3. Colin Priest was my teaching partner from 2008-2012. The proportion of my responsibility for authorship increased and I became solely responsible for OB1 LIVE projects after his departure from Oxford Brookes University in 2012. I wrote the editorial for the special issue on live projects for BeJLT (Anderson, Godiksen and Harriss, 2016). I shared responsibility for editing the papers with Harriss. Godiksen edited the case studies. Design for the Common Good (DCG) is an equal collaborative effort between the founders of member networks. At the time covered by the published work, its members were convener Sergio Palleroni, Social Economic Environmental Network (SEED) represented by Bryan Bell and Lisa Abendroth; designbuildXchange (DBX) represented by Simon Colwill, Peter Fattinger, Ursula Hartig and Nina Pawlicki; and Live Projects Network (LPN) represented by Jane Anderson and Colin Priest.

Publication	Author	Conception	Study design	Primary research	Secondary research	Analysis	Interpretation	Writing	Review	Revision
(Anderson and Priest, 2012a)	Anderson	Y	Y	Y	N/A	N/A	N/A	N/A	Y	Y
	Priest	Y	Y	Y	N/A	N/A	N/A	N/A	Y	N
(Anderson and Priest, 2012b)	Anderson	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Priest	Y	Y	Y	Y	Y	Y	Y	Y	N
(Anderson and Priest, 2014)	Anderson	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Priest	Y	N	N	N	N	N	N	Y	N
(Anderson and Priest, 2017)	Anderson	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Priest	Y	N	N	N	N	N	N	Y	N
Editorial (Anderson, Godiksen and Harriss, 2016)	Anderson	Y	Y	N/A	Y	Y	Y	Y	Y	Y
	Godiksen	Y	Y	N/A	N	N	N	N	Y	N
	Harriss	Y	Y	N/A	N	N	N	N	Y	N
(*Design for the Common Good*, 2017)	Anderson (for LPN)	Y	Y	Y	N/A	N/A	N/A	N/A	Y	N
	DBX	Y	Y	Y	N/A	N/A	N/A	N/A	Y	N
	SEED	Y	Y	Y	N/A	N/A	N/A	N/A	Y	N

Figure 3. Co-authorship. Table of contribution made by co-authors in the published work (*Defining authorship in your research paper*, 2021).

4. Results of Literature Review

4.1. Literature Review: comparative reading of key texts

Works identified by the literature search were checked via their abstracts and 478 were selected as being relevant to the field of live projects. Nine of the texts were found to be particularly significant to this research because they give an overview of the field of live project education. They were compared on the basis of the research methodologies, concepts and theories that they employed. This enabled key themes to be identified and comparison to be made with the published work (See Appendix B).

Sara (2004) and Brown (2012) based in UK and Delport (2016) in South Africa authored PhD theses with robust research methodologies that are rooted in literature review, analysis and theory as well as drawing upon live project practice in order to tackle an overview of the field. Canizaro's paper (2012) surveys and interviews US designbuild educators. Dodd, Harrisson and Charlesworth (2012), Harriss and Widder (2014), Kraus (2017), Stonorov (2018) and Verderber, Cavanagh and Oak (2019) also undertake an overview of the field but are edited works that draw upon a range of contributors. All of the texts include case studies but these are augmented variously by surveys, interviews, literature review, analysis, reflection and critique.

4.2. Literature Review: chronological reading of texts published from 1990-2020

Of the 478 works relevant to the field of live projects that were found, 139 were chosen because live projects were their central subject matter or because of their relevance to the themes of the published work (Appendix A). They were read in chronological order to gain an understanding of how the fields of live project activity and inquiry have developed since 1990. This process was used to chart the development of the field of research into live projects and also to identify and demonstrate where the published work made an original contribution to knowledge. Figure 4 shows that the number of publications grew from two in 1990-94 to 50 in 2015-20.
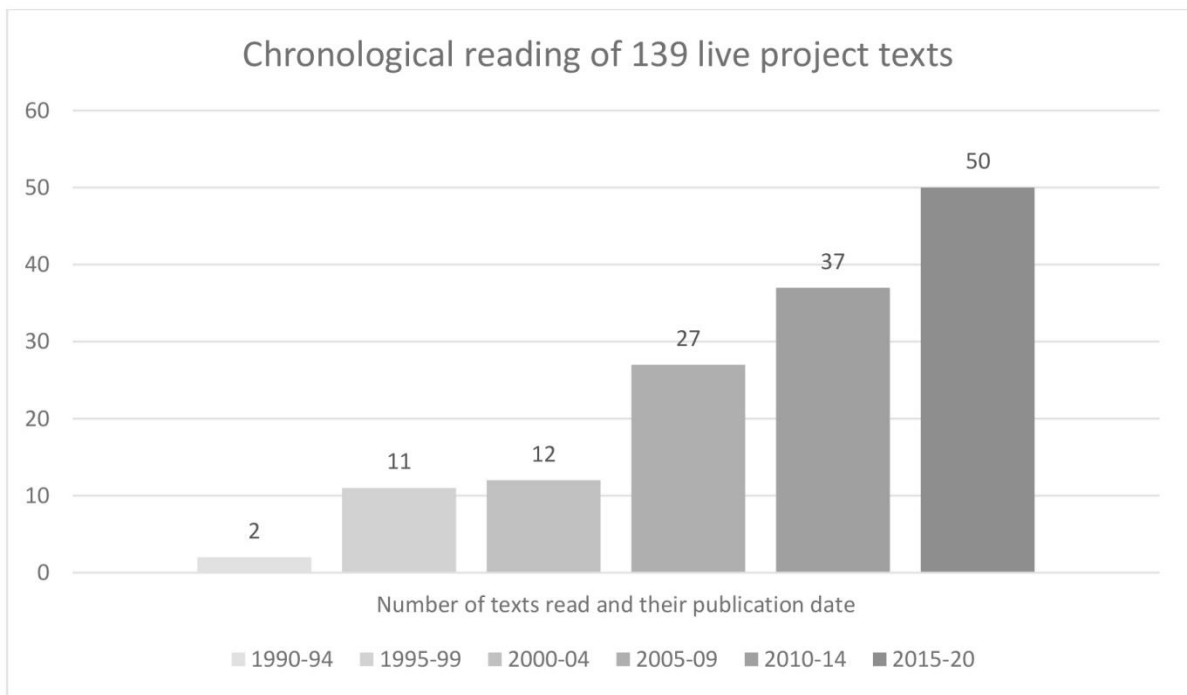
Figure 4. Chronological reading of 139 live project texts. Bar chart showing the number of texts read and their publication date

4.2.1. <u>Literature review from chronological reading of texts that were published 1990 - 1999</u>

Thirteen texts were read. The earliest was published in 1992. All are US-based. These texts are significant because they are few in number and represent early research into the field of live project education. There is little sense of awareness of similar work by others or of this being a field of activity and research. All texts have a focus on designbuild projects and most are described using case studies, normally undertaken by the author with little or no theoretical basis. There are early suggestions of the potential of live projects as a vehicle for progress in pedagogy, sustainability, employability and social justice but these are not yet evidence-based claims. Some projects involve making that is innovative but without any external collaborative element to make it 'live' (Anderson and Priest, 2014, p. 13) . Installations are often temporary and / or modest in scale and complexity. This is suggestive of live project programmes that were in the early stages of becoming established.

Carpenter's book (1997) remains influential within the field today. Deamer edited two issues of the Journal of Architectural Education (JAE) under the themes of design pedagogy (Deamer, 1999a) and temporality (Deamer, 1999b) that, probably for the first time, brought together a range of different live project activity. She acknowledges the radical nature of these projects (1999a, p. 96). Several of the texts suggest that live projects are a reaction to systemic problems in architectural education, practice and society (Clipson, 1992, p. 218; Scarpa, 1999, p. 36). Although some significant US designbuild programmes were active in the 1990s, such as *Rural Studio* and *Studio 804* they do not seem to be publishing their work in academic contexts at this time.

4.2.2. <u>Literature review from chronological reading of texts that were published 2000 - 2009</u>

Thirty-nine texts were read: thirty North American-based, 8 UK-based and 1 Swiss-based authors. In them, a fragmented awareness is emerging of the work of others and that live projects may be worthy of study in themselves. Although the majority of publications remain small scale case studies by the authors of the project, some authors begin to offer a broader perspective, a wider range of evidence and a more analytical approach: Chi (2002, p. 161) makes an early call for 'critical discussion of the nature, content and relevance' of live projects and for exploration of their pedagogical motive.'

The 39 texts show that live project programmes are proliferating, several are mature and a greater range of different live project types are undertaken. Some of these programmes are beginning to publish their work in academic contexts: Ascher-Barnstone (2002) applies an analytical approach to a range of live projects undertaken by *Studio, 804*. Oppenheimer Dean and Hursley publish two influential books on *Rural Studio* (2002; 2005). Two surveys of live project education are undertaken: Pearson (2002) reports on University-Community Design Partnerships in the US; Sara surveys live project activity in 34 UK schools of architecture (2004, p. 198) and finds evidence of live project activity in UK, US, Australia, Cuba and Sweden (2004, pp. 131-144).

The search begins for appropriate pedagogical theory: Erdman and Weddle (2002) discuss the challenges of theorising live projects; Oak (2000) and Chun and McDonald (2002) introduce pedagogical theories such as Learning by Doing; Watt and Cottrell (2006) evaluate different pedagogical theories in order to establish a theoretical framework. Sara's thesis provides a definition of live projects (2004, pp. 10-11). Oak (2000) and Sara (2006) generate guidance and best practice advice on the pedagogy of live projects. Sara (2006) categorises different types of live projects, for an inter-disciplinary audience.

Jemtrud and Cazabon (2002) suggest the potential of live projects as a vehicle for research. Several authors report on the potential of live projects to explore innovations and issues such as digital fabrication (Better, Cosmas and Piermarini, 2002); activism (Morrow, 2007); and vernacular / heritage development (Verderber, 2009).

4.2.3. <u>Literature review from chronological reading of texts that were published 2010 - 2014</u>

Thirty-seven texts were read: 12 North American, 16 UK, 4 South African and one each from Chile, Australia and Norway. One co-authored text is by authors based in Slovenia and Kosovo / Serbia and another has authors based in North America, Australia and UK. There is a momentum of increased publications internationally and an emerging sense of live projects as a legitimate field of enquiry. Dodd, Harrisson and Charlesworth (2012, pp. 2-3) discuss the difficulties of defining and categorising live projects and the absence of criteria or a theoretical basis by which to do so. Harriss and Widder's book on live project pedagogy aims to move 'Live Projects away from the realm of provocation and marginality….towards a holistic integration into current and future architectural curricula' (2014, p. 1).

Academics begin to make more targeted efforts to become aware of the work of others, learning from it, collaborating, identifying gaps in knowledge and contributing to fill them. Canizaro (2012) analyses established US designbuild projects via a survey, 15 interviews, and a literature review. Uribe Ortiz (2011) provides important evidence of a mature programme of live projects based at the University of Talca, Chile. Several of Dodd, Harrisson and Charlesworth's (2012) 20 Australian and three UK contributors discuss matters beyond their own work such as contemporary global issues and pedagogical or ethical theory.

Differences of approach and terminology are gradually recognised and common ground begins to be identified. Voulgarelis (2012) considers US designbuild and UK live project activity together. Gaber's (2014) paper includes the first mention found in the literature review of the term 'live project' by a US-based author. The general quality of reflection, critique and methodology rises. Brown's 'socially constructed critique' (2012, p. 281) of live project education includes a survey of 49 schools of architecture in UK and Ireland; interviews with 21 educators; and a historical analysis of the development of live project education in four different disciplines. Verderber (2014) generates a pilot taxonomy of US designbuild education.

4.2.4. Literature review from chronological reading of texts that were published 2015 - 2020

Fifty texts were read: 10 North American, 20 UK, 4 South African, 3 Australian, 2 each from Norway and Taiwan, one each from Germany, Austria, Nigeria, Indonesia, Lebanon and Denmark. Three co-authored texts are based as follows: Slovenia and Kosovo / Serbia; North America and UK; North America, Ireland and UK. Not only is live project activity and research more international than before, it is also more inter-disciplinary (Walkington *et al.*, 2017; Liang *et al.*, 2018; Ternenge, 2019). Texts are published that give broader overview of the field such as Salama's (2015a) review of contemporary architectural education in which live project education is considered as offering a significant new direction for architectural education. Delport (2016) and Kraus (2017) consider live project and designbuild education together, teasing out contradictions and duplications.

There is more variation in analytical perspectives, although Delport notes the continued lack of theoretical grounding in the field (2016, p. 106). Delport categorises designbuild education into six typologies and devises ten pedagogic tools to manage issues such as assessment, collaboration and complexity (2016, pp. 144-167). Doucet's (2017) historical perspective roots both UK and US live project education in the radical architectural pedagogy of the US and Europe in the 1960s. Stonorov's (2018, pp. 10-15) time map of designbuild case studies, although lacking a methodological explanation of what has or has not been included and why, provides a very useful gathering of examples, mostly in US and Europe.

The relationship of live projects to pedagogy, practice and research and their potential to cross between them is being acknowledged and explored (Delport, 2016; ACSA, 2019; Fojcik, Fojcik and Pollen, 2020). The quality of critique, available information and understanding of how to evaluate live projects is improving: Kraus (2018) adopts an ethical and pedagogical perspective to discuss the importance of learning from failure; Mohareb and Maassarani (2018) urge rigorous procedures for success that include testing, inter-disciplinary working and stakeholder involvement; Verderber, Cavanagh and Oak (2019) report on the multi-disciplinary evaluation of a designbuild collaboration between ten universities to build four timber gridshell structures.

4.3. Coding of themes during the Literature Review

A system of coding was used in order to identify the role of the published work in the field of live project inquiry. Themes were identified that were relevant to the published work and its contribution to knowledge. Whenever a theme was identified in the literature review, it was coded. Figure 5 shows the number of texts where each theme was identified.
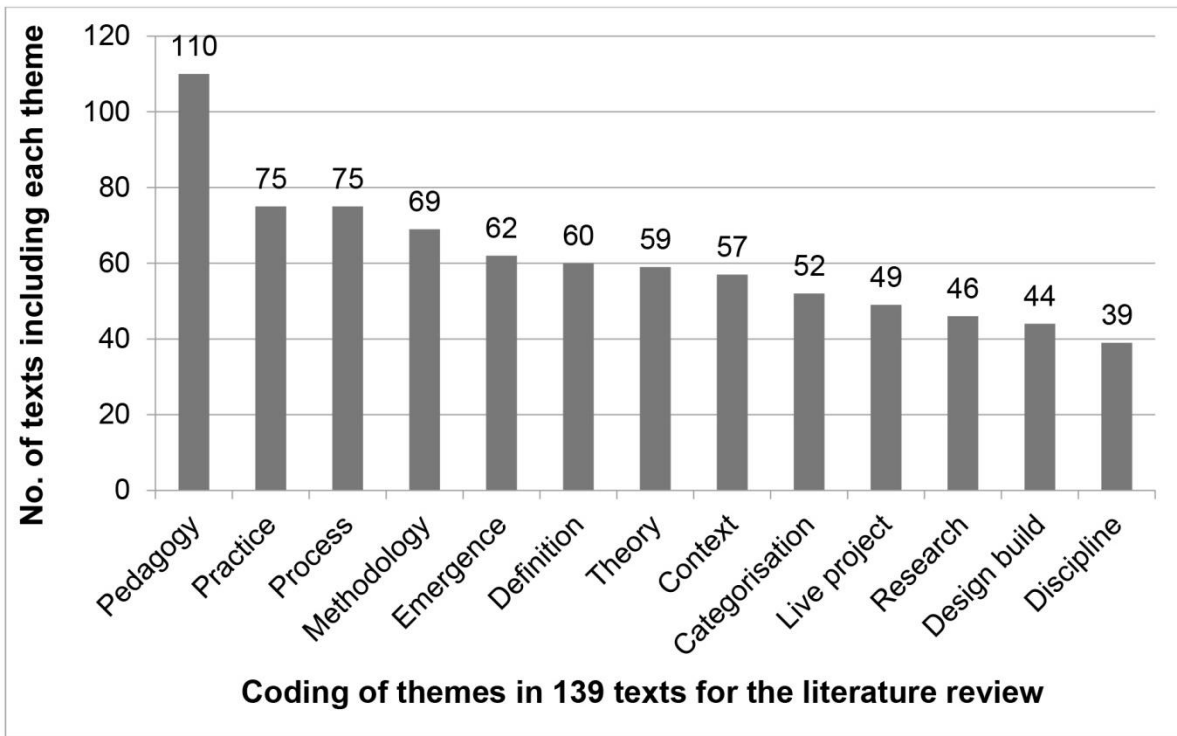
Figure 5. Bar Chart showing the number of texts that included the themes that were coded during the literature review

Of the 139 texts in the chronological literature review, 110 included the theme of pedagogy, reflecting its identity and use as a pedagogical method, tool or vehicle. Practice and Process were the next most common themes, with 75 texts referring to them. Pedagogy and Practice were frequently discussed together because of the use of live projects to teach students via practice and to a lesser extent because findings from live project practice are informing new directions in professional practice. Process was discussed frequently, probably because live project education prompts methods such as collaborative design that challenge conventional assumptions about authorship, participation and assessment. Respectively, 62, 60 and 52 texts referred to Emergence, Definition and Categorisation, reflecting live projects as an emerging field and the effort to understand them better. Given that these 139 texts are academic in nature, it is also interesting to observe that only 69 and 59 (less than half of the texts) made an explicit or clear reference to Methodology or Theory respectively. This reflects the emergence of live projects as a field of academic inquiry, lacking a body of literature or precedents of how to express their findings as a form of research. A relatively small number (39) of texts refer to disciplines beyond architecture.

4.4. Literature Review: conclusion

The literature review involved a comprehensive overview of the field. It is significant because it is international in its scope and inclusive of the different pedagogic traditions and terminologies currently in use in live project education. It demonstrates that an exponential increase in live project inquiry has occurred since 1990 (See Figure 4). Coding of the literature supports my hypothesis that live projects are an emerging field of inquiry, with the prevalence of themes such as Definition, Emergence and Categorisation, as well as the relative lack of Methodology, Theory and Research themes.

The majority of available literature comprises individual articles which use the author's own work and reflections as a case study. Many of these authors are disseminating valuable expertise and specialist knowledge but a body of knowledge that is generated in this limited way can lack awareness of the work of others. This began to improve with important work to establish the field of live project education: (Pearson, 2002; Sara, 2004; Brown, 2012; Canizaro, 2012; Dodd, Harrisson and Charlesworth, 2012). These authors did not have the benefit of a substantial body of reliable publications to consult and instead focused on the important task of unearthing and understanding evidence of live project activity, normally at a national level. Publications gained in quantity and quality in the 2010s (Delport, 2016, p. 106). Access to more reliable peer reviewed research has improved mutual understanding among participants and stimulated the emergence of live projects as a significant field of study within architectural education. Examples of progress in the effort to devise methodologies of analysis include Delport (2016) and Verderber, Cavanagh and Oak (2019). Works such as Salama (2015a), Delport (2016) and Kraus (2017) are significant for their inclusive and comprehensive overview of the field.

5. Developing live project education as a field of pedagogy, practice and inquiry

The contribution to knowledge made by the published work is described in sections 5-7. See Figure 1 for a reminder of how each section relates to the objectives of the critical appraisal.

Section 5 addresses fundamental questions explored by the published work such as the definition, categorisation, pedagogy and theorisation of live projects which were significant and relevant to the field of live project education as it was expanding internationally and gaining in quality of reflection, critique and methodology.

Section 6 explores specific knowledge contributed by the published work that was derived from live project activity and inquiry that expands understanding of architectural education, practice, research and the design process.

Section 7 discusses published work that intersects with other disciplines or professional bodies, influencing pedagogy or policy.

There are overlaps in timing and content between the published works so sections 5-7 do not represent sequential phases. However, the fundamental work described in Section 5 to document, understand, define, categorise and theorise live projects established a basis upon which it became possible to draw more secure findings from live project activity and inquiry as described in Sections 6 and 7.

5.1. Practicing, documenting and reflecting on live project education

5.1.1. <u>OB1 LIVE online database</u> (Anderson, 2008)

In 2008, limited information was available about live project activity (Delport, 2016, p. 106). Pearson's report on University-Community Design Partnerships for the National Endowment for the Arts surveyed 85 community design programmes, 70% of which were connected to universities (2002, pp. 16-17). Sara surveyed live project activity in 34 UK schools of architecture. Of the 21 respondents, 19 schools had 'some element of 'live-ness' (2004, p. 200).

In order to contribute to the task of documenting and disseminating live project activity, I recorded the outputs of my own live project practice via *OB1 LIVE* (Anderson, 2008), an open source online database. With Colin Priest, my teaching partner from 2008 until 2012, we initiated OB1 LIVE, a programme of live projects whereby first year undergraduate Architecture and Interior Architecture students at Oxford Brookes University participate in live projects in collaboration with local community organisations. Between 2008 and 2020, 29 live projects have been completed. These live projects form the basis of the practice-based research, observations and reflections in the published written work (Anderson, 2012; Anderson and Priest, 2012b; Anderson, 2014a; Anderson, 2014b; Anderson and Priest, 2014; Anderson, 2017a; Anderson, 2017c; Anderson and Priest, 2017).

The *OB1 LIVE* database (Anderson, 2008) was an effective means to initiate dialogue with others in the field, particularly because very few examples of live projects at undergraduate level had been documented and in 2008 I could find no other examples of first year undergraduate live projects. The OB1 LIVE outputs contributed evidence to the debate about whether or not live projects were too complex for undergraduate students to undertake (Morrow in Harriss and Widder, 2014, p. xx).

5.1.2. <u>Live Projects Network</u> (Anderson and Priest, 2012a)

As Brown noted in his thesis,

> there is much work still to be done in developing a comprehensive theoretical knowledge base relating to live projects….The field can best be enhanced through sustained, comparative multi-site research that contextualises and critically evaluates live project teaching against established pedagogical and ethical frameworks (2012, p. 273).

The Live Projects Network (LPN) (Anderson and Priest, 2012a) represents a significant contribution towards this effort. LPN is an open source online international database of live project case studies. LPN currently comprises 259 case studies in 37 different countries by 97 different educational organisations. It was launched at the Live Projects Pedagogy International Symposium at Oxford Brookes University, Oxford, 24-26 May 2012. LPN is a resource for academics, practitioners, students and collaborators involved in live projects. Case studies meet our definition of a live project and can be searched on the database according to six factors common to all live projects (Anderson and Priest, 2014, p. 11).

Citations discussing LPN credit it as an initiative that improved international awareness of the importance of live projects in contemporary architectural education (Kraus, 2017, p. 28) and contributed to the establishment of:

> strong supportive communities of project academics [that] have emerged internationally with the aim of sharing and discussing their work in design-build and live education (Delport, 2016, p. 121).

The online and open source nature of LPN was key in enabling a more fluent dialogue between disparate actors. Citations acknowledge the opportunities that LPN created for live project participants to disseminate their work (Robazza in Anderson, 2017a, p. 564); its function as a means "to share intelligence about live projects with other educators, students, and professionals" (Kattein, 2015, p. 298); and the access that it provides to plentiful case study information about live project activity internationally (Brown in Anderson, Godiksen and Harriss, 2016, p. 1).

In discussing areas for future live project research, Harriss identified that

> devices such as the formulation of the Live Project [sic] Network by Jane
> Anderson and Colin Priest at Oxford Brookes University have demonstrated
> through the scale of their popularity that their [sic] remains further scope for
> architectural educators to explore working collaboratively towards developing
> shared frameworks to enable best practice (2014, p. 342).

5.1.3. <u>Design for the Common Good network of networks</u> (Design for the Common Good, 2017)

As the momentum and diversity of live project activity grew internationally, I collaborated and engaged in dialogue with other networks such as the North American *design/build exchange* (dbX) (Verderber, Cavanagh and Oak, 2019, pp. 15, 262). Collaboration with two further networks, DBX (Colwill, Hartig and Pawlicki, 2014) and SEED (*Social Economic Environmental Design Network*, 2005) led to the establishment in 2017 of *Design for the Common Good* (DCG) (*Design for the* Common *Good*, 2017). DCG was joined by the *Pacific Rim Community Design Network* (PacRim) (Pacific Rim Community Design Network, 1998) in 2020 and the Curry Stone Foundation (*Curry Stone Foundation*, 2007) in 2021.

DCG, still in its development phase, disseminates information and peer review via exhibitions, conferences, awards and an open access online map of case studies. We aim to connect practitioners, academics, students and communities engaged in design for the common good via methods such as live project / designbuild education, service learning, public interest design, community design, participatory design and co-design.

5.2. Defining live project education (Anderson and Priest, 2014, pp. 9-17)

5.2.1. <u>Foundational work to develop an evidence-based definition of live project</u>
<u>education</u>

Working within the emerging and contested field of contemporary live projects
(Dodd, Harrisson and Charlesworth, 2012, p. 2; 'Living and Learning,' 2014, p. 155),
I observed that a reliable, evidence-based definition of live projects would provide a
foundational contribution that could establish common ground for dialogue and
enable the field to progress. Having experimented with, and reflected upon a range
of different OB1 LIVE projects as well as gathering and analysing data from LPN live
project case studies, it was possible to identify six factors that were common to all of
these live projects. This shifted the point of analysis from the product of a project to
its process and enabled connections to be made between projects that previously
had been seen as unconnected, thus expanding the boundaries of what constituted
a live project. The six factors were incorporated into an inclusive and flexible live
project definition (Anderson and Priest, 2014, pp. 11-13), capable of application in
multiple contexts and disciplines. These findings were presented as a conference
paper at the *Live Projects Pedagogy International Symposium* at Oxford Brookes
University, Oxford, 24-26 May 2012 prior to publication.

5.2.2. <u>Progressing understanding of live project education via the definition</u>

Sara (2004, p. 2) had published an important early definition described by Brown as
'a comprehensive definition of the live project according to the University of Sheffield
model' (2012, p. 40). Morrow compares Sara's 2004 definition with our 2014
definition and finds that our definition contributes to knowledge because it goes
beyond describing the activity of live projects by considering the context and also
because it provides 'the means to sift and sort case studies, beginning a process of
classification through which a community and lineage can emerge' (Morrow in
Harriss and Widder, 2014, p. xix). Generously, Sara employed our 2014 definition in
her later work (Sara and Jones, 2018, p. 330).

5.2.3. Demonstrating common ground between different spheres of activity

Brown considered a range of contemporary live project descriptions and definitions (Sara, 2006, p. 1; Watt and Cottrell, 2006, p. 98; Petrescu and Chiles, 2009, p. 110; Dodd, Harrisson and Charlesworth, 2012, p. 2; Anderson and Priest, 2014, p. 13) and observed that

> While the modern architectural live project focused upon architecture-as-built-product, the postmodern live project places great emphasis on architecture-as-process (Brown in Anderson, Godiksen and Harriss, 2016, pp. 13-15)

The requirement for a built architectural outcome brings two significant limitations to any definition of live projects. Firstly, it excludes any other disciplines or pedagogies that are not motivated by the production of a built outcome. Secondly, it marginalises other important work that architects do such as strategic planning and post-occupancy evaluation. In 2011-12, Canizaro undertook a survey of 34 US designbuild programmes. His description of designbuild education would be recognisable to many designbuild educators.

> With design-build, students engage in both the design and construction of projects, small and large, simple and complex…It is referred to variously as hands-on learning, learning-by-making, learning by building, 1:1, and is seen as a variant of experiential learning promoted early by John Dewey and later by David Kolb (Canizaro, 2012, p. 21).

The requirement for a built outcome explains why two established movements in US architectural education, designbuild and community design occupy separate spheres despite professional architectural practice encompassing both. It also hampers recognition of common ground between designbuild and live project education. Kraus cites our live project definition when advocating that the term live project be used as an umbrella which encompasses designbuild education.

> While some observers have understood designbuild education and the live projects model that has emerged in British universities as two parallel and largely synonymous pedagogical models, one associated with US-based universities (although emerging globally) and the other associated with UK-based universities, this understanding is flawed. The live project, according to Jane Anderson and Colin Priest, consists of six factors "common to all Live Projects: external collaborator, educational organisation, brief, timescale, budget and product." This product need not be a physical work of architecture….The term live project, then, is not a synonym for designbuild but rather an umbrella. The US context lacks a universally accepted term for architectural projects that engage constituencies beyond the architecture studio but that are not designbuild-based…Therefore, it seems natural that live projects be adopted as the umbrella term that it is, in both UK and US contexts, as well as elsewhere (Kraus, 2017, p. 29).

I had come to a similar conclusion, and decided that for clarity, designbuild education should be 'considered as being within the field of live project education.' (Anderson, 2014a, p. 213).

Perold and Delport working in a South African designbuild context also cite our definition when concluding that a "design-build project, in turn, is a specific type of live project that has a built structure as outcome." (in Costandius and Botes, 2018, p. 44). Pawlicki working in a German designbuild context concurs (2020, pp. 27-28). Reflecting in 2015 on their 2012 symposium, Hartig and Pawlicki include five out of six of our factors in their own definition ('DesignBuild Studio: New Ways in Architectural Education. Symposium Proceedings,' 2012, p. 36).

5.2.4. <u>Influence and impact of the definition</u>

Diverse educators have used our definition to reflect upon, analyse and compare their practice ('Living and Learning,' 2014, p. 115; Christiansson, Grönvall and Yndigegn, 2018, p. 4). It has been widely discussed and adopted. Since the definition was published (Anderson and Priest, 2014), 21 citations of the definition appear within the 64 works in the literature review that were published from 2014 onwards. Harriss and Widder consider the publication to include findings that are 'foundational to Live Projects practice' (2014, p. 2).

5.3. Categorising and taxonomising live project education (Anderson, 2014a; Anderson, 2017b)

5.3.1. <u>The problem of categorising live projects</u>

Categorisation of an emerging field is useful for those seeking to understand its extents and nature. It allows recurring patterns to be identified and also furthers understanding of elements that differ and why this is the case.

From the literature review we can see that several attempts have been made to categorise live projects, most employing only one characteristic with which to differentiate them. Stonorov (2018, pp. 10-15) adopted a linear genealogical approach to create a time line of designbuild education. Brown (2012, pp. 271-2) adopted a historical perspective and identified a development from "modern" to "modern to postmodern" to "postmodern" phases of live project education in the UK. Brown, Manfredini, McPherson et al ('Applied Collaborations,' 2015) categorised their conference proceedings according to the nature of the collaboration employed. Butterworth (2013, p. 36) reflected on Sheffield School of Architecture's extensive live projects programme and identified eight categories of learning contexts.

Canizaro derived an early analysis from his survey of 34 US designbuild programmes. His methods for data gathering and analysis are not stated, leading us to surmise that the conclusions are the result of the author's own empirical observations. Canizaro categorised designbuild projects into eight 'instructional intentionalities' (2012, pp. 22-26); ten 'instructional tactics' (2012, pp. 27-30) and five 'issues and challenges' (2012, pp. 32-34). Canizaro's model doesn't explain how these different categories inter-relate, limiting his observations to the conundrum that the surveyed programmes exhibit 'the radical heterogeneity of design-build programs as well as the surprising commonalities they share' (2012, p. 31) In short, convergence and divergence were observable but the reasons and mechanisms for this were as yet unknown and unmodelled.

Instructional Intentionalities	Instructional Tactics	Issues and Challenges
Construction Experience	Design Process	Collegial Resistance
Community Service	Clients	Administrative and Institutional Resistance
Professional Practice	Projects	Student Resistance
Critique of Academia	Getting Started	Equipment and Facilities
Awareness of Place	Work	Quality of Work
Collaborative Skills	Financing	
Project Delivery	Scheduling	
Materials & Materiality	Organization	
	Location	
	Sustainability	

Figure 6. Categories of designbuild education from Canizaro's 2011-12 survey of 34 US designbuild programmes (Canizaro, 2012)

Delport's comprehensive international literature review included diverse forms of live project, regardless of terminology or tradition. However, Delport narrows the problem of categorisation to designbuild education only, arriving at six designbuild typologies (2016, p. 353) and ten pedagogical tools (2016, pp. 144-162).

Dodd, Harrisson and Charlesworth articulate the process of categorising live projects (2012, pp. 2-3). They started to categorise by context and then by the 'intentions for undertaking the project' (2012, p. 250). Dodd et al acknowledge the difficulties of categorisation:

> The detail, variety, idiosyncrasy and messy contingency of the live projects presented here might lead one to believe that each one is a unique, situated adventure and to question the potential for standardisation, transfer and replication of approaches (Dodd, Harrisson and Charlesworth, 2012, p. 255).

They also noted the tendency of projects to "sit between categories" (Dodd, Harrisson and Charlesworth, 2012, p. 255). This problem of finding that projects overlap when attempts are made to fit them into single categories is symptomatic of live projects being 'complex pedagogies' (Brown, 2012, p. 281). The complexity of the reality that a live project engages with provokes it to respond to all of the different and conflicting issues present in and around the project. Therefore a multi-perspective approach to categorising live projects is needed, one that models their authenticity and complexity.

5.3.2. <u>Developing an evidence-based and peer reviewed taxonomy model of live project education</u>

Having gathered a large data set on LPN (Anderson and Priest, 2012a) and used it to establish and test a reliable and evidence-based definition of live projects (Anderson and Priest, 2014), it became possible to devise an evidence-based method to categorise live projects. The aim was to develop an objective and flexible method to analyse live projects that represented and accommodated their diversity. I recognised that the complexity of live projects meant that no single type of category would be sufficient as a means of differentiation and that genealogical approaches tended to emphasise unbroken pedigrees and prominent elites, neglecting the peripheral activity that was so important to the diversity and innovation of live projects, described by Salama as 'alternative and unconventional paradigms' of design pedagogy (2015a, p. 14). A taxonomy model had potential because its structure was inclusive and flexible enough to accommodate an emerging evolving field of live projects that exhibited both convergence and divergence.

The initial taxonomy was presented at the *Living and Learning* conference (Anderson, 2014c, pp. 227-232) and to designbuild peers at the *Working Out* conference (Anderson, 2014a, pp. 213-220). This pilot comprised 97 LPN case studies and an initial attempt to bring multiple categories together into a unifying taxonomy diagram.

After improving the methodologies for quantitative and qualitative analysis; increasing the data set to 154 LPN case studies in 28 countries; undertaking the analysis for a second time; and refining the taxonomy diagram to reflect a better understanding of the inter-relationships between the different types of categories, a definitive paper was published (Anderson, 2017b). See Figure 7 for the taxonomy diagram. The coding of each case study author's own words allowed their values to shape the taxonomy rather than impose my own perception upon the model. It also eliminated the overlap problem observed by others (Dodd, Harrisson and Charlesworth, 2012, p. 250; Fattinger in Association of Collegiate Schools of, 2014, p. 167) (Verderber in Association of Collegiate Schools of, 2014, p. 175) because the purpose of coding was to identify the full spectrum of, and relationships between different activities rather than try to fit each case study into a finite set of categories.
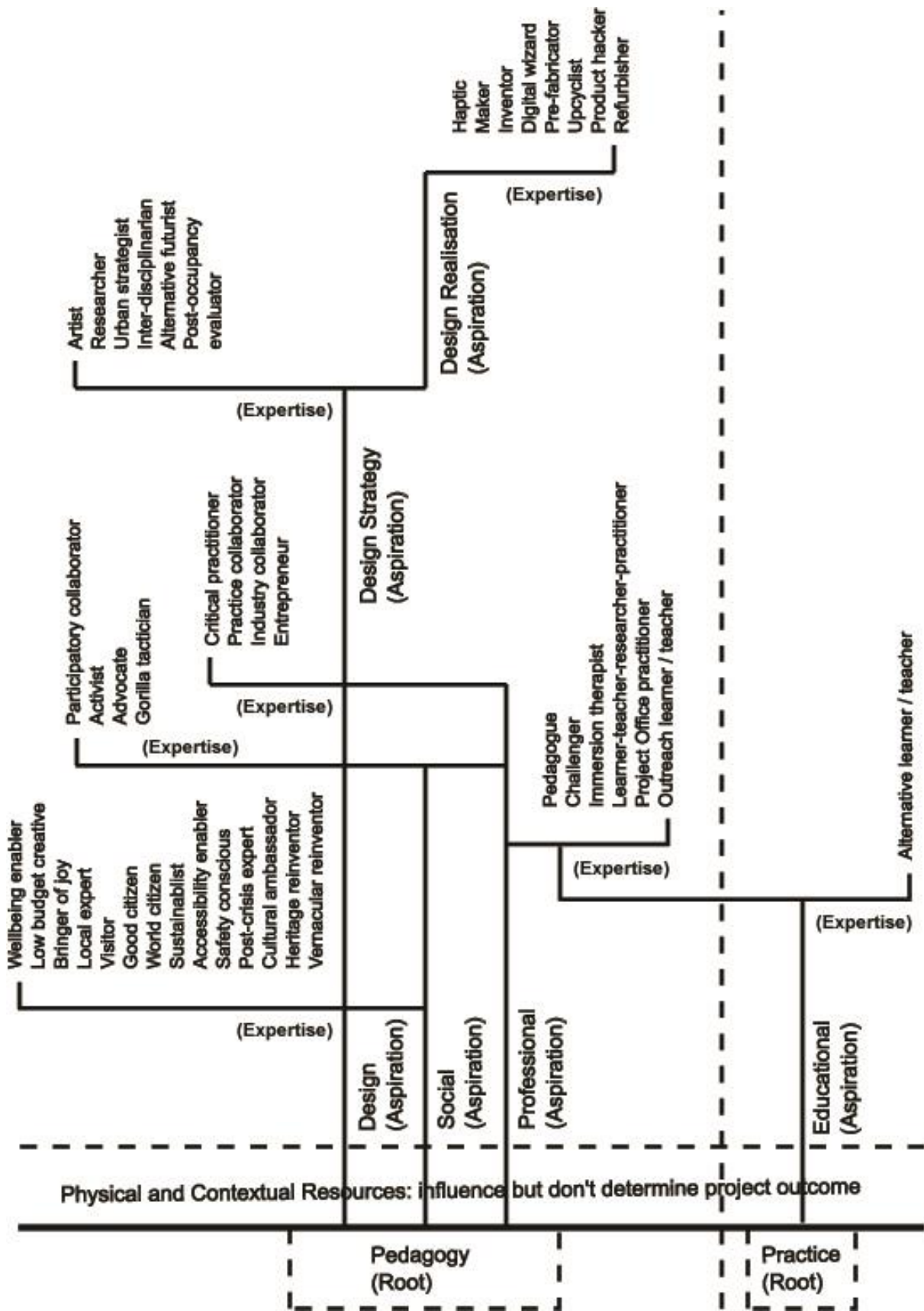
Figure 7. Live project taxonomy diagram (Anderson, 2017b)

As a taxonomy of live project education, it is more comprehensive than models of designbuild education which require a built object as an outcome (Delport, 2016, p. 7; Kraus, 2017, p. 29). The taxonomy (Anderson, 2017b) represents a significant contribution to knowledge because it is based on the largest and most diverse and standardised data set of any previous or subsequent publication to date. The methodology was devised to be inclusive of variation and sensitive to peripheral data. The taxonomy employs a reliable definition of live project education as its basis (Anderson and Priest, 2014). It identifies different models and strategies rather than fixed outcomes. The live project taxonomy is the only model that attempts to bring together different types of categorisation together in a single taxonomy and to model how different categories relate to each other (Anderson, 2017b, p. 13).

5.3.3. Comparison of work to develop taxonomy models

In parallel with my presentation of a pilot live project taxonomy (Anderson, 2014a; Anderson, 2014d), Verderber presented a pilot designbuild taxonomy (Verderber in Association of Collegiate Schools of, 2014, pp. 174-185). It comprised a list of ten specialisms that were found in the projects or curricula of designbuild programmes. Verderber observed the resistance of projects to fitting within the model's single categories (Verderber in Association of Collegiate Schools of, 2014, p. 175).

In 2019 a revised version was published, no longer described as a taxonomy but a 'conceptual framework' of 'territories of educational design/build' (Verderber in Verderber, Cavanagh and Oak, 2019, pp. 29-30 and 32). Verderber also includes a separate 'operational framework' of 'field determinants of educational design/build' (Verderber, Cavanagh and Oak, 2019, pp. 44-45) which categorises physical and contextual resources addressed by live projects. The two frameworks remain separate and categories in both frameworks remain singular, lacking an overall model to explain the relationships between different elements.

Verderber advocates that the development of the emerging field of designbuild education 'deserves no less than a fully rigorous level of classification, interpretation and analysis' (Verderber, Cavanagh and Oak, 2019, p. 46). Verderber et al. acknowledge the contribution of the published work to this endeavour, albeit with some confusion caused by a footnote error giving the wrong web address for LPN (Verderber, Cavanagh and Oak, 2019, p. 262).

6. Expanding understanding of architectural education, practice, research and the design process

6.1. Connecting architectural education, practice and research via live project education

6.1.1. Live projects as a means to teach knowledge perceived as 'practice-based' (Anderson and Priest, 2012b)

Some aspects of architectural design and practice are difficult to teach in an educational institution because they are difficult to transport, stimulate or simulate. These aspects tend to possess factors such as contingency, resources, risk, chance and conflict that are brought to a design project by external actors and authentic contexts. Live projects provide opportunities for students to participate in authentic architectural projects in social contexts while learning with the support of their tutors. They are vehicles for learning knowledge and skills that are difficult to integrate into conventional design studio projects, such as construction, ethics, regulations, collaboration, inter-disciplinary working and resource management. Live projects are well-suited to pedagogic methods commonly used by architectural educators such as learning by doing (Dewey, 1997), experiential learning (Kolb and Fry, 1974) and problem-based learning (Barrows and Tamblyn, 1980).

Anderson and Priest (2012b) is an early paper that includes initial findings from my own live project practice. It begins several strands of research and contributions to knowledge that were developed in later work. These are:

- Identifying pedagogical theories relevant to live project education at a time when Brown (2012, p. 273) noted the need for this in order to enable the field to emerge and develop.

- Identifying precedents of pedagogical practices relevant to live project education at a time when Harriss (2014, p. 342) noted the lack of such information.

- Questioning the location of live project education.

- Questioning what level of experience students needed to have before they could participate in live projects.

- Questioning what could be defined as a live project.

6.1.2. <u>Live projects as a vehicle for research</u> (Anderson, 2014a; Anderson, 2014b; Anderson, Godiksen and Harriss, 2016; Anderson, 2017a; Anderson, 2017b)

Few publications report on live projects as a vehicle for research. Exceptions include (Hinson, 2007; Orlowski in Anderson, 2017a; Fojcik, Fojcik and Pollen, 2020). Perhaps this gap in the literature exists because live projects are not yet accepted as a form of research. The Association of Collegiate Schools of Architecture (ACSA) considers community engagement to be a form of research but considers that 'unique modes of practice such as design-build….. require further studies' ('ACSA White Paper on Assessing the Quality of Architectural Research & Scholarship,' 2019, p. 8).

Several commentators note the suitability of live projects as a means to connect education, practice and research due to their activity in all three spheres (Brown, 2012, p. 281; Dodd in Dodd, Harrisson and Charlesworth, 2012, p. 24; Mohareb and Maassarani, 2018, p. 147). I discussed live projects as the site of 'realisation, theorisation and pedagogy' (Anderson, 2014a, p. 216). The literature review found references to different forms of research associated with live projects: Below is a list of each type and where it is discussed in the published work.

- Pedagogical research of live projects. Much of the published work includes pedagogical research of live projects. In particular: (Anderson and Priest, 2012b; Anderson, 2014b; Anderson, 2014a; Anderson and Priest, 2014; Anderson, 2017b)

- Research-informed teaching (Burgum and Stoakes, 2016, p. 3). Fojcik, Fojcik and Pollen (2020, p. 123) cite our description (Anderson and Priest, 2014) of live project activity and learning as an example of research-based learning.

- Applied research. I was able to contribute to knowledge by using the definition (Anderson and Priest, 2014) and taxonomy (Anderson, 2017b) to demonstrate that applied research activity occurred within live projects.

- Research-based learning (Burgum and Stoakes, 2016, p. 3). Analysis of case studies on LPN (Anderson and Priest, 2012a) and use of the spectra diagram to map different types of live project, demonstrated that student applied research projects sit comfortably within the definition of a live project (Anderson and Priest, 2014, pp. 13-16).

- Collaborative / co-creation of research and inter-disciplinary research. Anderson (2014b, p. 5) discussed the potential of both students and tutors to generate research via live projects and Anderson (2017a, p. x) extended this observation to include community partners and other external collaborators in the co-creation of research.

- Design research. The taxonomy of live projects (Anderson, 2017b, pp. 1-2) widens the scope of research generated via live projects to include design research.

6.2. Establishing and analysing pedagogical precedents for live project education

6.2.1. <u>Identifying and analysing live project precedents</u>

Recognising that the majority of live project literature was comprised of case studies, most of which were written by those involved in the case study and / or cited a narrow range of primarily US designbuild projects, I decided to seek precedents not previously been connected with live projects that could expand understanding. This included historical and inter-disciplinary precedents.

> There is a strong focus on the narration of successful design-build projects. This links directly to the first perceived gap in the literature: the lack of theoretical grounding in the research of design-build projects (Delport, 2016, p. 106).

The live project definition (Anderson and Priest, 2014, p. 13) made it possible to identify precedents in other contexts and disciplines that had not been discussed in the context of live projects previously. This shifted focus from study of the product of the live project and enabled analysis of the process. The published work helped the field to progress by piloting methods of analysis that explored a wider body of evidence than case studies, such as pedagogical methods, participant reflections and artefacts produced during the live project process.

6.2.2. <u>Analysing the work of John Hejduk</u> (Anderson and Priest, 2012b; Anderson, 2014a; Anderson, 2017c; Anderson and Priest, 2017)

Anderson and Priest (2012b) was the first to demonstrate the relevance of the work of architect, educator, artist and writer John Hejduk as a precedent for live project educational practice. The collaborative nature and student involvement in later built works were live elements that had not been previously considered and demonstrated the relevance of his work as a live project precedent. The only prior reference found in the literature review that discusses Hejduk in the context of live projects is a description of a Pasadena City College design and construction course using Hejduk as a precedent for a 1:1 scale building exercise that was not live (Creimer, 2006, p. 59). Hejduk had produced written, drawn and built works but these had not been considered as live projects. Close reading and analysis of these works plus pedagogical material and reflections from students, educators, designers and others who collaborated with him on built works enabled Hejduk's reputation as a paper architect to be reconsidered (Anderson, 2014b; Anderson, 2017c; Anderson and Priest, 2017).

6.2.3. <u>Analysing Environmental Art pedagogy</u> (Anderson, 2014b)

By 2014 there had been scant investigation by the architectural discipline into live project education in other disciplines despite this being identified as necessary in order to understand live projects more deeply (Harriss and Oxford Brookes, 2014, p. 343). The literature review found only two such studies: Sara (2011) investigated Information Systems and Brown (2012) investigated Planning, Medicine and Law disciplines. There was also recognition that socially engaged art practice methods were relevant to live projects (Morrow, 2007, p. 61; Dodd in Dodd, Harrisson and Charlesworth, 2012, p. 28). However, the pedagogy of socially engaged art had not yet been investigated in the context of architectural live project education.

I made this contribution to knowledge by researching the Public Art projects undertaken from 1985 at the Glasgow School of Art Environmental Art (EA) department, interviewing the former department head David Harding and Rachel Mimiec, a graduate of the course. The maturity of the EA course meant that the passage of time, the large body of Public Art projects undertaken and publications discussing the work enabled reflection on a substantial body of student work and its influence on the professional work of graduates. By mapping an undergraduate Public Art project onto the live project spectrum model, it was possible to make a direct comparison with architectural live project education.

6.3. Understanding the location of live project education (Anderson, 2014b; Anderson, 2019b)

There is a widespread view that live projects are a reaction against conventional design studio education (Erdman and Weddle, 2002, p. 175; Till in Dodd, Harrisson and Charlesworth, 2012, p. 4; Salama, 2015a, p. 12; Doucet, 2017, p. 7). Also, because the physical outcome of live projects is normally located outside the studio, there is a perception that live project education is also located outside the educational institution (Freear in Bürge, 2009, p. 47).

Anderson (2013; 2014b) explored the divergence and convergence between design studio and live project education. Salama noted the case made by the published work for the reduction of the dominance of the design studio ('Living and Learning,' 2014, p. 88). The argument being that this would enable the integration of learning that design studio teaching neglects, such as collaborative working, inclusive practices and holistic design processes. However, by analysing how live projects operate within authentic contexts, engage with collaborators and how they function pedagogically, the published work demonstrates that live projects are not located entirely outside the educational institution or in opposition to it. Even when physically or intellectually distant from the institution, the pedagogical purpose of live projects maintains the link to education. Live projects straddle pedagogy, research, practice and the community, enabling their mutual benefit. This view has resonated with others reflecting on the location and function of live project education (Sara, 2004, p. 245; Sara, 2011, p. 23; Harriss and Widder, 2014, p. 2; Love, 2018, p. 152).

The published work also demonstrated that the pedagogical and academic functions of live projects meant that their location was not only physical but intellectual too (Anderson, 2014b, p. 17). This more evolved understanding of live projects as forming a metaphysical conduit between institution and external community was explored later in more detail for an interdisciplinary pedagogical audience (Anderson, 2019b). This publication applied a spatial perspective to pedagogy, seeking to identify how learning is affected by (and can affect) the spaces in which it is situated.

6.4. Establishing a theoretical basis for live project pedagogy

Several scholars have noted gaps in the literature on live project pedagogy. Delport noted 'the lack of the development of specific pedagogic theory' (2016, p. 106). Brown observed that 'the participation of a third party (the client) renders many binary (teacher-student) pedagogical theories inappropriate' (in Harriss and Widder, 2014, p. 19). Verderber criticised the designbuild movement which 'continues to lack meaningful connections with broader scholarly discourses' (in 'Working out. Thinking while building,' 2014, p. 174). These gaps suggested that live project education needed to look beyond the architectural discipline for relevant pedagogical theories in order to expand its current understanding. It would then have to adapt or expand this knowledge in order to accommodate the innovative aspects of live project education. It would also need to develop bespoke pedagogical methods that were appropriate for application in the design and architectural disciplines. I contributed to this endeavour by seeking and interrogating learning theories developed outside the architectural discipline, demonstrating their relevant aspects, adapting them to a live project context and applying them to architectural live project education. These theories have since been discussed and adopted by several live project educators and scholars.

6.4.1. <u>Establishing situated learning as a theory relevant to live project pedagogy</u>

(Anderson and Priest, 2012b; Anderson, 2014a; Anderson, 2014b; Anderson and Priest, 2014; Anderson, 2017b; Anderson, 2019b)

Several pedagogical theories and methods that are used in conventional design studio teaching can be translated into a live project context with little difficulty. These include learning by doing (Dewey, 1997), experiential learning (Kolb and Fry, 1974) and problem-based learning (Barrows and Tamblyn, 1980). However, there is a need to find pedagogical theories and methods that help participants to learn and teach effectively and embrace the specific conditions of a live project context.

A key contribution to this effort was the application of Lave and Wenger's situated learning theory (Lave and Wenger, 1991) to my live project practice (Anderson and Priest, 2012b). Contemporaneous with this, Dodd, described live projects as a form of situated learning but did not explore the application of this model to live projects (Dodd, Harrisson and Charlesworth, 2012, p. 25). The only citation of situated learning in the context of live projects found prior to this is by Watt and Cottrell who considered its potential but rejected it in favour of collaborative learning theory which they considered to be more appropriate to live projects' 'unpredictable interaction with many different people' (2006, p. 101).

The literature review found 14 subsequent publications citing situated learning in the context of live projects, nine of which reference the published work. Harriss and Widder cite my use of situated learning theory which was previously 'only casually considered relative to the teaching of architecture' (2014, p. 2).

The published work provided analysis of situated learning theory as applied to live project education This generated insights that were relevant to the understanding how learning / teaching occurs in the social context of live project education and the participatory and reciprocal nature of socially constructed learning / teaching that live projects produce (Anderson, 2014b; Anderson and Priest, 2014).

The published work makes the following contributions to knowledge derived from study of situated learning theory in relation to live project education:

- Collaborative learning places the emphasis on what the group learns as a whole, which is an important product of a live project. However, my own observations are that students, tutors and external collaborators involved in a live project also acquire learning can be transformative and differs from person to person (Anderson, 2017b, p. 12). Situated learning theory is helpful when exploring this because it encompasses how a learner assembles meaning from their engagement with others and their participation in an authentic situation.

- Situated learning theory is particularly relevant when devising live project pedagogy for 'newcomers' to education, to a context or to a task (Lave and Wenger, 1991, pp. 114-117). Situated learning theory acknowledges the legitimacy of the participation of the non-expert, which is an important factor in a live project (Anderson and Priest, 2012b; Anderson and Priest, 2014). Anderson and Priest (2012b) outline a pedagogical strategy for teaching first year undergraduate students via live projects, demonstrating their legitimate participation, despite the paucity of precedents of first year undergraduate students undertaking architectural live projects. Permission to participate in an authentic context and to engage with others in that context enables learners to understand through experience the who, what, when, where, why and how of what they are learning, removing the abstractions employed in a conventional educational context and which are so confusing to novices (Anderson and Priest, 2012b).

- Situated learning theory was developed from research of apprenticeship models in different professions. Lave and Wenger describe apprenticeship as having a tension between 'continuity and displacement' that is fundamental to the social relations of production and reproduction (Lave and Wenger, 1991, p. 114). The inclusion of external collaborators in live projects allows for the social context to exert a more diverse influence than in a traditional apprenticeship model. In a live project, tutors relinquish sole occupation of the 'old-timer' (Lave and Wenger, 1991, pp. 114-117) and authorship roles, sharing them with external collaborators and distributing them according to the needs of each live project (Anderson and Priest, 2012b; Anderson, 2014b; Anderson and Priest, 2014).

6.4.2. Establishing Vygotsky's theories as relevant to live project pedagogy (Anderson, 2014a)

Anderson (2014a) introduces discussion of the pedagogical theories of Vygotsky in the context of live project education. Harriss (2014, pp. 88-89, 96, 159) alludes to Vygotsky's conception of learning as a social activity. Vygotsky's sociocultural view of learning has since found resonance with others in the field of live projects (Salama, 2015a, p. 223; Perold and Delport-Voulgarelis, 2016, pp. 45-46; Belfield, Khonsari and Lang in Anderson, 2017a, p. 18; Liang *et al.*, 2018, p. 6). The published work identified and interrogated aspects of his work that have had less attention in the context of live projects. Vygotsky's 'Paedology of the Adolescent' (Vygotskiĭ, Veer and Valsiner, 1994) describes the development of imagination, explaining the interplay of concrete and abstract thinking. When coupled with Vygotsky's ideas about the role of physical and psychological artefacts in mediating learning, the published work demonstrates how an understanding of these concepts allows us to leverage the potency of live projects in a discipline where students are learning to design and make objects.

6.5. Progressing understanding of the design process (Anderson, 2014a; Anderson, 2017a; Anderson, 2017c; Anderson and Priest, 2017)

6.5.1. <u>The role of live project education in improving our understanding of the design process</u>

The architectural discipline is moving from a predominant hyper-focus on the architectural object (Brown, 2013, p. 202) and becoming more tolerant of the view that the design process is of significance.

> design is seen by many leaders, educators, writers and practitioners as both process and product and, first and foremost, as an ethical decision-making system, rather than a manufacturing one (Charlesworth, 2013, p. 201).

Although the pre-eminence of the architectural object remains, live projects have been credited with helping to change minds and practices (Stevens in Dodd, Harrisson and Charlesworth, 2012, p. 258; Salama, 2015a, p. 223; Kraus, 2018, p. 42) by trialling alternative approaches to the process of design and how this could be valued, practiced, taught, assessed and communicated. Giving due consideration to the process of design is seen as a means to enable progress in design for social justice (Till in Dodd, Harrisson and Charlesworth, 2012, p. 8), sustainable design ('Living and Learning,' 2014, p. 161), design inquiry (Orr in Anderson, Godiksen and Harriss, 2016, p. 12) and design practices (Mannell, 2006, p. 29; McVicar in Anderson, 2017a, p. 155).

The literature review reveals two dominant perspectives on how live projects bring insights to the design process. The first explores live projects as a means to reconnect design thinking with making (Carpenter, 1997). The second explores live projects as a means to reconnect designers with society via participation and collaboration (Dodd, Harrisson and Charlesworth, 2012). The published work accepts the validity of both these perspectives and augments them with consideration of the following:

- The significance of the authentic location / context; design project / problem; and participants / collaborators in learning the design process.

- Live projects as a means for engagement of learners in all stages of a design project from inception to post-occupation.

This expanded view embraces the complexity of live project education in order to further our understanding of the design process, how it can be practiced, learned and taught. The published work has contributed to knowledge of the following aspects of the design process:

- The relationship between reality and imagination in the design process.

- The relationship between subject and object in the design process.

- The introduction of material culture theory in order to progress understanding of the interaction between the social and the material in the process and realisation of design.

- Increased awareness of the significance of the design process and the potential of this to progress architectural praxis e.g. via adoption of collaborative design methods.

- Improved understanding of how students learn the process of design, via insights gained from live project education.

- Initiatives in architectural education to record the design process so that it can be effectively evidenced and assessed (Pitchford, Owen and Stevens, 2021, p. 112).

6.5.2. <u>Reality and imagination: progressing understanding of the pedagogy and praxis of the design process</u>

Anderson (2014a, pp. 213-220) demonstrates the importance of the interaction between reality and imagination to live project learning, exploring this through Vygotsky's theories on child development (Vygotskiĭ, Veer and Valsiner, 1994). Two live project case studies are analysed to demonstrate how the interaction between reality and imagination alters in the mind of the designer during the design process. Anderson and Priest (2017) reassesses empirical responses and received wisdom about the relationship between reality and imagination in the design process. It demonstrates how improved understanding and manipulation of the fluctuations between reality and imagination for all participants can be used to include others in a more collaborative design process, as exemplified by many live projects which embrace co-design and other collaborative methods. It analyses differences in the perception of reality and imagination in live project education compared to professional projects.

6.5.3. Subject and object: progressing understanding of the design process

In order to progress understanding of the design process, the relationship between subject and object is explored via the introduction and analysis of several different theoretical and inter-disciplinary sources and precedents that had never previously been discussed in relation to live project education.

Anderson (2017c, pp. 37-60) draws together philosophical, literary, anthropological, archaeological and architectural sources to interrogate cultural confusion between subject and object:

- Buchli's (2013, p. 1) explanation of material registers is employed to improve an architect's understanding of the relationship between subject and object during the design process.

- The identification of the effect that the third party presence of the architect has upon the relationship between inhabitant and habitation during the design process.

- The theories, methodologies and practice of the architects Atelier Bow Wow are analysed to demonstrate how the ambiguities between subject and object can be a design generator.

Anderson and Priest (2017, pp. 183-192) analyse the complex and ambiguous relationship between subject and object in the written, drawn and built work of Hejduk, explaining how this was used as a deliberate design strategy. The paper also introduces Thing Theory (Brown, 2001) as a means to understand the shifting relationship between subject and object during the design process. Thing Theory is applied to transcripts of interviews with professional architects - several of which were undertaken by Anderson (2011) - in order to reveal the moments of transition from subject to object or vice versa during the design process.

6.5.4. <u>Significance of contribution to improve our understanding of the design process</u>

The significance of the findings described above about the relationship between subject / object and reality / imagination is in the improved understanding of the design process.

Investigation revealed that the object is indelibly conjoined to the subject during the design process. The architectural object cannot be generated without the co-existence of a subject because it is formed from both object and subject matter. Therefore the architectural object cannot be evaluated or understood without identifying and evaluating the holistic and complex series of processes and processors that formed the object. Neither can the architectural object be evaluated or understood without analysing its occupation upon completion. As Hejduk tells us, art is the shell of thought (Hejduk *et al.*, 1988, p. 340) and the shell can be used to interpret the thought, but why should we be reduced to working backwards from the answer when evaluating architecture? We lack methods to understand, articulate, record and evaluate the design processes that form architectural objects.

Improved understanding of the design process improves the ability to articulate and manage it as well as to include others. Anderson (2017a) describes the importance of co-design and co-production and creates the opportunity for its exploration in order to progress the praxis of architecture.

A particularly significant finding from this inquiry is the effectiveness of live projects as a means for students to gain a more accurate understanding of the design process. The authentic context, participants and design problem of a live project help students to understand and employ the interplay between reality and imagination in their design process. Alemany and Harkness express this transformation thus:

> Finally, they [live projects] have shown us that designing architecture can be fruitfully understood as growing and caring for not just a building, but also people, things and place (Alemany and Harkness in Anderson, 2017a, p. 144).

The published work also demonstrates that all participants, not just the architect, move between imagination and reality during the design process and that awareness of this opens up opportunities for others to contribute to the design process (Anderson and Priest, 2017, p. 190).

6.5.5. <u>Material Culture: finding common ground between disparate live project activity</u>

As described in section 5.2.3, a significant contribution of the published work is to demonstrate common ground between US community design (focused on the social) and designbuild (focused on the material) programmes. A further contribution is made by the introduction of material culture theories to the consideration of the design process of live projects (Anderson, 2017c). Material culture provides a lens through which community design and designbuild, two dominant perspectives on live project design, can be united. The published work demonstrates how material culture theory helps us to understand the social in the material and the material in the social.

The published work's application of material culture theory to live project education and the design process is novel. However this approach has found some recent support in the work of sociologist Oak and cultural anthropologist Nicholas in (Verderber, Cavanagh and Oak, 2019) who conducted ethnographic studies of the designbuild projects undertaken during the *Thinking While Doing* research project:

> It is becoming acceptable (in some scholarly venues) to consider people not only in relation to each other but also in direct relation to material worlds of buildings, products and infrastructural networks (Oak in Verderber, Cavanagh and Oak, 2019, p. 168).

7. Improving inter-disciplinary and professional understanding of live project education

7.1. Improving inter-disciplinary understanding of live project education

7.1.1. Inter-disciplinary collaboration, research methods and subject matter of published work (Anderson, 2008)

As described in the previous sections, the published work adopted the research strategy of openness to knowledge from, and communication with, other disciplines. My live project practice enabled inter-disciplinary collaborations such as the live project with community archaeology group Archeox and the Pitt Rivers Museum (Anderson, 2008). This live project activity informed inter-disciplinary research collaborations such as the establishment of a seminar group on inhabitation as part of The Oxford Research Centre in the Humanities (TORCH) that led to the publication of *InHabit* (Buxton, Hulin and Anderson, 2017) with contributions from the disciplines of archaeology, anthropology, history, literature, art, design, architecture and interior architecture. In short, the practice, methodology, research activity and subject matter of the published work includes examples of inter-disciplinary contributions to knowledge.

7.1.2. <u>Dissemination to, and impact on, a multi-disciplinary community</u> (Anderson and Priest, 2012b; Anderson and Priest, 2014; Anderson, 2017b)

When expressing the findings from the research, I was careful to do so in a way that was as inclusive of other disciplines as possible. For example, the definition of live projects has been structured to be 'inclusive' (Anderson and Priest, 2014, p. 9) of variation found in different practices and disciplines. The definition avoids terminology and characteristics that restrict it to the architectural discipline. The use of the term *live project* has been used in preference to *designbuild* so that non-architectural processes and outcomes can be included. Similarly, the taxonomy of live projects has been structured so that it can describe in an 'inclusive and flexible' way (Anderson, 2017b, p. 1) all who are involved in the project, regardless of discipline or lack of formal association with a discipline.

As evidence of the inter-disciplinary applicability of the published work, the literature review found ten citations of the published work since 2016 from authors in non-architectural disciplines. Four of these cite our definition of live projects (Anderson and Priest, 2014) in order to describe their understanding of what a live project is. They are writing from the disciplines of Digital Media and Design (Christiansson, Grönvall and Yndigegn, 2018); Geography (Walkington *et al.*, 2017); Computer Science (Ternenge, 2019); and from a multi-disciplinary perspective, looking at undergraduate research internationally (Sengupta and Blessinger in Hensel and Blessinger, 2020).

The published work has been cited by authors from non-architectural disciplines to discuss the following themes:

- Live projects as a vehicle to teach students how to conduct research (Walkington *et al.*, 2017); (Ternenge, 2019); (Maknun, Gloria and Muzakki, 2020); (Sengupta and Blessinger in Hensel and Blessinger, 2020).

- The use of live projects to teach imagination and creativity (Goodliff et al. in Anderson, Godiksen and Harriss, 2016); (Walkington *et al.*, 2017); (Liang *et al.*, 2018).

- The authentic context of live projects (Walkington *et al.*, 2017); (Goodliff et al. in Anderson, Godiksen and Harriss, 2016).

- Participatory design and collaborative working (Liang *et al.*, 2018); (Christiansson, Grönvall and Yndigegn, 2018); (Chang and Fang, 2019).

7.1.3. <u>Stimulating inter-disciplinary live project research via the published work</u> (Anderson, Godiksen and Harriss, 2016; Anderson, 2017a)

The literature review shows that most architectural live project research draws upon architectural sources. This is perhaps symptomatic of a field that is in the process of establishing itself. However, limiting live project investigation and activity to the architectural sphere is not conducive to establishing the fullest understanding of live projects, particularly because live projects are acknowledged as being suited to inter-disciplinary collaboration (Canizaro, 2012, p. 34; Cerulli, 2017, p. 15).

Harriss (2014, p. 343) notes that what 'warrants further investigation, is a deeper study of Live Project inter-disciplinarity'. The publication of a special issue of the Brookes e-Journal of Learning and Teaching (Anderson, Godiksen and Harriss, 2016) was the first time that a range of inter- and multi-disciplinary perspectives had been brought together to share experience and findings from live projects. For the editorial I analysed the contributions and found the following themes shared by the fourteen different disciplines that contributed to the issue:

- responsiveness and adaptability

- community engagement

- ethics

- practice and professionalism

- research and innovation.

These themes relate to the pedagogical, research, professional and social concerns that recur in so many architectural live project activities and inquiries, indicating the relevance of inter-disciplinary inquiry to the development of the field.

I chaired the 2017 Association of Architectural Educators *Architecture Connects* conference which explored the 'positive dialogue and collaboration between architectural educators, students, practitioners, researchers, educational bodies, local communities and other disciplines' (Anderson, 2017a, p. x). The themes of co-production and inclusion explored methodologies for multi- and inter-disciplinary collaboration.

7.2. Influence of live project education on architectural and pedagogical professions and policies

The published work raised awareness and understanding of architectural live project education beyond those immediately involved in it. These interested parties include architectural professionals who are interested in the preparation of students for practice or who have specialist practice expertise that are employed in live projects such as public interest design (Anderson, 2017b). They also include educators and academics from non-architectural disciplines who are interested in the pedagogy or practice of live projects or who collaborate in inter-disciplinary live projects. In 2014 the Higher Education Academy awarded me a National Teaching Fellowship for excellence in teaching, which included the integration of live projects into the curriculum.

7.2.1. Influence of the published work on multi-disciplinary pedagogical practice and strategy (Anderson, 2019b, pp. 161-173)

An area where the published work has created impact beyond its own discipline is in multi-disciplinary pedagogical research and strategy. *Reframing Space for Learning. Excellence and innovation in university teaching* (Bilham *et al.*, 2019) was written by National Teaching Fellows of the Higher Education Academy. It includes 'exemplars of innovative pedagogies within higher education' and seeks to influence 'at policy level, the dialogue about the appropriateness of spaces for teaching' (Bilham *et al.*, 2019, p. xxx). To help multi-disciplinary readers navigate the book, the editors signpost a connection between my section on the spaces where live project education takes place (Anderson, 2019b, pp. 161-173) and the following themes: authentic learning, collaborative and social spaces, collaborative learning, design education, experiential learning, inter-disciplinary learning, problem-based / project-based learning, vulnerable places (Bilham *et al.*, 2019, pp. xxvi - xxvii). This indicates the relevance of live projects to non-architectural disciplines and to several innovative pedagogies.

I contributed a case study and was interviewed for *A Handbook for Authentic Learning in Higher Education. Transforming Learning Through Real World Experiences* (Pitchford, Owen and Stevens, 2021). The book shares best practice in authentic learning for a multi-disciplinary audience (Pitchford, Owen and Stevens, 2021, p. 69). The authors cite Anderson and Priest (2017, p. 187) in order to illustrate the academic richness of authentic learning, remarking that such approaches

> will move us beyond student-centred education which, although it brought many valuable innovations ...is still missing the value of networks and partnerships to student learning in higher education and higher education's role within society (Pitchford, Owen and Stevens, 2021, p. 34).

The case study also draws attention to the difficulty of assessing collaborative live project work and notes the planning, action and reflection method of assessment by design diary that I introduced at Oxford Brookes University (Pitchford, Owen and Stevens, 2021, p. 112)

In the book *International Perspectives on Undergraduate Research* (Hensel and Blessinger, 2020), the published work is cited:

> The research process can be stimulated through assignments and giving students firsthand experience through live projects (Anderson and Priest 2014)' (Sengupta and Blessinger in Hensel and Blessinger, 2020, p. 118).

Walkington et al. (2017) also discuss the research element of live projects, citing the published work on live projects (Anderson and Priest, 2014). They propose dissemination of student research to authentic audiences as a means to introduce students to the discipline of research and further see their potential to:

> transform faculty-student relationships from supervision to something more akin to mentoring, a real-world and authentic approach to developing citizenship (Walkington *et al.*, 2017, p. 19).

7.2.2. <u>Influence of the published work on teaching and learning for professional practice</u> (Anderson, 2012; Anderson and Priest, 2012a; Anderson, 2019a)

Much attention has been given to the aspect of live project education that intersects with the learning of professional practice skills. Harriss' thesis on the subject of live projects as a means to acquire 'practice-ready skills' (2014, p. 11) uses LPN (Anderson and Priest, 2012a) as a resource to identify questionnaire participants for its primary research. Several authors describe how they employ live projects to teach professional skills and cite our definition (Anderson and Priest, 2012a) to illustrate their understanding of what live projects are (Walters and McGlothlin in 'Living and Learning,' 2014, p. 95; De Graft-Johnson et al. in Anderson, 2017a, p. 415).

The contribution made by the published work to establish a definition, taxonomy and clarification of the extents of live project education reduces confusion with adjacent pedagogical strategies and enables meaningful comparisons to be made. Tezcan et al. (2020, p. 524) cite the published work (Anderson and Priest, 2012b) in the context of work-integrated learning, discussing the various points of convergence and divergence between these two models. The published work also identifies distinctions between live project education and work-based learning (2019b, p. 163).

In terms of influencing policy within the architectural profession, the published work made a modest contribution with the inclusion of an OB1 LIVE case study in the joint report for the Health and Safety Executive (HSE) and Royal Institute of British Architects (RIBA) on the use of live projects to teach architectural students health and safety in order to reduce construction site injuries and fatalities (Anderson, 2012). I also contributed a section on live project / designbuild education for the RIBA book, *Defining Contemporary Professionalism. For Architects in Practice and Education* (Anderson, 2019a). The intention of the book was to 'inform how we develop, manage, mentor and teach professionalism at all levels' (Jones *et al.*, 2019, p. viii). My contribution highlights the mutual benefits of live project education where students are prepared for challenges that they will face in contemporary practice and also learn innovative approaches that will evolve the direction of professional practice once they join it (Anderson, 2019a, pp. 7-8) .

8. Conclusion: significance of the published work and implications for future development of the field of live project education

8.1. Contribution to knowledge

The critical appraisal has examined the published work; synthesised its methods and findings; provided evidence of its significance and impact; and demonstrated how together, the published works form a coherent body of research and contribution to knowledge, thus helping to develop live projects to progress as a field of education, practice and research.

The published work has contributed to knowledge in a number of ways, principally:

- The formulation of a definition of live project education by devising a reliable and inclusive methodology to analyse the large data set available on LPN. The definition is widely adopted and appropriate for inter-disciplinary application. It has connected previously disparate actors by enabling mutual recognition. The definition (Anderson and Priest, 2014) was cited in 33% of the post-2014 works in the chronological literature review.

- The gathering and analysis of the largest and most internationally and methodologically diverse data set of live project case studies via the establishment of Live Projects Network (LPN), a searchable, open access database (Anderson and Priest, 2012a).

- The publication of the first taxonomy of live project education via the devising of a rigorous, transparent and evidence-based methodology to analyse the diversity of design-based live project education. The translation of these findings into a flexible taxonomy enables different models of live project education to be understood and compared, regardless of context or outcome.

- The dissemination of rigorous research and engagement in collective scholarly initiatives such as conferences, publications and networks in order to establish live projects as a field of inquiry to support established live project activity.
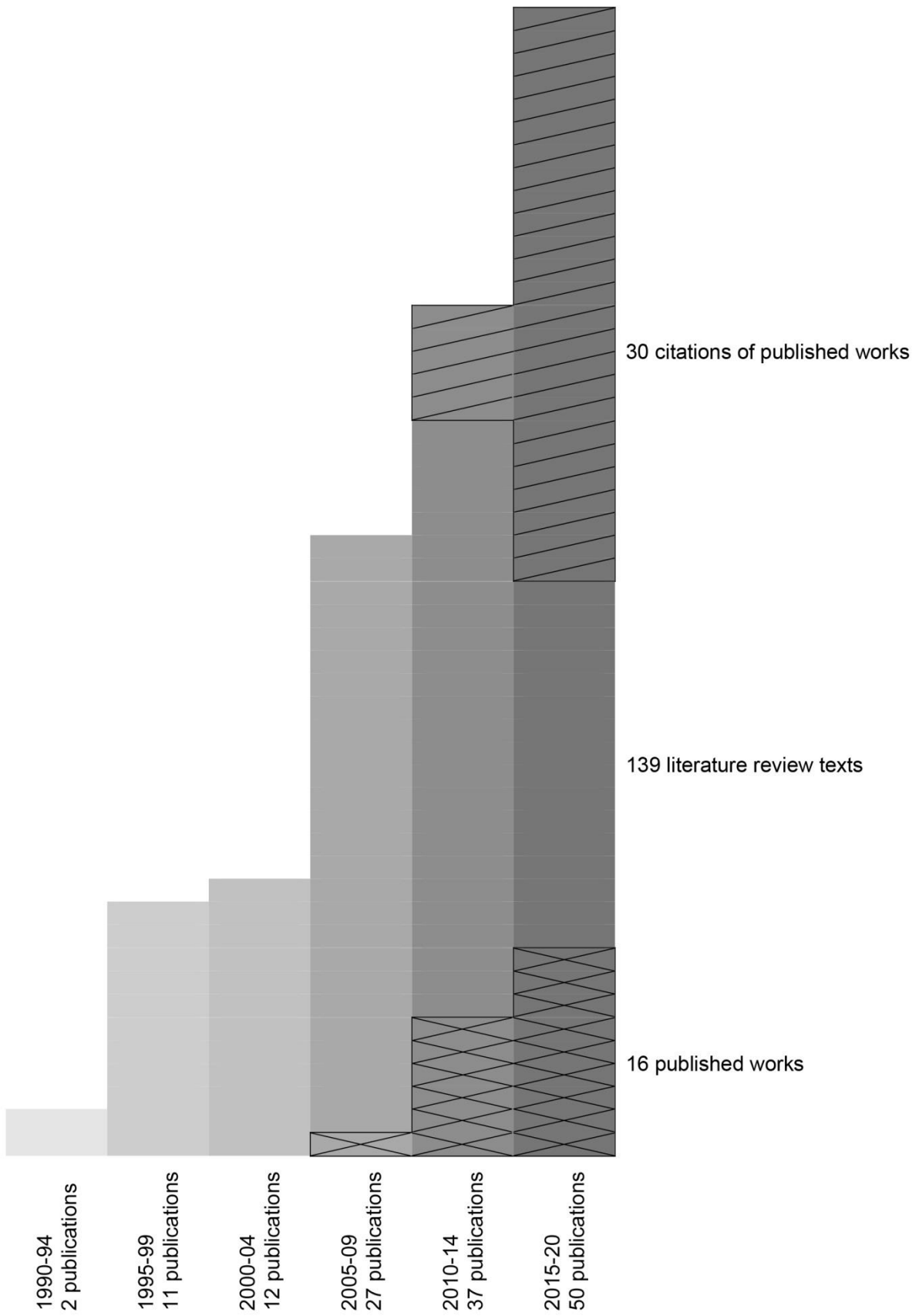
Figure 8. Impact of the published work on literature review texts

- The gathering, comparison and analysis of inter-disciplinary case studies, precedents and pedagogical theories; demonstration of their relevance to live project education and inquiry; and therefore expansion of the field of live project education. In particular, the published work was the first to demonstrate the significance of Lave and Wenger's theory of 'legitimate peripheral participation via situated learning' (1991) to live project education, a theory that is now widely cited for its relevance to live project education.

- The publication of case studies and guides to live project education for professional bodies has helped to create connections between architectural education, practice and society, highlighting contributions to knowledge and practice that are of mutual interest and benefit and influencing areas of policy such as health and safety, collaborative working and acceptance of pedagogical innovations.

- The published work has contributed to new insights into the design process and how we learn, teach and practice design that are relevant to contemporary social challenges. The innovative nature and methods of live project education have demonstrated the increased significance of the design process relative to the design object.

- Engagement, contribution and collaboration in international live project activity and inquiry in order to progress the development of the field of live projects and connect previously disparate actors. In particular, the devising of the inclusive definition and taxonomy; the establishment of open source resources such as LPN, DCG; collaborative and inter-disciplinary activity; and dissemination of the published work have raised awareness of live project education and its relevance to contemporary pedagogical, professional and social issues and challenges. This activity and inquiry has helped with the formation of a global community of practice and the establishment of live projects as an emerging field of education, practice and research.

8.2. Limitations of the research

A worldwide literature search was undertaken but due to my language limitations, the literature review was restricted to English language texts.

COVID-19 restrictions limited access to libraries for print sources for the literature review after the first 6 months of research.

Many live project educators and practitioners are not researchers or active in contexts where publication and dissemination of work is expected or feasible. It is therefore inevitable that relevant and significant work was not documented or disseminated.

Different terminology and the emerging nature of the field means that some live project activity is difficult to identify and therefore may have been missed.

As an emerging field, methodologies for research and analysis are still being developed. Therefore, much of the material consulted for the literature review, although often of high quality in terms of live project activity, is lacking in terms of conventional research methods, documentation and analysis.

8.3. Scope for further research

Much work is still to be done in devising research methods and structures for peer review that are suited to live project education, taking into account its cross-over position between education, research, practice and society. This would help to generate and disseminate best practice as well as improve the quality and significance of insights obtained from live project inquiry.

More inter-disciplinary research is needed to conceptualise universal learning theories, insights and best practice. This process will clarify the elements of live project education that are pan-disciplinary and those that are disciplinary-specific.

Design-based live projects help us to understand the design process from new and relevant perspectives. Further discipline-specific research into the design process would enable designers to face future challenges where focus on the design object has become problematic or irrelevant.

Research is needed on design thinking and processes in live projects operating in contexts that are multi-disciplinary or inclusive of participants not associated with design and / or a formal discipline. Such design processes are ideal for the progression of co-creation methods that are relevant to many future societal challenges.

Current live project research is dominated by the perspectives of educators, practitioners and researchers. Students, external collaborators, stakeholders and local communities need more opportunities to participate in the research process and more of their testimonies need to be elicited and evaluated.

8.3.1. Progressing the field of live project education, its pedagogy, research and practice

The field of live project education has made great progress since 1990. Dissemination of pedagogy, research and best practice has increased, enabling a distinct field to emerge and become recognised internationally. This has stimulated dialogue and increased the quality of pedagogy, research and practice. This progress has been international and multi-disciplinary. Live project educational initiatives and innovations have influenced professional and pedagogic practice and policy. The published work has contributed to all of these endeavours and developments. It has also been influential: in the chronological reading undertaken for the literature review, of the 71 texts published by others since 2012 (the year of my first academic paper publication on live project education), 44% of the texts cite the published work.

While the published work was being undertaken, live project education was at an intriguing stage of its development. It was emerging internationally and activity was increasing rapidly, often in overlooked and marginal locations in a series of parallel evolutions. Live project educators were becoming aware of like-minded activity elsewhere and a fascinating dialogue and collective examination began.

For a while it almost seemed possible to capture live project activity in its entirety, like a Renaissance cabinet of curiosities. Even more excitingly, it became apparent that the field is too diverse and restless to be encapsulated in such a finite way. The published work was undertaken during this dynamic period and represents an attempt to find rigorous and appropriate ways to discover, document, analyse, understand, connect and develop an emerging field.

In order to continue to develop the field of live project education and meet the pedagogical, intellectual, professional and societal challenges that they pose and are presented with, future live project inquiry needs to focus on:

- Accessible and inclusive dissemination of live project best practice, both pedagogical and professional.

- Devising and improving research methodologies for rigorous and diverse live project inquiry.

- Effective dissemination of significant research findings so that they inform progress in the pedagogy, research and practice of live projects.

- Establishing robust and open access structures and methods for peer review that acknowledge the pedagogical-research-practice-society cross-over of live projects.

- Calibrating live project practice and inquiry with different international and national structures for awarding funding and esteem.

- Improved and increased inter-disciplinary collaboration in live project activity and inquiry.

- Greater inclusion of students, educators, practitioners, professional bodies, external collaborators and local communities when planning, undertaking and evaluating live projects.

Although the above list presents several complex challenges, they could be achieved if advocates for live project education communicate and collaborate with existing policy and funding structures and systems, offering fresh perspectives on how to address contemporary issues and thus helping to make positive progress that is mutually beneficial for education, research, practice and society.

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71

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10. Appendices

See overleaf for appendices.

APPENDIX A

Initial Literature Search and Findings

SEARCH TERM	WHERE SEARCHED	SEARCH NARROWED TO:	REFS FOUND	NO. REFS SELECTED
live project	OBU Library Catalogue	OBU library; art and architecture; 1990-2019	225	31
designbuild	OBU Library Catalogue	OBU library; art and architecture; 1990-2019	1641	48
designbuild	OBU Library Catalogue	OBU library; art and architecture	21	0
pedagogy	OBU Library Catalogue	OBU library; architecture	17	8
education	OBU Library Catalogue	OBU library; architecture	327	16
live project	World Cat via OBU Library Catalogue	Libraries worldwide; all formats; architecture; 1990-2019; English language	1465	41
design build	World Cat via OBU Library Catalogue	Libraries worldwide; all formats; All Databases; All authors; 1990-2019; English language; Architecture	22,250	Search narrowed
design build, education	World Cat via OBU Library Catalogue	Libraries worldwide; all formats; All Databases; All authors; 1990-2019; English language; Architecture	1614	12
designbuild	World Cat via OBU	Libraries worldwide; all formats; All	2	2

	Library Catalogue	Databases; All authors; 1990-2019; English language; Architecture		
pedagogy, architecture	World Cat via OBU Library Catalogue	Libraries worldwide; all formats; All Databases; All authors; 1990-2019; English language; Architecture	178	178
education, architecture	World Cat via OBU Library Catalogue	Libraries worldwide; all formats; All Databases; All authors; 1990-2019; English language; Architecture	3744	Search narrowed
architectural education	World Cat via OBU Library Catalogue	Libraries worldwide; all formats; All Databases; All authors; 1990-2019; English language; Architecture	2400	75
life project	Avery Index of Architectural Publications	N.B. Boolean search defaulted to "life project". Very few results for "live project"	130	8
live project	Avery Index of Architectural Publications	Removed Boolean search. Find all search terms. Language: English. Jan 1990-present	959	Search narrowed
live project NOT life	Avery Index of Architectural Publications	Removed Boolean search. Find all search terms. Language: English. Jan 1990-present	133	14
designbuild AND	Avery Index of	Boolean search. Language English.	1	1

architecture AND education	Architectural Publications	Jan 1990-present		
design build	Avery Index of Architectural Publications	Boolean search. Language English. Jan 1990-present	668	Search narrowed
design build AND education	Avery Index of Architectural Publications	Boolean search. Language English. Jan 1990-present	52	44
TOTAL				478

APPENDIX B

Comparative Reading of Key Texts

METHODOLOGY	Rachel Sara (UK)	Vincent B. Canizaro (US)	Dodd, Harrisson & Charlesworth (Eds) (Australia)	James Benedict Brown (UK)	Harriet Harriss (UK) & Lynette Widder (Eds) (US)	Hermie Delport Voulgarelis (S. Africa)	Chad Kraus (Ed) (US)	Tolya Stonorov (Ed) (US)	Stephen Verderber (US); Ted Cavanagh; Arlene Oak (Eds) (US+Canada)	Jane Anderson (published works)
	2004	2012	2012	2012	2014	2016	2017	2018	2019	2008-2019
Case Study	Y	(Y)	Y	(Y)	Y	Y	Y	Y	Y	Y
LP+DB project	N	N	N	N	N	Y	(Y)	N	N	Y
Design research	N	N	N	N	N	Y	N	N	(Y)	(Y)
Survey	Y	Y	N	Y	N	N	N	N	Y	N
Interview	N	Y	N	Y	N	Y	Y	N	Y	Y
Literature Review	Y	N	N	Y	N	Y	N	N	N	N
Data Analysis	Y	N	N	Y	N	Y	N	N	Y	Y
Categorisation	N	Y	Y	Y	N	Y	Y	Y	Y	Y
Reflection	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Critique	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Symposium	N	N	Y	Y	Y	N	N	N	Y	Y

Proceedings	N	N	N	N	N	N	N	N	N	Y
Journal Article	N	Y	N	N	N	N	N	N	N	Y
Edited Book	N	N	Y	N	Y	N	Y	Y	Y	N
Authored Book	N	N	N	N	N	N	N	N	N	Y
PhD Thesis	Y	N	N	Y	N	Y	N	N	N	in progress

CONCEPTUALISATION	Rachel Sara	Vincent B. Canizaro	Dodd, Harrisson & Charlesworth	James Benedict Brown	Harriet Harriss & Lynette Widder	Hermie Delport Voulgarelis	Chad Kraus	Tolya Stonorov	Stephen Verderber; Ted Cavanagh; Arlene Oak (Eds)	Jane Anderson
Emerging Field	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Categorisation / Model	N	Y	Y	Y	N	Y	Y (	N	Y	Y
Definition	Y	N	N	(Y)	(Y) (LPN)	Y	(Y) (LPN)	N	N	Y
Process v. object	Y	N	Y	Y	N	Y	Y	N	Y	Y
LPs in Different disciplines	N	N	Y	Y	N	N	N	(Y)	(Y)	Y
Resources	N	Y	N	Y	N	(Y)	(Y)	(Y)	Y	Y

SOURCES (overlaps with sources in published work)	Rachel Sara	Vincent B. Canizaro	Dodd, Harrisson & Charlesworth	James Benedict Brown	Harriet Harriss & Lynette Widder	Hermie Delport Voulgarelis	Chad Kraus	Tolya Stonorov	Stephen Verderber; Ted Cavanagh; Arlene Oak (Eds)	Jane Anderson
John Hejduk	N	N	N	N	N	N	Y	N	N	Y
Victor Buchli	N	N	N	N	N	N	N	N	(N)	Y
L S Vygotsky	N	N	N	(Y)	N	Y	N	N	N	Y
Lave + Wenger	N	N	Y	N	(Y)	Y	N	N	N	Y
Paulo Freire	Y	N	Y	Y	(Y)	N	N	N	N	N
Jeremy Till	Y	N	Y	Y	(Y)	Y	Y	Y	N	Y
Tatiana Schneider	N	N	Y	N	N	N	Y	Y	N	N
Doina Petrescu	N	N	N	Y	N	N	N	N	N	N
Rachel Sara	Y	N	N	Y	Y	Y	N	N	N	Y
James Benedict Brown	N	N	N	N	(N)	Y	N	N	N	Y
Ruth Morrow	Y	N	Y	Y	Y	Y	N	N	N	Y
Harriet Harriss	N	N	N	N	Y	Y	Y	N	N	N
Chad Kraus	N	N	N	N	N	N	Y	N	Y	N
Jane Anderson	N	N	N	N	Y	Y	Y	N	Y	Y
Rural Studio	Y	Y	Y	Y	N	Y	Y	Y	Y	Y

Bauhuas	Y	Y	N	N	N	N	Y	Y	Y	Y
Assemble	N	N	N	N	N	N	(Y)	N	N	N
University of Sheffield	Y	N	N	Y	(Y)	N	N	N	N	Y
Agency	N	N	N	(Y)	N	Y	Y	Y	N	Y
Thing Theory (Bowker and Star)	N	N	N	N	N	N	N	N	N	Y
Material Registers	N	N	N	N	N	N	N	N	N	Y

APPENDIX C

Themes and Coding for the Literature Review

Themes drawn from my own contribution to knowledge	Sub-Themes. Instances coded in the literature review	No. of works coded containing this theme	No. of instances of this theme coded
Live Project	Live Project	49	117
Design Build	Design Build Service Learning Community Design	44	130
Definition	Definition	60	155
Emergence	Development of emerging field	62	226
Categorisation	Taxonomy Categorisation Chronology Typology Aesthetic	52	209
Methodology	Critique Analysis Case Study Theory Interview	69	300
Discipline	Technology / Technology Studies Material / Material Culture Art / Environmental Art / Social Sculpture Architecture Design Social / Sociology / Anthropology (Any other discipline)	39	114
Process	Design Process Reality / Imagination	75	259

	Subject / Object Co-Design Participatory Design Strategy Realisation Authorship		
Research	Research Design Research Applied Research Research-based Education (Any other form of Research)	46	128
Pedagogy	Pedagogy Learning by Doing Transformation Tutor role Situated Learning Community of Practice Employability Making / Craft Policy (educational + practice) Assessment Complexity Civic Pedagogy Ethics Apprentices	110	605
Practice	Practice / Professional Community / Social Activism Non-commercial Public Interest Design Professional Registration / Accreditation Ethics	75	259

Context	Urban	57	201
	Rural		
	Scarcity / Need		
	Local		
	Abroad		
	Interim / Meanwhile / Event		
	Inaccessible		
	Informal settlement		
	Heritage		
	Vernacular		
	Post-Crisis		
	Unsafe		
	Homeless		
	Charity / NGO		
Theory	John Hejduk	59	256
	Victor Buchli		
	L S Vygotsky		
	Lave + Wenger		
	Paulo Freire		
	Jeremy Till		
	Tatiana Schneider		
	Doina Petrescu		
	Murray Fraser		
	Rachel Sara		
	James Benedict Brown		
	Ruth Morrow		
	Harriet Harriss		
	Chad Krauss		
	Jane Anderson		
	Rural Studio		
	Bauhuas		
	Assemble		
	University of Sheffield		

	Agency		
	Thing Theory (Bowker and Star)		
	Material Registers (Buchli)		
	Hermie Delport		
	Ted Cavanagh		
	Sergio Palleroni		
	Bryan Bell		
	Stephen Verderber		
	Jeff Hou		

APPENDIX D

Co-authorship Letters

See overleaf for letters from Colin Priest, Christina Godiksen and Bryan Bell.

ual:

To Whom it may concern,

I am a Senior Lecturer and Course Leader for BA Interiors and Spatial Design at Chelsea College of Arts. I am writing in support of Jane Anderson's application to enrol on the PhD by Publication Programme at Oxford Brookes University.

I understand that three of the publications to be included in Jane's proposed PhD submission are co-authored with myself. Below I have listed each co-authored publication and a statement confirming Jane's contribution to each one.

Anderson J, Priest C, 'The Live Education of an Architect: John Hejduk and Oxford Brookes Year One Live Projects.'
Journal for Education in the Built Environment 7 (2) (2012) pp.50-62
ISSN: 1747-4205 eISSN: 1747-4205

> Jane and I had an equal share in conducting the teaching and practice work (as part of a programme of live projects named "OB1 LIVE") that is included as a case study in this paper. We collaborated fully on the research and writing of the paper. Jane took the lead on the primary theoretical research and was responsible for introducing the theories of Lave and Wenger to the paper.
> Jane presented an early version of the paper at the Live Projects 2011 Colloquium at Queen's University, Belfast. 25 March 2011. Jane completed all of the major revisions required by the publisher, with feedback from me.

Anderson J, Priest C, 'Developing an inclusive definition, typological analysis and online resource for live projects' in Harriss H (ed.), Architecture Live Projects. Pedagogy into Practice, Routledge (2014)
ISBN: 978-0-415-73352-6

> Jane and I had an equal share in conducting the teaching and practice work (as part of a programme of live projects named "OB1 LIVE") that is included as a case study in this paper. We had an equal share in devising and establishing the Live Projects Network that is a principal subject of this paper and that also yielded primary data for the paper. We collaborated equally in devising a definition of live projects through extensive discussion and analysis. Jane devised the method and categories of the spectrum analysis to categorise the factors of a live project and the diagram to use as a tool to represent this.

We collaborated on the research and writing of the paper with Jane leading and making the principle contribution to the primary theoretical research and writing (approx. 75%). Jane presented an initial version of the paper at the Live Projects Pedagogy International Symposium at Oxford Brookes University, Oxford. 24–26 May 2012. Jane completed all of the major revisions required by the publisher, with feedback from me.

Anderson J, Priest C, 'Following John Hejduk's Fabrications: On imagination and reality in the architectural design process', *arq: Architectural Research Quarterly* 21 (2) (2017) ISSN: 1359-1355 eISSN: 1359-1355

I was involved with two of the four "OB1 LIVE" teaching and practice projects included as case studies in this paper. We collaborated on the research and writing of the paper with Jane leading and making the principle contribution to primary theoretical research and writing (approx. 85%). Together we presented initial versions of the paper at the *Spatial Perspectives: Literature and Architecture 1850-present* conference at the University of Oxford, 11 June 2012 and at the *writingplace conference*, TU Delft, 25-27 November 2013.
Jane devised the method of comparative analysis between OB1 LIVE Case Studies and Hejduk's work. She also devised the spatial concept analysis of the OB1 LIVE project and was responsible for introducing the key concepts of the Subject / Object relationship and Thing Theory into the paper. Jane completed all of the major revisions required by the publisher, with feedback from me.

Please do not hesitate to contact me if you require any further information.

Yours sincerely

Colin Priest
Course Leader, BA(Hons) Interior and Spatial Design

Christina Godiksen

10 Gironde Road

London Sw6 7DZ

To whom it may concern

I am a Senior Lecturer in the School of Architecture, Oxford Brookes University. I am writing in support of Jane Anderson's application to enrol on the PhD by Publication Programme at Oxford Brookes University.

I understand that one of the publications to be included in Jane's proposed PhD submission is:

Anderson J, Godiksen C, Harriss H, 'Live projects across the disciplines', *Brookes eJournal of Learning and Teaching* 8 (1+2) (2016)

ISSN: 1744-7747 eISSN: 1744-7747

As a co-author of that publication I can confirm that Jane was one of the three co-editors for the special issue. All three authors were equally responsible for the call for papers, selection of papers, editing, organisation of the peer review process and peer review of abstracts. Jane shared responsibility with Dr. Harriet Harris for peer review of the selected full Papers. I took responsibility for the peer review of selected full Case Studies. Jane authored the editorial with feedback from Harriet and I.

Please do not hesitate to contact me if you require any further information.

Yours sincerely,

Christina Godiksen

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4.20.2021

To whom it may concern,

I, Bryan Bell, Founder of the SEED Network, am very pleased to write in strong support of Jane Anderson's submission for the PhD by Published Work at Oxford Brookes University. I am a collaborator on one of the outputs that I understand is to be included in Jane's proposed PhD submission.

I am a founder of the *Social Economic Environmental Design* network (SEED). Jane is a co-founder of *Live Projects Network* (LPN). SEED and LPN are both members of *Design for the Common Good* (DCG). DCG is an open access online resource that Jane is including as an output in her proposed PhD by Published Work.
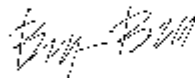
DCG is a network of like-minded networks. Representatives from each member network collaborate to organise events and disseminate information via DCG that is of mutual interest and assistance to the members of our respective networks. Representatives contribute to the development of DGC as a resource; organise events such as conferences and exhibitions; and disseminate information about DCG. Representatives work collaboratively and each endeavour to contribute equally to the effort according to their expertise. Jane has been a very active and beyond equal contributor to DCG since its inception.

As a representative for LPN, Jane was involved in the establishment of DCG. She attends DCG strategy meetings and contributes to the decision-making on the direction and running of DCG.

Jane represents LPN at DCG events and has contributed to the organisation and running of several of them. She was a jury member for the 2017 Structures for Inclusion (SFI) Awards; gathered and nominated LPN projects for the 2022 Exhibition in Denver, Colorado; assisted with a conference in Portland, Oregon (2017) by peer reviewing and chairing sessions; chaired a conference in Oxford (2017), editing its proceedings; and authored / co-authored conference papers / workshops at these conferences plus an online conference for the *Swiss Design Network* (2021).

Please do not hesitate to contact me if you require any further information.

Yours sincerely,

Bryan Bell
Founder, SEED Network
Associate Professor, School of Architecture, NC State University
Executive Director, Design Corps

Appendix E

List of Publications

Below is the list of publications upon which this critical appraisal is based.

	PUBLICATION (chronologically by date of publication)	TYPE
1	Anderson, J. (2008) *OB1 LIVE*. Available at: http://www.ob1live.org (Accessed 25 July 2021).	Creative work (Practice) + Online database
2	Anderson, J. (2012) 'Undergraduate live projects and integrating health and safety', in: Care, L., Jary, D and Parnell, R. (eds.) 'Healthy Design, Creative Safety. Approaches to health and safety teaching and learning in undergraduate schools of architecture', *RIBA and Health and Safety Executive.* HSE Research Report RR925, Review of Symposium pp.33-35 and Appendix E. Symposium Papers pp. 106-112. Available at: https://www.hse.gov.uk/research/rrpdf/rr925.pdf (Accessed 19 January 2021).	Professional Body Report
3	Anderson, J. and Priest C. (2012a) *Live Projects Network.* Available at: http://liveprojectsnetwork.org (Accessed 25 July 2021).	Online database
4	Anderson, J., and Priest C. (2012b) 'The Live Education of an Architect: John Hejduk and Oxford Brookes Year One Live Projects', *Journal for Education in the Built Environment,* 7(2), pp.50-62. doi: 10.11120/jebe.2012.07020050 (Accessed 19 January 2021)	Journal article
5	Anderson, J. (2014a) 'Facts and Figments. Imagination and reality in Design-Build education'. *WORKING OUT. Thinking while building: Association of Collegiate Schools of Architecture. 2014 Fall Conference.* Dalhousie University, Halifax, Canada, 16-18 October 2014. Washington D.C: ACSA Press, pp.213-220.	Conference proceedings

6	Anderson, J. (2014b) 'Undercurrent: swimming away from the design studio', *Charrette,* 1(1), pp.3-19. Available at: http://www.ingentaconnect.com/contentone/arched/char/2014/00000001/00000001/art00002#expand/collapse (Accessed 19 January 2021).	Journal article
7	Anderson, J., Priest C. (2014) 'Developing an inclusive definition, typological analysis and online resource for live projects', in: H. Harriss and L. Widder, (eds.) *Architecture Live Projects. Pedagogy into Practice*. London: Routledge, pp.9-17.	Book chapter
8	Anderson, J., Godiksen, C., and Harriss, H. (eds.) (2016) 'Live projects across the disciplines', *Brookes eJournal of Learning and Teaching* 8(1+2). Available at: http://hejlt.org/issue/8-1-2/ (Accessed 19 January 2021).	Journal special issue + editorial
9	Anderson, J. (ed.) (2017a) *Architecture Connects: Proceedings of the Conference of the Association of Architectural Educators*. Oxford Brookes University, Oxford, 6-9 September 2017. Oxford: Oxford Brookes University, pp.x-xi. Available at: https://aaeconference2017.files.wordpress.com/2018/07/aae-2017-architecture-connects-proceedings_180706_low-res-online-sharing.pdf (Accessed 19.January 2021)	Conference proceeding + editorial
10	Anderson J. (2017a) 'Healthy Buildings. Two phases of a live project', *Architecture Connects: AAE 2017 Conference*. Oxford Brookes University, 6-9 September 2017. Oxford: Oxford Brookes University, pp. 540-542. Available at: https://aaeconference2017.files.wordpress.com/2018/07/aae-2017-architecture-connects-proceedings_180706_low-res-online-sharing.pdf (Accessed 19.January 2021)	Conference proceedings
11	Anderson, J. (2017b) 'Devising an inclusive and flexible taxonomy of international Live Projects', *ARENA Journal of Architectural Research,* 2(1), pp.3-18. doi: http://doi.org/10.5334/ajar.5 (Accessed 19.January 2021)	Journal article
12	Anderson, J. (2017c) 'Uncertain Futures, Obscure Pasts:	Book chapter

	The Relationship between the Subject and Object in the Praxis of Archaeology and Architectural Design' in: Buxton, A., Hulin, L., Anderson, J. (eds.) *InHabit. People, Places and Possessions.* Oxford; Bern: Peter Lang, pp. 37-60.	
13	Abendroth, L., Anderson, J., Bell, B., Colwill, S., Fattinger, P., Hartig, U., Palleroni, S, Pawlicki, N. and Priest, C. (2017) *Design for the Common Good.* Available at: http://www.designforcommongood.net (Accessed 25 July 2021).	Online database
14	Anderson, J., and Priest C. (2017) 'Following John Hejduk's Fabrications: On imagination and reality in the architectural design process', *arq: Architectural Research Quarterly* 21(2), pp.183-192. doi: https://doi.org/10.1017/S1359135517000264 (Accessed 19.January 2021)	Journal article
15	Anderson, J. (2019a) 'Live project / designbuild education. Creating new connections between universities, communities and contemporary professionalism' in: Jones, A. and Hyde, R. (eds.) *Defining contemporary professionalism: for architects in practice and education.* London: RIBA Publishing, pp. 5-8.	Book chapter
16	Anderson, J. (2019b) 'Live projects: Collaborative learning in and with authentic spaces' in: Bilham, T., Hamshire, C. Hartog, M. with Doolan, M. A. (eds.) *Reframing space for learning: excellence and innovation in university teaching.* London: UCL Institute of Education Press, pp. 161-173.	Book chapter

APPENDIX F

The Published Work