

DESIGN RESEARCH ESSAY

Devising an Inclusive and Flexible Taxonomy of International Live Projects

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Architectural live project education (including Design Build projects, Extension Projects and Service Learning) is evolving rapidly. Emerging research describes, defines and analyses contemporary activity. Much is based on case studies that rely on the quality of the author's critique or is not located within a wider theoretical, historical or cultural context. The aim of this paper is to develop an objective method to analyse live projects that includes the peripheral and promotes diversity and evolution. The paper analyses 154 contemporary live project case studies located in twenty-eight different countries that have been drawn from the online *Live Projects Network* between April 2012 and January 2016.

This paper explores three connected questions: What differentiates and connects contemporary international live projects? What live project models and strategies have emerged to date? What influence are live projects having on architectural education, research and practice?

Ordering live projects by singular categories such as outcome or motive fails to acknowledge their complexity or to reveal new models and strategies. Quantitative and qualitative analyses demonstrate that human and physical resources and contexts have the greatest influence on diversity of live project models and strategies. The expertise of the live project participants is capable of overcoming contextual resource limitations via design ingenuity. A Taxonomy has been developed to illustrate the relationship between these factors. This allows us to identify the ways in which live projects are influencing contemporary architectural education, research and practice.

Keywords: Live Project; Design Build; Extension Project; Service Learning; Pedagogy; Architectural Design Studio; Taxonomy

Introduction

Live projects (also known as Design Build, Extension Projects and Service Learning) are one of the most dynamic recent developments in architectural education. They form an emerging field operating with increasing expertise, gathering momentum in the last five years. The quality of critique of these projects is improving and work has begun to establish appropriate theories to deepen understanding. Communities of debate and mutual support are forming as evidenced by many recent conferences and the formation of online networks [1–12]. This has revealed approaches that have evolved in response to local conditions, often independently and spontaneously. Some projects look and function so differently that their participants may not recognise the pedagogical connection between, say a permanent building designed and built by students and a masterplan designed by students and derived through a participatory process with stakeholders. However all would recognise these activities as belonging within architectural practice.

This paper explores three connected questions: What differentiates and connects contemporary international live projects? What live project models and strategies have emerged to date? What influence are live projects having upon architectural education, research and practice?

Contemporary Context: Education, Research, Practice and Society

Live projects straddle the worlds of education, research, practice and wider society. They are connecting with current thought on several levels and across several fields. In the field of education live projects enable an alternative pedagogical strategy in response to a critique of the limits of conventional architectural education

as self-referential, image-based or detached from architectural practice. Live projects can be responsive to local and global challenges and crises at a time of globalisation, economic and political uncertainty, the retreat or failure of the state and other institutions. Some connect to new forms of activism and search for alternative solutions to social, economic and political problems. Many schools of architecture that have been high profile or early-adopters of live projects are located on the peripheries of power in relation to the centres conventionally holding the architectural, cultural or political elite. Often 'such people fall below the sometimes crude radar used to pick up signs of significance' [13, p. 5]. Such locations include the rural and the global south.

At the same time, architectural academics are developing the field of design research [14] and some are using the collaborative, inter-disciplinary and externally engaged qualities of live projects to realise or disseminate ideas and to conduct research in ways that are impossible in conventional theoretical research or architectural practice [15]. Live projects are a bridge to research-based education that can make a more mutually beneficial relationship possible between researcher, students and external collaborators [16, p. 418].

Live project participants are frequent proponents of current or innovative methods of practice of equal interest to the profession [17, p. 97–111] such as participatory design practices, collaboration, low-budget ingenuity and sustainability, as well as digital craft [18] and temporary installations [19, p. 14]. Cohorts of architectural students have now graduated and taken their experience of live projects into practice with them and some have found ways to implement live project strategies into their professional practice. The research of Samuel et al. to uncover the cultural value of architects suggests that current attempts 'generally focus on the finished product, building or place.' and recommend that they should instead 'focus on processes of architecture (verb not noun) and the benefits that architectural skillsets bring to a project' [20, p. 3].

At first glance, live projects could be said to have a certain prominence because ambitious projects designed and built by students in the face of adversity or elegant structures pushing the boundaries of current digital technology tend to create impressively engaging stories and media-friendly images of the realised design. However, many live project educators are acutely aware of the significance not of the end product but the process itself in stimulating transformational learning among participants that is difficult to enable in studio-based contexts. It is therefore essential to find ways to articulate and value the live project process as much as the product.

In his doctoral critique of the live project, James Benedict Brown identifies areas for future research. He states that a 'critical examination of the curricula, contexts, clients and pedagogical responses of live projects in the UK and Ireland to comparable overseas projects could make a significant contribution to the literature' [9, p. 275]. Live projects engage the needs and wishes of external collaborators. Therefore architecturally self-referential measures of design excellence often used to critique or categorise design studio projects are difficult to apply. Live projects need new criteria by which to be conceptualised and analysed. The attempt to develop a taxonomy of live projects described below was made with an awareness that 'the act of assigning a classification can be socially or ethically charged' [21, p. 24], because some are made visible and some invisible by their inclusion or exclusion. However, through the process of classification it was hoped that live project practices and processes could emerge that were previously invisible.

The aim of this paper is to develop an objective method to analyse live projects that transcends customary value judgements used to critique and categorise architectural practice, research and education. The intention is to make invisible processes visible and to articulate models or strategies that are developing to support live projects. In doing so, we will have a greater understanding of the influence live projects are having on contemporary architectural education, research and practice.

On the Analysis of Live Projects

Much of the work to survey, define and critique live projects to date adopts a case-study methodology in order to illustrate and support the conclusions drawn. One issue with this approach to date is that many are authored by the academics who initiated the live project and there is a risk of a lack of critique or awareness of a wider context. Increased dialogue within the community is stimulating more critical positions on issues such as definition, methodology, ethics, theory and pedagogy [9–12, 22–24]. Ashraf Salama [12] has placed Live Projects within a broad historical and theoretical context for architectural education. In describing the evolution of their book, Dodd, Harrison and Charlesworth [10, p. 3] discuss the difficulty of trying to structure the book according to the motivation of the project authors. This discussion reveals the complexity brought about by the multiple authorship involved in live projects. Live projects are rich, complex and contingent. They weave multiple strands of inter-disciplinary expertise and their participants emerge having

learned slightly different things from the experience. Due to their complexity, any attempt to categorise live projects according to a single motivation or disciplinary focus is problematic.

This study takes advantage of the growing body of available evidence on live project activity, analysing data taken from case studies of 154 live projects completed in twenty-eight different countries that have been submitted to the *Live Projects Network* (LPN) [7] between April 2012 and January 2016. Instead of adopting a linear case-study-by-case study approach, it stands back to see if an overview of the field will enable us to see if any patterns or trends emerge that will tell us more about the nature of architectural live project activity. The accumulation and analysis of data enables an objective and quantitative perspective to be brought to the field. However it is informed by and tested against qualitative evidence and analysis in order to balance the risks of big data made possible by technology 'when a seemingly neutral data collection mechanism is substituted for ethical conflict about the contents of the forms, the moral debate is partially erased.' [21, p. 24] A whole-project approach has been devised here to identify different models and arrange them into a taxonomy that explains the inter-relationship of these factors.

A pilot for this study can be found in the proceedings of the *AAE Conference 2014* [25, p. 227–232]. It reported on a quantitative analysis identifying which factors have most influence on live project outcomes and strategies and revealing the trends and patterns made by the correlation of these different factors. The sample for this study has been expanded by 63%, the methodology reviewed and expanded to include a qualitative analysis using coding of contributor statements. New case studies in South America, Europe and Africa have revealed new models. At present this study does not represent the wealth of Design Build projects in North America but it is hoped that connections established recently with networks developing there will enable this in the future [26].

Development of Live Projects Network and Collection of Data

In 2008, the author – along with Colin Priest – established OB1 LIVE, a programme of live projects for Year 1 students at Oxford Brookes School of Architecture. Our aims were to understand more about live projects, connect with others internationally with similar concerns and to try to define common ground. The ambition was to research and disseminate best practice but first it was necessary to survey the field and form a community. In 2012 we launched the Live Projects Network (LPN) as:

'... an online resource to become a critical point of reference to connect students, educators, clients, practitioners and researchers involved in live projects. The aims are to promote the use of live projects in education, share best practice, encourage dialogue and also contribute to the establishment of a theoretical basis for the study of live projects.' [7]

In order to identify and gather a community engaged in a shared endeavour, we devised a definition of live projects that was deliberately as inclusive as possible in order to encourage innovation, diversity and dialogue in a developing field. The definition was evolved via research and dialogue with others in the field:

'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.' [23, p. 13].

The first part of the definition described six factors that are common to every architectural project, whether live or in professional practice. Each of the six factors forms its own spectrum (e.g. timescale ranges from days to years) to allow for the wide variation in approach that we had observed [23, p. 11–12].

The beta version of the site was launched in April 2012 and tested using our own live projects. A call for case studies was made in May 2012 and the first contributions posted online in October 2012. Contributors complete a pro forma that allows the site to filter projects according to the six factors in the definition and the position along the spectrum of each factor. Contributors also submit a 200-word description of a project plus three images. The criterion for inclusion as a case study on the site is whether the project meets the definition of a live project. If this is unclear, contributors are contacted with follow up questions before a decision is made. If a submitted project challenges the definition, it is debated before a decision is made on whether to include it or whether the definition needs to be revised in response.

In practice, events and discoveries have not required the fundamental definition to be revised since July 2013. Some filters have been rationalised to remove duplication or added to the spectra to acknowledge

diversity. Terminology was revised so that it was clearer or more inclusive of the community: 'university' was revised to 'educational organisation', so as to include several independent bodies running educational live projects.

The process of adding new projects to LPN, interrogating the definition and filters, further research, discussion with contributors and peers enabled a good overview of the field internationally. Patterns and trends seemed to be emerging and many of them seemed relevant to current debates about architectural education and practice as well as wider social, economic and political change. There seemed to be particular areas of convergence that suggested that identifiable models and strategies for live projects were emerging. For example, educators with particular types of expertise, such as participatory design, seemed to be involved in live projects.

Choice of Methodology for Analysis of Live Projects Network Data

The quantity of data gathered on the Live Projects Network offered the opportunity for an objective analysis. The intention was to ensure that projects on the periphery could be considered on equal terms with more prominent work. A website is by its nature very visual, reproducing the status quo within the architectural discipline of emphasising the appearance of designs rather than the quality of their process or strategies. The number and geographical spread of these projects made it impossible to visit them all but the collection of their data allowed an analysis to be made of how they worked.

It was important to be aware of the limitations of categorisation in the website. The act of making a website filterable makes terminology a critical issue. 'There are spaces between (unclassified, nonstandard areas), of course, and these are equally important to the analysis' [21, p. 38]. Through reflection and dialogue with LPN contributors and compilers of design build online networks under development in Europe [8] and North America [26], the intention was to avoid creating an inflexible classification that excluded contributors who may not recognise themselves: 'client' was revised to 'external collaborator' to acknowledge the collaborative, non-commercial and often community-led bodies who engage in live projects.

Two types of LPN data were analysed in two different ways (**Figure 1**). Firstly, the data on the project's factors such as budget and timescale gleaned from the pro forma was subjected to a quantitative analysis

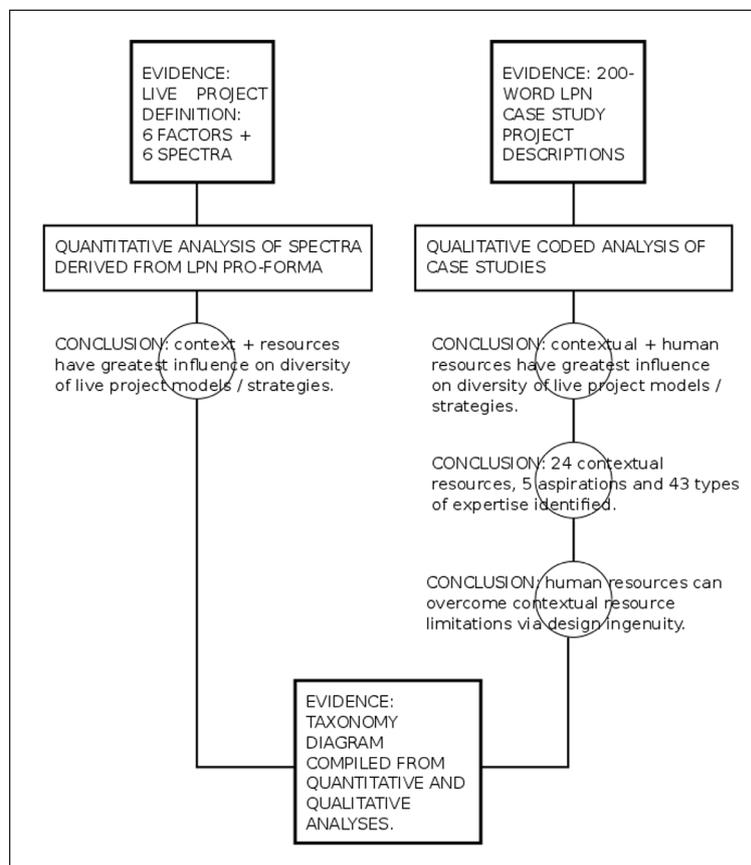


Figure 1: Methodology diagram. (Image: Jane Anderson).

where each factor was compared with the others to identify correlations between them. This process was blind to any prior knowledge of the projects or visual clues, reducing cultural bias and giving peripheral projects equal scrutiny. Secondly, coding was chosen to enable a qualitative analysis of the 200-word project descriptions in order to include the perspective of the contributor in an objective way, reduce bias on the part of the researcher and to allow any themes to be identified that could not emerge via the quantitative analysis.

Methodology for Quantitative Analysis of Resource and Context Data

Six factors common to all live projects were identified and they tell us much about the context and resources of each project. They are budget (funding source), product (permanence of outcome), timescale, external collaborator (client), and brief (level of institutional support). Educational organisation was then sub-divided into group size, student level (academic stage of students) and curricular/extra-curricular. Each factor has its own spectrum (Figure 2) [23, p. 15–16]. For example, the characteristics of the project's product might range from the propositional (such as a participatory urban masterplan) to a permanent installation (such as a Design Build project). In this study the spectrum was used to interpret data as quantitative information for analysis.

During the initial analysis of the data it was apparent that context was significant. For example, some rural projects in developed countries shared characteristics with rural projects in developing countries that they did not share with urban projects in their own country. To analyse the context data, projects were split into developed and developing countries [27, p. 133–38] and into urban and rural contexts. Rural was defined as places with a population below 10,000 people [28]. Each factor was mapped against every other factor in pairs and recorded in bubble charts.

The working hypothesis for the quantitative analysis was that resources, product (outcome), and context are important in shaping different live project models. Live projects tend to exist on the periphery of legitimate participation in both the profession and conventional design studio education [29, p. 10–11, 15–17]. This means that resources can be difficult to access. Scarcity can increase sensitivity to the resources to be gleaned from one's immediate context. Live project educators often devise responses that are resourceful, responsive, resilient and therefore, relevant to their context and users.

Comparison with Results from Pilot Analysis

Since a pilot analysis made in July 2014 [25, p. 227–232], the total sample size has increased by 63%. This study includes projects from 59 educational organisations located in all five continents: Europe 75.3%, Asia 5.2%, America 12.3%, Africa 6.8% and Australia 1.3%. UK projects make up 57% of the study. Relationships between factors such as budget, timescale, brief, educational organisation, level and group

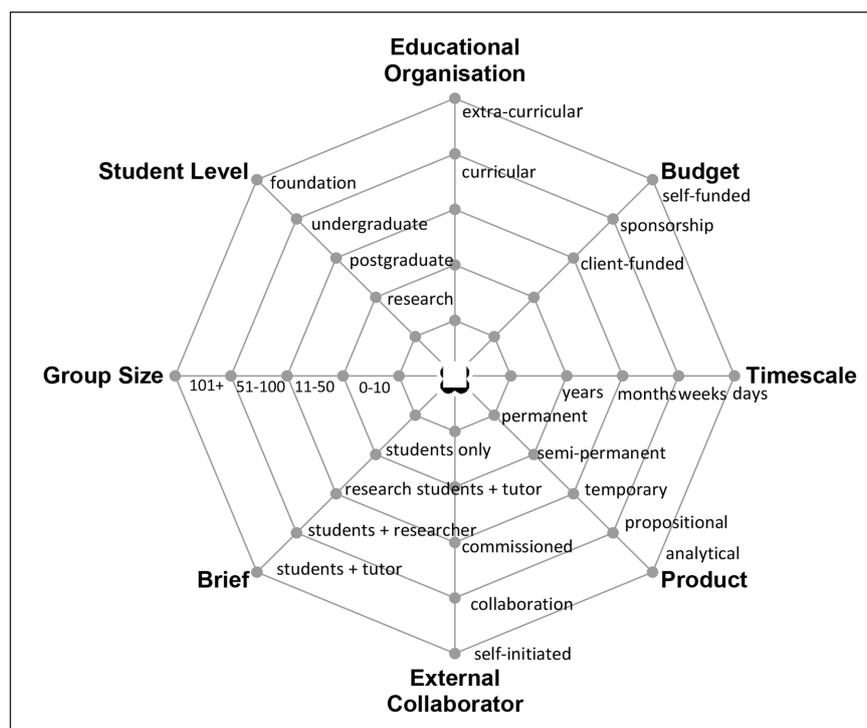


Figure 2: Spectrum of live project factors. (Image: Jane Anderson).

size, have remained fairly stable in most cases, suggesting that the correlations drawn below are reliable. As live project education develops, perhaps attracting greater resources and as networks extend to share case-study information, it is anticipated that an even greater diversity of live project models will emerge and some patterns may alter.

Since the pilot study fewer projects are temporary. Permanent projects and propositional or analytical projects both increased by 4%. The number of projects initiated by the institution has dropped by 6% while the number of collaborations has increased by 5%. This suggests that live project programmes may be becoming established enough to approach or be approached by external collaborators in a less speculative way. The vast majority of projects (94%) operate with students supported by a tutor. In the previous study there were no examples of projects wholly run by students. There are now three case-study examples. The sample of data for developing countries (20%) and rural contexts (21%), while increased since the previous study is still smaller than the sample from developed countries and urban contexts so conclusions are less reliable for these contexts.

Some educational organisations have submitted multiple projects. These include projects by the same group, sometimes following different models for different projects. Others are contributions from multiple groups based at the same educational organisation and often following different models.

Results and Discussion of Quantitative Analysis of Resource Data

Relationships with external collaborators: commissions (27%); collaborations (48%); self-initiated projects (25%). This suggests that live projects are operating in a way that is distinct from conventional practice and can attract external collaborators, probably by demonstrating a maturing track record and expertise.

Winning funding was more successful than expected: client-funding (41%). Sponsorship (23%) is less common than self-funding (36%) suggesting that support from industry, government and the profession may be under-explored. Client commissioned projects are more likely to be client-funded and permanent while self-funded projects are more likely to be self-initiated and temporary (**Figures 3 and 4**). Permanent projects are also more likely to be collaborations than commissioned or self-initiated.

Temporary and semi-permanent projects (53%) are more common than permanent projects (25%) and propositional/analytical projects (22%). The largest proportion of the undergraduate projects is temporary and self-funded. The largest proportion of the postgraduate projects is client-funded. Postgraduate projects are more likely than undergraduate projects to be permanent or propositional. Postgraduate projects

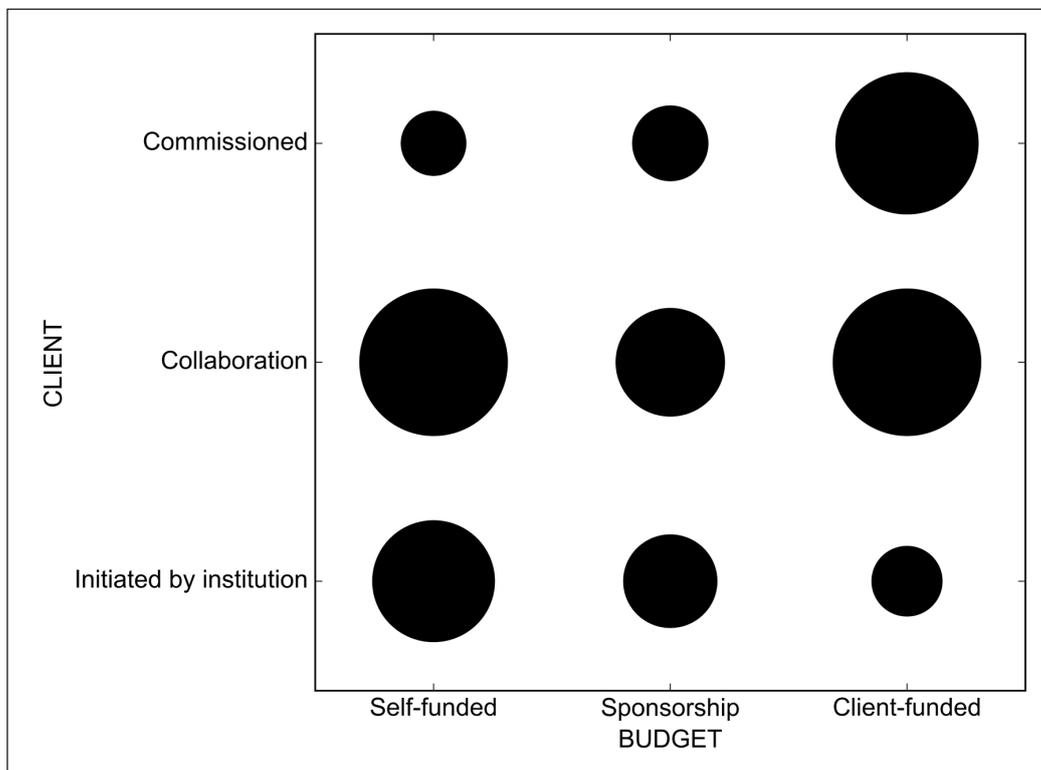


Figure 3: Budget mapped against external collaborator (client). (Image: Jane Anderson).

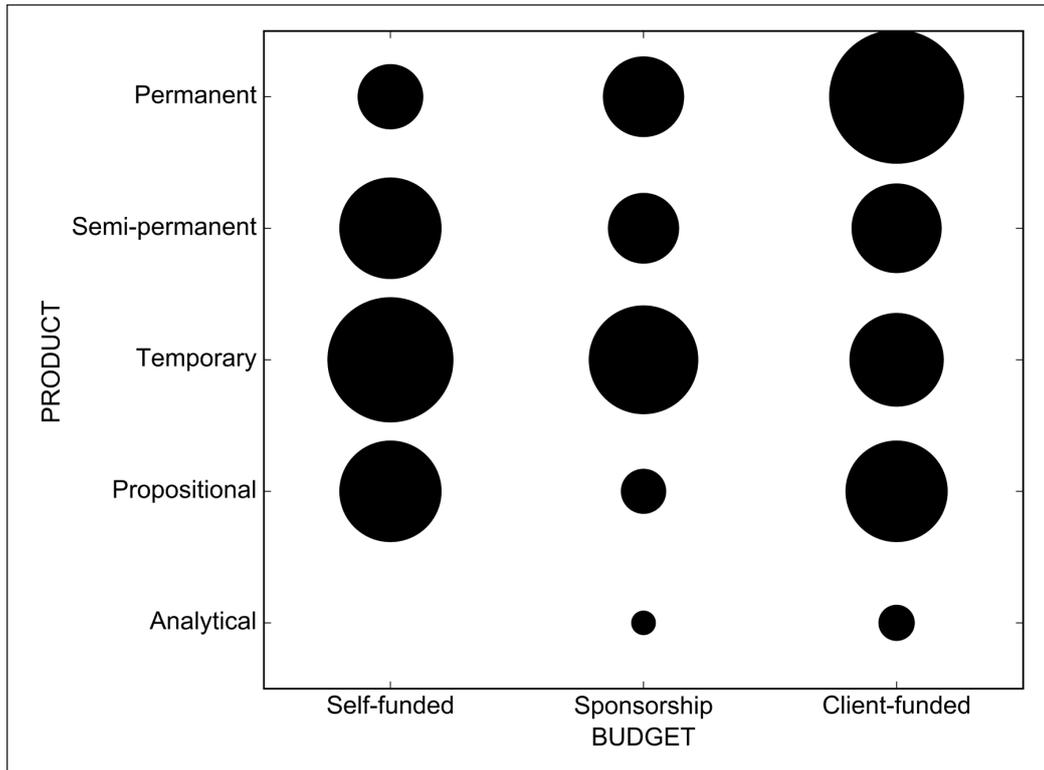


Figure 4: Budget mapped against product (outcome). (Image: Jane Anderson).

made up 36% and undergraduate 40% of the sample. Live projects are enabling students to work together in mixed-level groups (20%). There are inter-disciplinary collaborations with 17 different disciplines, most of them design-based but including others ranging from construction to various arts disciplines. This is rare in conventional design studio education. 33% of projects are extra-curricular, the majority are curricular (60%) and 8% are mixed. This all suggests that live projects are complex and have been structured to enable students to participate in a variety of ways. It also suggests that despite difficulties in fitting complex live projects within existing academic structures there is sufficient acceptance within university structures to develop pedagogy and work around curricular obstacles to initiate, sustain and complete them.

Most projects happen in days (40%) or months (46%) rather than years (14%), regardless of budget or permanence. This suggests that the academic calendar has a strong influence with most cohorts needing to complete a project or phase of a project within an academic year. Analytical projects take months rather than days acknowledging the depth, research element and participatory techniques that universities can bring to these projects that are not always possible in commercial practice.

Large groups above fifty students are less common and are normally self-funded whereas the most common source of funding for groups of 1–50 students is client funding (**Figure 5**). Group sizes of up to 50 are more likely to create permanent buildings than larger group sizes who are most likely to create temporary projects (**Figure 6**). This demonstrates that it is more problematic to resource and coordinate a large team to create a permanent construction. Almost all of the postgraduate projects were carried out by groups of up to 50 students. Large cohorts are often associated with the earlier years of undergraduate study (**Figure 7**). It is more of a challenge with larger cohorts of less experienced students to provide them with the skills, establish a track record to secure the trust of external collaborators and secure the resources needed to construct permanent buildings.

Surprisingly, extra-curricular projects are more likely to be client-funded or sponsored than self-funded. Perhaps student labour and expertise outside the curriculum is seen as more worthy of recompense or perhaps more complex projects demanding greater financial commitment happen outside the curriculum due to the increased time commitment that they require. It is also possible that university structures have not adapted to support the financial and other commitments that substantial live projects bring. This emphasises the importance that where students are not being paid for their contribution, educators need to negotiate a fair exchange between benefit to the external collaborator and learning gained by the students.

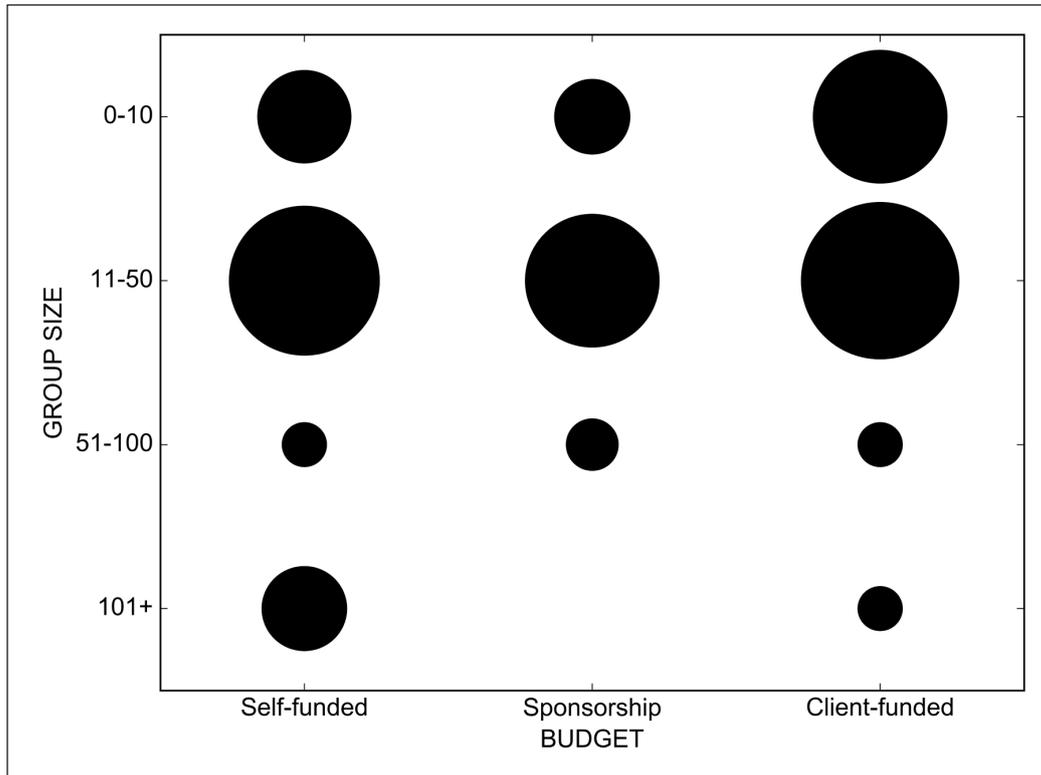


Figure 5: Budget mapped against group size. (Image: Jane Anderson).

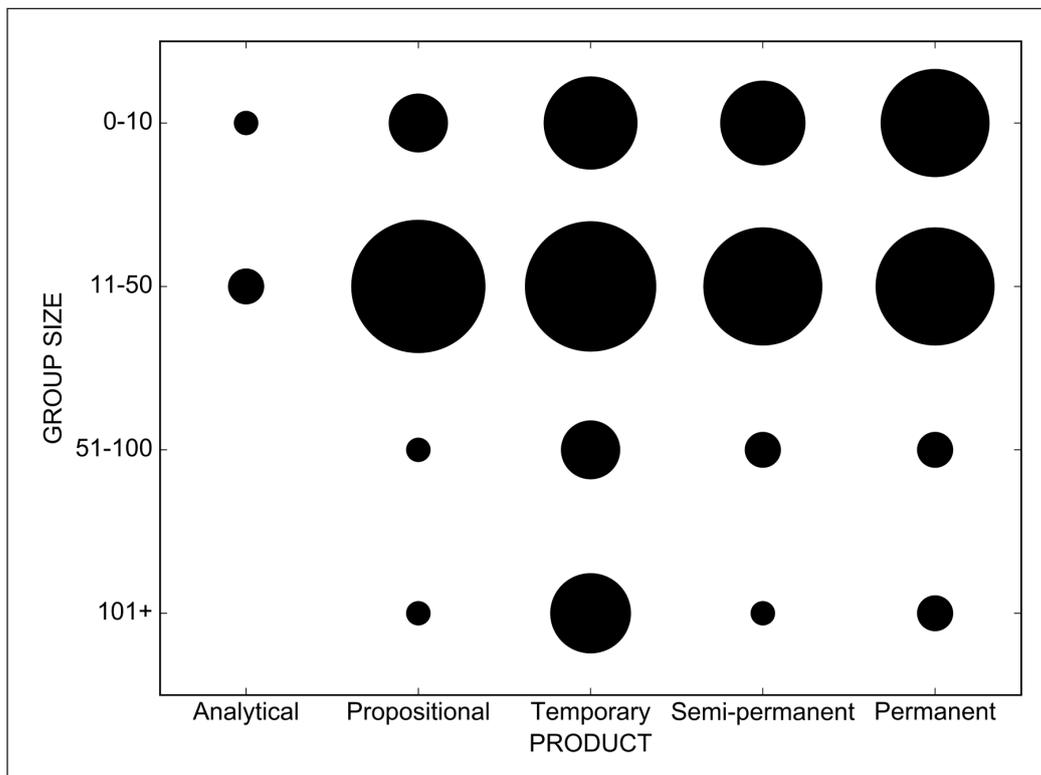


Figure 6: Product (outcome) mapped against group size. (Image: Jane Anderson).

By correlating all of the resource factors, we can see that student level, group size and timescale create greater variation in project outcomes (product) than the level of tutor support (brief), position within the curriculum (educational organisation), budget and the relationship with the external collaborator.

Some live projects defy these norms. Projects such as the Brighton Waste House (2014) [7] by Brighton University in the UK demonstrated that it was possible for 350 undergraduates and young people to design

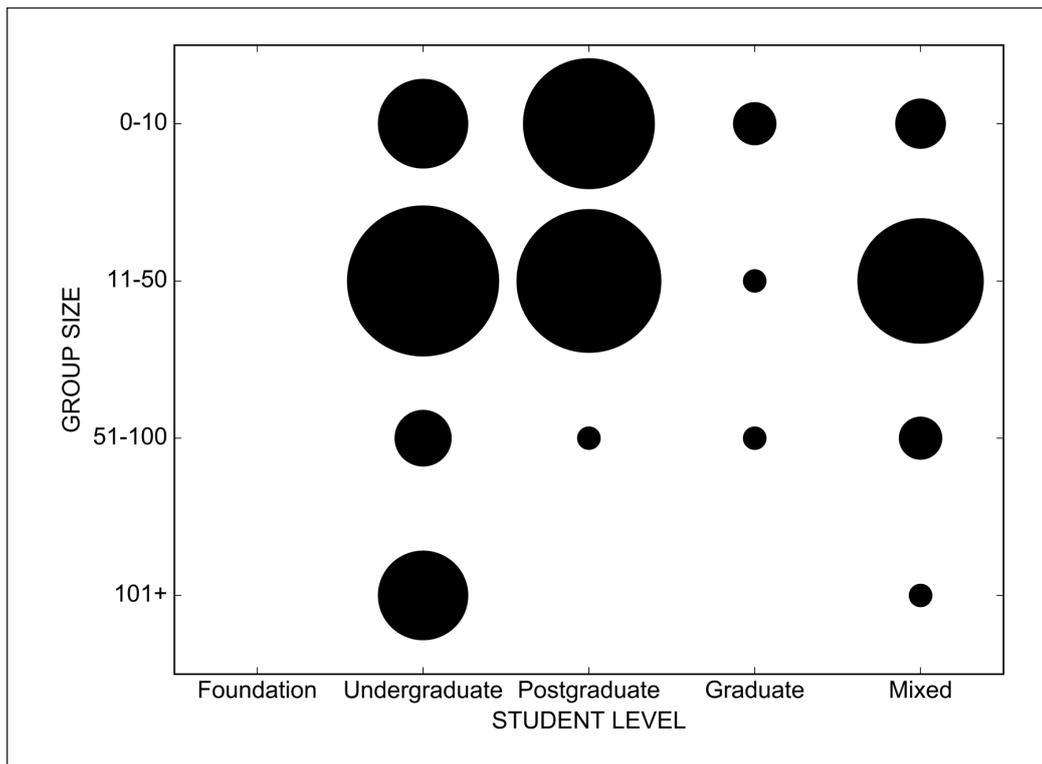


Figure 7: Student level mapped against group size. (Image: Jane Anderson).

and construct an innovative permanent building. By recognising student level, group size and timescale as potential barriers to participation in the widest range of live project models, it is anticipated that solutions to these issues can be developed by live project educators whose work demonstrates that they are already adept in the ingenious use of resources.

Results and Discussion of Quantitative Analysis of Context Data

Most projects in developed and developing countries were located in urban areas. This suggests that projects are engaging with contemporary urban issues, but that rural issues are relatively neglected by what are usually largely urban universities. Groups above fifty students are less likely to operate in developing countries and rural areas suggesting that the added cost, complexity and accessibility of these locations may be restricting their activity.

Urban areas had the largest proportion of temporary projects. This may be because temporary projects are often about impact, research or consultation, requiring engagement with large numbers of people. Temporary projects are often maintained and removed by the project team rather than the local community or site owner and this is more logistically complex in a remote area.

The largest proportion of permanent projects is located in developing countries and rural areas. This suggests that it is more difficult to find permissions and opportunities for permanent construction in developed urban areas with greater legislative control and commercial competition.

Most projects in developing countries were self-initiated or collaborative rather than commissioned. This may be a reflection of the fact that many of these projects were carried out by educational organisations from developed countries rather than local educational organisations. In developed countries collaborations were the most common followed by sponsorship. Projects in developing countries had several distinguishing features. Mixed level and smaller group sizes were strongly represented, as were permanent projects funded by clients. This suggests that these projects are complex, require unconventional arrangements in relation to the curriculum and require concerted external resources and collaborations in order to operate. Nineteen out of the thirty-one projects located in developing countries were carried out by universities that are located in developed countries. There was only one example of the reverse arrangement.

It can be seen that the distance between the university and the project location has a significant influence on the level and numbers of students participating as well as the permanence of the project and nature of the relationship with client collaborators. However these projects in rural and developing locations present

alternative economic and legislative contexts more likely to result in a permanent building. Viviana d'Auria discusses the complexities of this situation in her paper on live projects in the Global South [30, p. 130–134].

Methodology for Qualitative Analysis of Contextual and Human Resources

The quantitative analysis revealed that resources and context were significant factors in explaining the diversity of different live project strategies. It showed correlations between them but was less able to describe the human dimension behind this. If we conceive the participants in a live project as contributors of human resources and their actions as being influenced by their cultural context, we can draw upon live project literature that discusses the motivation of these live project actors.

In order to make a critical evaluation of live projects, Dodd et al. also rejected the categorisation of projects by outcome. They chose motive while acknowledging the difficulty of organising by a single category [10, p. 250]. Their case studies are:

'... classified through the definition of the *intention* for doing live projects. This shifts the discussion away from a focus on outcomes toward an understanding of the deeper import or meaning in the practice ... We also acknowledge that the boundaries are slippery and imprecise. Certain case studies can straddle definitions, or fall into the gaps between' [10, p. 3].

Live projects demand that participants negotiate all aspects of reality that they encounter during the project, both expected and unexpected. This complexity and authenticity is one of the strengths of live project learning [31, p. 124–125]. Students, tutors and external collaborators bring a mixture of, ideally mutually conducive, motivations that become evident in the process and outcomes of the project.

The impossibility of assigning a single motive to individual live projects was reinforced as a by-product of a participatory art piece performed by the author at the *Living and Learning Conference* [32, p. 273]. Participants were asked why they were involved in live projects. They could choose from People, Design, Practice or Making. The overwhelming majority of participants chose 'People' as their prime motivation for engaging in live projects despite their work being very different in emphasis and scope. Upon reflection I realised that a concern with engagement with people may be such a central value held by so many live project educators, the single question 'what is your motivation for undertaking live projects?' is inadequate to reveal the evident diversity of live project models. Sensitive to Bowker and Leigh Star's advice that 'Classifications and standardisation and infrastructure normally require negotiated compromises and alignment to work practices' [21], this study acknowledges the probability of multiple motivations and uses a qualitative coding analysis [33] of the 200-word summary of each project on the Live Projects Network. The analysis draws upon the words of the project participants to reveal what it is that they bring to their live projects, and which contributes to the diversity of models.

The qualitative analysis drew upon experience from live project educators' papers and discussion at six conferences in Belfast, Oxford, Nottingham, Sheffield, Dalhousie and Vienna [1–6]; Benedict Brown's 2012 survey of UK live projects [9]; books edited by Dodd, Harrisson and Charlesworth [10] and by Harriss and Widder [11] as well as informal conversations and correspondence stimulated by the development of the Live Projects Network [7].

Analysis confirmed words and phrases that related to physical resources and context ('commissioned', 'rural') that had been identified in the quantitative analysis as factors that diversified live project outcomes. A small number of new physical resources were identified. Frequent mention was made of phrases referring to the human resources of each project. They tended to relate to skills and values ('participatory', 'sustainability', and so on).

From this initial analysis, a working hypothesis emerged that these skills and values reflect the particular expertise and aspirations of live project actors and that these are particularly significant in diversifying live project models. While it is acknowledged that the expertise of external collaborators is a significant factor, there is insufficient data available to analyse this so the focus here is on the expertise brought by the tutors and students.

Results and Discussion of Qualitative Analysis: Contextual Resources

The coding of the 200-word project summaries revealed more detail and clarity about the nature of context in shaping live project models than the quantitative analysis had. For example, projects located in a city in a developing country and a developed country could often be seen to be using similar strategies when they had access to similar resources. In order to express the diversity of project models it was therefore not helpful to classify

projects by a single factor such as context or resources. Different live project models were instead distinguishable once the interaction of context and resources were considered together. Context was re-conceptualised as a multi-dimensional resource connected to need or opportunity, rather than as the singular factor that it was in the quantitative analysis. Twenty-four contextual resources were identified that supported live projects:

Thriving city; Declining city; Thriving rural; Declining rural; Scarce physical resources; Scarce economic resources; Plentiful physical resources; Plentiful economic resources; Local; Abroad; Event; Interim; Inaccessible; Informal settlement; Existing building; Vernacular; Heritage; Post-crisis; Unsafe; Homeless; Charity/NGO; Industry; Practice; Education.

The analysis showed that there was a lot of activity in locations not usually associated with conventional development or design activity such as declining cities and rural areas with scarce economic resources. This included several projects to tackle the negative effects of isolation, often by building physical connections such as bridges, ramps and stairs. Also frequently mentioned were contexts in various types of crisis. These ranged from derelict historic fabric to informal settlements. The relationship between the home educational organisation and the project location was significant with frequent reference to either 'local' or 'abroad'. Context as a resource also needed to be considered in a temporal way to differentiate strategies for temporary events, permanent situations and interim uses. 'Meanwhile' projects enable spaces to be used before another planned development happens.

The analysis confirms the strong connection between live projects and contexts with significant levels of need (particularly economic, social justice and wellbeing). In these contexts there is often a vacuum of commercial design input and non-profit solutions may be appropriate or necessary. However there are counter-examples of projects located in thriving places with plentiful resources. Low-cost projects in these locations offered a positive alternative to prevalent commercial activity. Others took advantage of opportunities to collaborate with vibrant cultural activities, industry, or the profession, which in turn often had their own motivation to engage with the educational organisation running the live project. Many of these projects responded to issues such as cultural identity, sense of place, equity and engagement, often in response to economic forces.

Results and Discussion of Qualitative Analysis: Human Resources

Coding revealed the significance of Human resources in distinguishing live project models and revealed the significance of the expertise and aspirations brought to each project by project participants. Forty-three distinct experts and their aspirations were identified. They are grouped below according to five aspirations:

1. *Design Strategy*: Artist; Researcher; Urban strategist; Inter-disciplinarian; Alternative futurist; Post-occupancy evaluator.
2. *Design Realisation*: Haptic; Maker; Inventor; Digital wizard; Pre-fabricator; Upcyclist; Product hacker; Refurbisher.
3. *Social*: Participatory collaborator; Activist; Advocate; Gorilla tactician; Wellbeing enabler; Low budget creative; Bringer of joy; Local expert; Good citizen; Visitor; World citizen; Sustainability; Accessibility enabler; Safety conscious; Post-crisis expert; Cultural ambassador; Heritage re-inventor; Vernacular re-inventor.
4. *Educational*: Pedagogue; Challenger; Immersion therapist; Learner-teacher-researcher-practitioner; Alternative learner-teacher; Project Office practitioner; Outreach learner-teacher.
5. *Professional*: Critical practitioner; Practice collaborator; Industry collaborator; Entrepreneur.

Aspirations 2, 3 and 4 are similar to Dodd et al.'s three 'intentions' for doing live projects [10, p. 3]. The terms *Design Strategy* and *Professional* have been added because significant numbers of projects were conceived with the intention of engaging with the design strategy phases of architectural practice and a significant minority of projects were conceived to give students the opportunity to engage with professional practice. This included curricular and extra-curricular projects run by academics, others initiated by professionals with educational aims but working independently from a university and a few 'spin-off' projects by graduates extending or developing projects they became involved with as students and using live project methods as a means to operate as young professionals.

The work of experts under *Design Strategy* did not have to be physically realised in order to achieve their aspirations but this was essential for experts in *Design Realisation*. *Social* expertise could be strategic or

realised. *Professional* and *Educational* aspiration relates to innovative ways that the actors operate, who they operate with and what can be learned or developed in the process. They exist in the intersection between education and practice that live projects tend to open up [29].

The qualitative analysis of human resources revealed new models in addition to those found in the quantitative analysis. For example, a number of projects used live project techniques to explore heritage through reconstructions or reinventions of historic and vernacular precedents. Others encouraged a critique of dominant building systems by upcycling, re-using or hacking them. An intention to influence legislation and policy manifested itself in creative ways using lateral thinking and invention. It was refreshing to observe that ethical and sensory expertise were so frequently mentioned because they are often problematic or neglected in purely theoretical design studios. These included expertise in the stimulation of enjoyment or play, an emphasis on haptic methods and outcomes, good citizenship, economic responsibility, accessibility, safety, sustainability and expertise related to wellbeing and social justice. Expertise in applied and active methods was prevalent. For example, many different types of collaboration were described. These included participatory expertise, interdisciplinarity, activism and partnership with industry. Entrepreneurialism was mentioned less than expected but there was a high level of awareness of the importance of dissemination for the benefit of the external collaborators, the educational organisation and society generally. Learning and teaching was a significant area of expertise. The analysis indicated that there was a high degree of awareness that the flow of learning was complex and multi-directional between community, students and tutors. This last finding supports the observation made by Lovett, McClean and Morrow that we can 'understand architecture and its processes as a form of pedagogical practice: a civic pedagogy' [34, p. 248].

Taxonomy of Live Projects

In his thesis, Benedict Brown identifies an evolution in education in UK and Ireland that begins with 'modern' live projects emphasising 'practical, hands-on experience of the design and construction of small projects' [9, p. 31]. Finally, 'The postmodern live project shifts the focus of the students' learning experience from architecture as built product to a wider conception of architecture as process' [9, p. 41].

Live project educators who are aware of the 'complex pedagogies' [9, p. 118] co-existing in any live project will frame a project brief in appropriate terms. For example they will site the project in a context that is appropriate if their focus is construction-led. They would not ignore or dismiss any socio-political-economic issues that were to be found in that context. The multiple aspirations acknowledged by contributors in their 200-word descriptions on the Live Projects Network tend to suggest that they are more likely to be 'postmodern' rather than 'modern'.

The quantitative analysis demonstrated that context and physical resources influenced the statistical likelihood of a particular project strategy being employed but this didn't preclude the use of other strategies. It was found that it was not useful to classify according to contextual or physical resources as singular categories because they informed each other, acting instead as contextual resources. In addition, participants' expertise and aspirations enabled projects to transcend contextual or physical resource limitations. This is a positive demonstration of the essential function of design. For example, projects were not found to reduce in scale or complexity when working in countries with scarce economic resources in comparison with wealthy countries. This was often because live project participants made ingenious use of available physical resources. Even when working in countries with plentiful economic resources, live projects often operate with very limited financial resources and within complex legislation.

The quantitative and qualitative analyses demonstrated the ways in which different factors inter-related to form particular models for live projects and which were influential in evolving a diversity of live project outcomes. In order to demonstrate these inter-relationships and resulting models, they have been assembled into a useful taxonomy (**Figure 8**). In the taxonomy, all live projects are assumed to have a pedagogical basis because that is what distinguishes them as live educational projects rather than as purely professional projects [23, p. 12]. Some professionals, acting independently of universities, function in an educational capacity temporarily or periodically in order to run student live projects with a pedagogical remit. To acknowledge this distinction, the taxonomy has two roots: pedagogy and practice. The five branches of the taxonomy represent different aspirations of the live project experts: *Design Strategy*, *Design Realisation*, *Social*, *Professional* and *Educational*. The inter-relationships between them are described in the taxonomy diagram. The branch springing from the practice root that describes pedagogical initiatives made by professionals in practice is labelled *Educational*. The branch springing from the pedagogy root that describes projects initiated by educational organisations that are interested in practice is labelled *Professional*. All branches are fed by, and pass through a common layer of physical and contextual resources because, although vital in influencing live project models, the aspirations of live project actors transcends the limitations of context

and resources. Other branches springing from the pedagogy root are *Social* and *Design* which splits into *Design Strategy* and *Design Realisation* to reflect the difference between projects that must be materialised in order to achieve their aims and those that do not. The leaves on the branches denote the forty-three different types of expertise that were found in the study to diversify the project models employed. It is at the point when expertise is described that the taxonomy distinguishes itself as a taxonomy of contemporary architectural live projects rather than any other discipline or time period. The roots and the branches share common ground with live projects in other disciplines. The expertise leaves could be replaced to describe live projects in other disciplines or developments in the architectural discipline.

The structure of the taxonomy allows live project participants to map their expertise and aspirations against available resources and contexts to see models or strategies that have evolved in similar circumstances. Case studies of these models can be viewed on Live Projects Network and a dialogue begun with others in the network. It is hoped that increased awareness of the work of others will stimulate further evolution and diversity. It is also hoped that by removing the emphasis from the image of each live project and instead exposing the structure, function and form, it will deepen understanding and enable dialogue to expand into other disciplines.

Conclusion

The data held by the Live Projects Network gave the opportunity to devise an objective method to analyse contemporary live projects that articulated the process and diversity of models rather than the outcomes, avoiding architecturally self-referential critique and seeking inclusive new terms of reference. Current developments in architectural education and practice as well as contemporary social and cultural issues were identified. The significance of live project activity on the periphery was factored in. Methods such as quantitative analysis and qualitative coding were used such to ensure that the analysis was representative and as objective as possible. This enabled invisible and emerging patterns to be identified. One such finding is that student activity outside the curriculum is more likely to be recompensed than within the curriculum.

Quantitative analysis of six factors drawn from 154 case studies from Live Projects Network revealed that group size, student level and timescale had the greatest impact on project strategies. By identifying them as potential barriers to participation in the widest range of live project models, it is hoped that live project educators will use their ingenuity to overcome them. Context and resources were the most significant conditions influencing the diversity of live project models and strategies. Live project educators devise responses that are resourceful, responsive, resilient and therefore, highly relevant to their context and users.

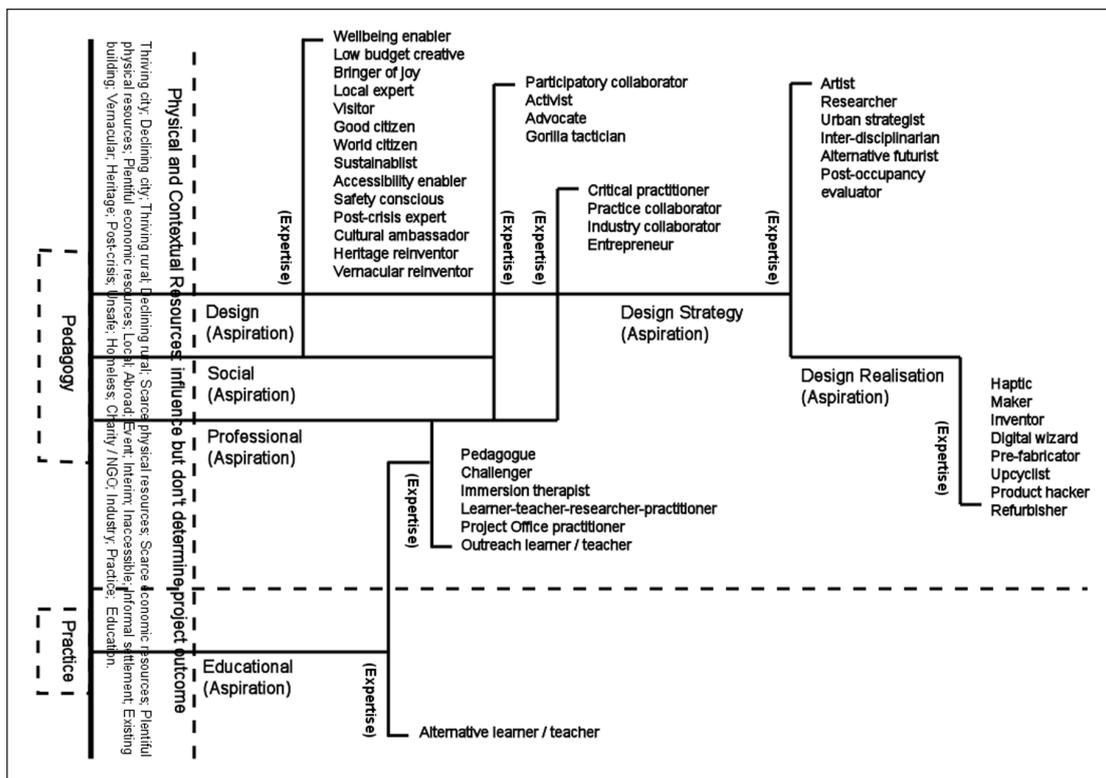


Figure 8: Live project taxonomy. (Image: Jane Anderson).

For example, projects in developing countries had several distinguishing features. Mixed level and smaller group sizes were strongly represented, as were permanent projects funded by clients. This suggests that these projects are complex, prompt unconventional arrangements in relation to the curriculum and require concerted external resources and collaborations in order to operate.

A second qualitative analysis of the 200-word descriptions of case studies on LPN was undertaken using coding. Dodd et al. [10, p. 250] chose to order case studies by motivation rather than project outcome and this study extended this by acknowledging that students, tutors and external collaborators bring a mixture of, ideally mutually conducive, motivations that become evident in the process and outcomes of the project. Not only that but individual participants bring multiple motivations. The authenticity of live projects means that each participant contributes different things that become evident in the process and outcomes.

Coding revealed that the expertise and aspirations of participants were particularly significant in diversifying live project models. It was insufficient to classify according to contextual or physical resources as singular categories because they informed each other, acting instead as contextual resources. Twenty-four different contextual resources were found that supported live project activity. Forty-three distinct experts were identified and grouped according to five common aspirations. The flow of learning was multi-directional between student, tutor and community, demonstrating architectural live projects functioning as a 'civic pedagogy' [34, p. 248]. The qualitative analysis of human resources revealed models additional to those found in the quantitative analysis. Many of these engaged contemporary disciplinary, social, economic or political issues.

Expertise and multiple motivations were identified as essential human resources capable of transcending limitations of contextual and physical resources and therefore being significant in distinguishing and diversifying different live project models. This is a positive demonstration of the essential function of design. Examples of models that emerged despite apparently hostile contexts were activity in locations not usually associated with conventional development or contemporary design such as declining cities and rural areas with scarce economic resources: isolation, crisis, significant levels of need (particularly economic, social justice and wellbeing). Even in areas of privilege projects located in thriving places with plentiful resources were often low cost or offered positive alternatives to prevalent commercial activity. This included collaboration with vibrant cultural activity, industry, or the profession; and responses to issues such as cultural identity, sense of place, equity and engagement.

This study has shown the way that projects cross the single dimensional categories that were previously used to identify them. We can now understand how these variables interact and which are most likely to stimulate diversity. The analyses revealed the intersection of multiple motivations, expertise and contextual resources that created diverse models/strategies, supporting Benedict Brown's findings that live projects are likely to be complex postmodern pedagogies [9, p. 31–45, 118]. In an effort to give voice to the peripheral this study avoided forming a hereditary tree of canonical projects. The fluid and multiple aspirations and expertise of project participants made it impossible to taxonomise individual projects or participants. However a general taxonomy was devised of live project models and strategies that demonstrated the inter-relationships between variables that participants can use in order to navigate to identify their existing and possible alternative modes of operation. In the taxonomy all live projects were ascribed pedagogical roots and educational aspirations to distinguish them from purely professional projects. Branches representing five aspirations are fed by, and pass through a common layer of physical and contextual resources because, although vital in influencing live project models, the aspirations of live project actors transcends the limitations of context and resources. The branches then split into forty-three identified types of expertise. Participants may recognise a description of their own expertise but this is not fixed. They could employ or acquire different expertise for different projects.

The choice and range of methodologies chosen to gather and analyse the data assembled into the taxonomy respect the advice given by Bowker and Star of 'being sensitive to exclusions', 'rendering voice retrievable', and 'recognizing the balancing act of classifying' [21, p. 214]. The purpose of this taxonomy is not to freeze or stifle the evolution or creation of new live project strategies and outcomes, but to record a contemporary snapshot in the hope that live project activity will continue to evolve. It makes visible what is possible with available resources and may stimulate some to challenge the limitations of their existing environment by altering it, defying it or harnessing new resources in order to operate in ways that were previously unimaginable. The taxonomy's models and strategies can be related to case-study projects on LPN for illustration. A dialogue can be established via LPN with others in the network for mutual support and collaboration. It is hoped that increased mutual awareness of the work of others will stimulate further diversity. It is also hoped that by removing the emphasis from the image of each project or its closeness in

appearance to professional architectural practice and instead exposing the process, it will enable dialogue to expand into other disciplines.

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Competing Interests

The author has no competing interests to declare.

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