

Professional Practices in the Built Environment

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Book of Abstracts

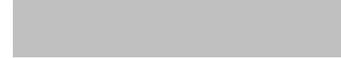
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Design-led procurement: linking design process with procurement of construction projects

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Abstract

Separation of design from construction has led to serious coordination and communication problems in our industry, which are unlikely to be resolved by BIM without significant changes. Although collaborative design and construction methods have been developed for major projects, over 80% of all construction projects still suffer from a divisive risk management culture, which perpetuates problems of integration between briefing, design and construction. Design-led procurement facilitates the engagement of trade and specialist contractors in the briefing and design process. Designers lead the supervision of work on site, thereby bridging the gaps between briefing, design and construction. Network governance supported by Project Insurance, instead of Professional Indemnity Insurance, facilitates the optimisation between briefing, design and construction. A new paradigm has to be established to disentangle long established routines across the design and construction professions.

Keywords: design-led procurement, network governance, project insurance

The Reluctant Supply Chain

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Abstract

Uniquely leveraging recent advancements in three technologies, Building Information Modelling (BIM), open source parametric software plug-ins, and digital CNC fabrication, Bauman Lyons Architects are working with ARUP to develop MassBespoke, a new timber cassette construction system. MassBespoke merges cutting edge design, fabrication, management and construction approaches with service delivery models from parallel technology industries, to enable delivery of high quality custom-designed buildings.

This research and development project aims to enable flexible, distributed manufacture of customisable buildings in a network of local, low-cost fabrication hubs, enabling widespread accessibility to a complex yet predictable construction process, independent of the level of customisation. The system brings increased level of cost and build certainty to early design stages. Through industry engagement we identified the scope for the system to become a platform for engaging users and designers with the supply chain at the point of sale, through an innovative browser based customer facing interface linked directly to suppliers thus enabling a fully integrated supply chain.

The government believes that new digital tools should help the construction industry achieve the 23-year dream first put forward by Latham (1994) of integrating the supply chain team to form a collaborative industry. This paper considers the additional challenges encountered to realising the full potential of digitisation, and highlights the barriers to achieving integration despite the availability of the tools. It also considers the impact that digitisation will make on architectural practice in terms of new skills, new working methods, new partnerships with all tiers of the supply chain, and the new commercial opportunities it presents in terms of blurring the distinctions between design service, fabrication, construction, development, management and even sales.

Finally, the paper offers a critical appraisal of the pitfalls in government policy. Whilst promoting the benefits of digitising the construction industry, current policy tends to favour large centralised off-site manufacture which historically proved to be vulnerable to the boom and bust nature of the industry. MassBespoke offers an alternative model for an ecology of an integrated network of small scale, low cost, distributed manufacturers.

Key words: digital construction, modern methods of construction, distributed fabrication, supply chain integration

Procurement and Building Performance

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Abstract

The post-occupancy evaluation of buildings repeatedly identifies similar causes to the performance gap and user dissatisfaction: lack of user considerations in the design process; overly complex systems and controls; insufficient commissioning, handover and training of end users.

This paper presents a cross-project analysis of Innovate UK non-domestic Building Performance Evaluation projects which, rather than focusing on design measures, i.e. what performed well or poorly, looked into how and why building performance was arrived at, i.e. whether procurement processes influenced the end performance in terms of user feedback and energy consumption.

The analysis concludes that procurement processes do matter for building performance, though probably not as much as people, collaboration, and simplicity. Some set-ups are more conducive to delivering better user satisfaction, comfort, and energy consumption. This includes the contractual framework, team's roles and responsibilities, as well as more informal factors such as relationships and individual motivations. The worst performing projects tended to be "normal" projects with aggravating factors and little incentive or protection through contract. Those achieving the best performance tended to be "normal" projects with motivated people, incentives, and helpful factors especially simplicity of design.

Key findings are presented, including a simple "procurement scoring" tool and a list of recommendations. This recognises that the choice of a procurement route will be driven by complex factors including capital cost and risk management. The intention is to highlight risks and opportunities so that, within the selected route, procurement characteristics can be refined to help deliver operational building performance.

Keywords: procurement, building performance, collaboration, post-occupancy evaluation

Challenges in the business models of creative professional service firms

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Abstract

Recent studies have shown that professionals in the built environment need new or improved business strategies to survive in increasingly dynamic and competitive environments. To gain insight into how professional businesses can be successfully reshaped, a profound understanding of their business models is necessary. So far, business model research in project-based organisations has focused on large companies that are primarily profit-oriented. Work that addresses the business challenges of small, creative service firms is extremely limited. This study aims to develop knowledge around the business models of architectural firms by focusing on their value propositions, value creation and value capture. Iterating between business model literature and empirical data from 41 semi-structured interviews with Dutch architects and clients, architectural firms' business models were systematically examined regarding their configurations and outcomes. This resulted in an overview of key business model components, their interrelationships and accompanying challenges for architectural firms. The study contributes to theory and practice by the development of a strategic decision making framework that specifically addresses the business model challenges of small creative service firms. The framework helps practitioners to enhance their business strategies and to develop new or improved business models with increased benefits.

Keywords: architectural firms, business model, strategy, value creation

Teaching tomorrow's Architects – How relevant are current models of professional education to the world of global architectural practice?

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Abstract

The current model of architectural education has its roots in the protectionist professional norms of the 1960s. Using the sociological perspectives of Larson's 'Professional Power' model and the traits of professions, this paper considers the reasons why professional education is not meeting the current requirements of global practice. It then considers the effects of globalisation and questions the relevance of national restrictive practices in a global marketplace for both procurement and design professionals, and proposes research into the context of global practice using Garrett's perspectives of Globalisation to determine new models of professional education.

Key words: architectural education, the professions, globalisation, innovation

Architects with borders: developing a sharing economy

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Abstract

With the apparent neo-liberalisations and major global restructure towards privatisation, disillusioned architects have been in search of a new form of public value. In giving the profession agency once again, the most common solution to-date has been volunteering architectural services, leveraging professional time and skills for free (or at a large subsidy), so that those who would not usually be able to afford design services can. But is this pro-bono model an appropriate and efficient mechanism to allow architects to re-gain its public role?

Instead, via analysing the breaches in existing competition and trade policies that service volunteering encourages, an initial conclusion could be made that, accidentally, this model has not so much been working against the power inequalities produced by late capitalism, but paradoxically only going to extend the arm of architectural corporate control, not reduce it. In fact, by understanding and acknowledging these mistakes, a move away from accidental monopolies and towards a more ethically considered form of architectural trade may be possible. Encouraging not 'exchange' but a 'user' value based architectural economy, positive alternative ways of sharing architecture may become apparent. Ones that emancipate the profession from the limits of capitalism, not restrict it further.

Key words: international volunteerism, architecture regulation, development economics, competition law, effective altruism

Joint Venture Design Teams: Managing for Effective Collaboration

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Abstract

Design has become an international commodity with the increase in the number of architectural competitions for premier international projects. In these cases, the design joint venture (JV) team must work with locally registered organisations to comply with local regulations and codes. But, designers prefer not to take responsibility for the management of such multi-disciplinary teams. JVs can be especially problematic in countries where the contractor is ultimately responsible for design integrity. A new approach is required in the professions, including taking leadership, with a deep understanding of the issues around digitally-mediated international collaboration (Ramalingam, Lobo et al., 2014) and, where accountability lies. Yet, little effort has been devoted to exposing designers and engineers to these issues in managing JVs. Our aim is to unpack these aspects through a study of JVs, working closely with leading international design and engineering consultants. The initial findings show that differing practices, contracts and perspectives on enabling collaboration in JVs, raises questions on the expectation of having a single 'charismatic' leader or leadership team. The analysis suggests that it should be broadened to consider 'authentic' and relational leadership which involves adaptation, a degree of self-management and relational accountability. The implications for the Architecture, Engineering and Construction (AEC) professions are significant, for effective joint ventures and project delivery.

Keywords: joint venture, design teams, leadership, relational accountability, collaboration

Towards a professional map for specifying and actively measuring behaviours for collaboration

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Abstract

The thrust of the efforts in BIM adoption and implementation has so far focused on the technological and project procurement to drive the transformation of the construction industry. However, organisational considerations such as actively measuring relevant behaviours for collaboration are deemed essential for collaborative success. The need for enforcing greater collaboration among construction project stakeholders have been highlighted over many decades, and yet, so far, have received little attention. Indeed it is widely acknowledged that tackling soft issues such as identifying and robustly measuring collaborative behaviours are central to fully realise the benefits of BIM, fundamental changes in the working practices and inter-relationships of construction professionals. The suggested range of benefits the industry might gain from such a shift in working practices include improved efficiency, waste reduction, dispute minimisation and predictability of project outcomes, amongst others. One of the keys to enhancing collaboration, therefore, is that managers of all participants involved in a given project should actively measure relevant behaviours for collaboration. In order to define such metrics, however, the desired behaviours need first to be identified and 'good' performance defined. It is suggested that dedicated mechanisms for monitoring the performance of behaviours for collaboration of participants are therefore needed. This is critical in order to ensure the required feedback is triggered. This paper reports on ongoing research project that sought to develop and validate a profession map, designed to define and actively measure the behaviours required to succeed in BIM project collaboration.

Key words: BIM, collaborative behaviours, interdisciplinarity

The portfolio professional = education + skills + commercial environment +
communications network

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Abstract

Inspired by the Edge Commission Report 'Collaboration for Change' (Morrell, 2015) and ongoing Careers-Mapping research by the cross-industry network 'dotBuiltEnvironment', this paper presents a thesis on how, and why, the traditional view of the linear 'specialist' professional does not reflect the reality of the modern employment market. This leads to a concluding mandate to increase our cross-disciplinary teaching and learning in built environment Higher Education.

The paper references extant teaching initiatives and innovations across built environment disciplines, and professional criteria from CIBSE, RICS, CIOB, IStructE, and the RIBA. Links between professions and the emergence of the transient professional, frequently traversing the traditional institutional silos, will be discussed. New research from dotBuiltEnvironment will demonstrate graphically the evidence collected from multiple industry events and contributors, evidencing that the 'norm' in built environment career paths is a world away from the narrow definitions of institutional membership criteria. Observations will be made on communication networks; professional development; accreditation criteria and future models of employment.

We propose a 'portfolio professional' view, and provide a perspective which posits a fundamental shift in the operational framework for the institutions of the construction industry. We conclude by recommending a concerted evolution of built environment institute operations, and the development and delivery of multi-disciplinary and cross-sector learning in built environment education at all (lifelong) levels.

This paper is a collaborative endeavour from a group of young professionals across built environment disciplines, and representing consulting, contracting, policy and education sectors.

Keywords: digital, construction, education & skills, multidisciplinary, economics

Re-imagining the Future of Cities Using Urban Foresight Techniques: Towards a Smart and Sustainable Reading 2050

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Abstract

Cities have become a global focus for tackling major climate change and resource depletion issues, and understanding how we can transition to a more sustainable future. However, strategic thinking is needed to overcome potential disconnections between short-term planning horizons and long-term environmental change. Understanding the past, present and future of cities helps us create a 'possibility space' for re-imagining the built/natural environments that can be created/re-imagined in cities. Interdisciplinary-based urban foresight techniques focus on the need to create strategies and scenarios to deal with future changes. They offer the ability to reach consensus around shared 'city visions'; help create innovative thinking and decision-making; promote engagement with city stakeholders; and link technology/innovation with wider socio-economic issues, which affect the urban innovation 'ecosystem'. This paper provides an overview of the evolution of urban foresight thinking, and examines the development of a specific, co-produced city vision: the 'Smart and Sustainable Reading 2050' project (linked to the UK GOS Future of Cities Foresight Programme) and the lessons it holds for built environment practice.

Keywords: urban foresight, city vision, backcasting, futures studies

A collaborative approach to POE

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Abstract

This joint paper prepared by Cullinan Studio and BuroHappold considers how architects and engineers use Post Occupancy Evaluation (POE). This is done by reflecting on their POE of the Foundry building, which is the home of Cullinan Studios. The paper focusses on the methodology used and how the knowledge was shared with various audiences. The key lessons learnt are that doing POE on your own building is a useful way of embedding POE into design practice; there is a balance to be had between measuring overall performance and evaluating the success of particular design features; finally, we surmise that openness is important both to the success of this collaboration and the wider collaboration that is needed for POE findings to be shared across the building industry.

Keywords: post occupancy evaluation, knowledge sharing, design practice, POE methodology

Designing with care: JDDK hospice design

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Abstract

The architectural practice JDDK has over 30 years of experience in developing and delivering hospice designs in the UK and Ireland. In responding to calls to address gaps in the knowledge of design considerations for this typology, the practice's directors are seeking appropriate methods to identify, evaluate, and disseminate their good practice in this field (Worpole, 2009). This paper considers whether existing forms of Post Occupancy Evaluation, particularly processes that privilege discrete measurements of medical efficiency over the holistic end-user experience, are applicable to evaluating hospice facilities. As hospice design presents an alternative 'architecture of resistance' to the normative environments of medicalisation, assessing its 'success' may benefit from supplementary or alternative evaluation methodologies. Such approaches could seek to engage with patient-centred factors of dignity, trust, autonomy, and similar intangible qualities. The practical output of such evaluation methods could potentially assist in the development of briefs, through developing common aims and languages, capable of being understood and utilised by all stakeholders in the development of new palliative care facilities.

Keywords: hospice, architecture, palliative, post-occupancy, evaluation

Developing wellbeing valuation practices in the built environment

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Abstract

Wellbeing has emerged as an influential agenda in the built environment in recent years, promoting the social and, significantly, the economic aspects of triple bottom line sustainability, a three-part framework encompassing environmental, social and economic priorities. With a proven business case, it embodies an accessible and affirmative goal for occupants and practitioners alike, compared to the technical discourse of restraint that surrounds energy efficiency. As the property market increasingly demands user-centred environments, evidence-based design proven to deliver wellbeing outcomes for end users is essential. The challenge of capturing and communicating this evidence to a range of expert and non-expert audiences is therefore a topical professional concern. This paper presents a novel wellbeing valuation approach. Consisting of a validated multi-item scale to measure the wellbeing of building users and its monetisation using techniques from the social impact sector, it has the capability to communicate the value of design in a powerful and transformative manner. Wellbeing valuation is a nascent practice that provides the professions with opportunities to collaborate with end users and develop new knowledge about building performance and experience, enhancing the ability of practitioners to shape the built environment in positive ways.

Key words: building users, post-occupancy evaluation, social return on investment (SROI), valuation, wellbeing

Spaces for interaction: empirical evidence on spatial realities versus supplier mantra

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Abstract

What are the conditions in which people interact? The built output of recent decades of UK procurement reflects the supply chain's promotion of flagship buildings, with the critical mass to confer image on their occupiers, and incorporate social facilities intended to attract occupants and promote their interaction. An associated argument rests on another proposed benefit of scale: with big buildings able to accommodate more people, they are postulated as increasing the opportunities for user interaction, both planned and spontaneous. The contingent proposition is that this adds value to the occupant organisation – the more so as a greater number people is further assumed to increase the scope for productive synergies.

Referencing examples of buildings predicated on this basis – including a notable trend in submissions for building awards, this paper questions these projected advantages of scale. Drawing on systematic user research in the form of post occupancy evaluations and briefing studies, the analysis offers pointers to relevant, sustainable development, involving aspects of location, scale, building form, and relevant amenity.

Key words: interaction, location, scale, facilities, work-life

The benefits of research for a small practice

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Abstract

The context for the research presented in this paper, is a growing interest in achieving positive outcomes for health and wellbeing in new residential developments. In particular it focuses on children and their ability to play outside safely and be independently mobile. There has been a sharp reduction in both play and children's independent mobility in recent years 'with significant consequences for the health and physical, social and mental development of children' (Shaw et al. 2015). However, this area suffers from a lack of available evidence and data that industry can draw on for policy and good practice.

This paper explores the experience of engaging with and carrying out independent critical research for our small practice ZCD Architects. It looks at the challenges and benefits, as well as the wider outcomes for academia and industry. A discussion of the project shows how it helped our practice to create new knowledge and expertise, providing competitive advantage as well as underpinning the practice's philosophy of designing buildings and communities for the people that use them.

Key words: practice research, health and wellbeing, play, residential design

The City of Time: 'Site, structure, skin, services, space plan, stuff' and then what?

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Abstract

DEGW was an international research based design company that pioneered new ways of thinking about architecture for over four decades from its foundation in 1971. A central idea informing DEGW's research and design was that buildings should be understood not merely in terms of fixed forms and spaces (as most architects are trained to do) but as interconnected building and user systems that change over time. The idea, also articulated by Stewart Brand in his landmark TV series and book 'How Buildings Learn,' was that a buildings are composed of the site, shell, services, scenery and stuff each changed and adapted by their users over different periods of time.

In this paper three former directors of DEGW explore how this shift in conception of architecture from spatial to temporal has been refined and developed through their creative work in three specialist disciplines. Through a series of case studies the topic is explored by:- Andrew Harrison in learning environments; Stephen Greenberg in arts and cultural space; Steven Smith in urbanism and the city. They conclude that in all these areas of work a temporal understanding is the key to creating deeper emotional and functional engagements between people and place.

Key words: practice knowledge, spatial to temporal conception of space, people and environment

Knowledge and Architectural Practice

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Abstract

This paper focuses on the specific knowledge residing in architectural practice. It is based on the research of 35 PhD fellows in the ADAPT-r (Architecture, Design and Art Practice Training-research) project. The ADAPT-r project innovates architectural research in combining expertise from academia and from practice in order to highlight and extract the specific kind of knowledge which resides and is developed in architectural practice (creative practice research).

The paper will discuss three ongoing and completed PhD projects and focusses on the outcomes and their contribution to the field. Specific to these research projects is that the researcher is within academia but stays emerged in architectural practice. The projects contribute to a better understanding of architectural practice, how it develops and what kind of knowledge is crucial.

Furthermore, the paper will develop a reflection of the level of research methods and will explain that the research methods and processes in creative practice research are very similar to grounded theory which is an established research method in the social sciences.

Finally, an argument will be made for a more explicit research attitude in architectural practice as it is the central place of innovation and development in the architectural discipline.

Keywords: creative practice research, ADAPT-r, research by design, architectural knowledge

Transitioning the Live Project: A managed interface between the architectural academy and professional practice

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Abstract

This paper sets out a case for establishing an alternative model of practice between the architectural academy and professional practice. This model of practice offers a learning focused alternative to commercial architectural enterprise. This proposal extends from reflections on a series of 'live' projects run through the design studio at the University of Auckland's School of Architecture and Planning since 2007.

The discussion consists of three parts. The first introduces the live project and its place in architectural education. The second provides an outline of the specific 'triple focus' live project that has emerged within the Auckland studio. It includes a discussion of the issues encountered and learnings gained in the transitioning of live projects from academic to commercial environments to date. The final part presents an unfolding model of practice as a managed interface through which these challenges are being met and the learnings implemented. The intention of the text is to stimulate a detailed discussion of how live projects might be transitioned from the speculative space of the academy to realisation on site whilst continuing the learning of the students involved.

Keywords: live project, architectural academy, professional practice, managed interface

The good client: How architect-client dynamics mediate attention to users

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Abstract

Due to the increasing complexity of architectural practice, gaining insight into future users' perspectives presents a particular challenge for architects. Architects' main reference point to obtain information about users is often the client. Moreover, architects indicate that a 'good' client is key to the project's success. Yet, architect-client relationships can be highly diverse, depending on the project type, procedure and phase. This paper sets out to study how different architect-client dynamics mediate attention to users in the design process. An ethnographic study provides insight into the daily professional practice of three diverse architecture firms in Belgium. Based on observations of project meetings and interviews with architects and clients, we identify four types of relationships: client absence, substitution by a developer; client consultation, and (long-term) engagement. Architect-client dynamics can result in conflicting or aligned ambitions. Extracts from the fieldwork illustrate how these can hamper or stimulate attention to future users in the design process. The insights presented in this paper contribute to untangling architect-client dynamics and can be useful to improve collaboration and knowledge transfer in design practice. A constructive relationship between architects and clients can provide an opportunity for enhancing their mutual ambitions to integrate use-related qualities in the design.

Keywords: architectural practice, client, ethnographic fieldwork, knowledge, user experience

The client, organisation and the project - Architects' evaluation of energy modelling adoption across four UK firms

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Abstract

This paper examines how architects evaluate the process of implementing early design energy modelling tools in their design practice. Recent industry, policy and academic discussions highlight the need for broadening the application of energy analysis across the design professions and within earlier stages of design particularly in reference to addressing the performance gap. Whilst some architects engage in energy analysis discussions early in design, in most cases building services engineers carry out modelling and simulation tasks often at late stages of design. Recently, however, a number of large architecture firms have begun promoting and reporting in-house use of energy modelling early in design. Effects of broadening energy analysis on architects' design practice as well as on architects' conceptions of energy are, however, poorly understood and largely unexamined. The paper draws on prior study conducted by Oliveira et al. (2016) utilising a large data set including semi structured interviews and focus groups with 35 participants across four large UK architecture firms. The analysis applies theories on evaluative practice in order to understand the formal and informal influences, use of specific procedures as well as disciplinary sovereignty that may inform the process. Findings indicate energy modelling, whilst evaluated as beneficial, is often approached with caution viewing the client, organisation and the project as determining its initial, ongoing or sporadic use. The study contributes to emerging discussions on energy analysis in architecture as well as the growing agenda on professional judgement and roles of design professions in the built environment. There are also implications for UK built environment energy policy as well as the international energy agenda in particular regarding the performance gap.

Keywords: architecture, design practice, energy modelling, evaluation, performance gap

Design System Assemblages – the continuous curation of Design Computation Processes in Architectural Practice

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Abstract

This paper maps design systems, a mode of operations formulated by Dsearch, a design computation R&D unit at White arkitekter AB. The authors also discuss the organisational learning resulting from facilitation of architectural design with computational methods and development of bespoke workflows. Two design system cases are described using assemblage theory, as developed by Manuel DeLanda. This materialist ontology is found useful, both in terms of research reflexivity and descriptive clarity. The authors critically assess their position as insider action researchers; rather than perceiving academic knowledge as necessarily distinct from practical, the paper shows that knowledge produced in design practice, research and development in practice, and academic research, differs in degree - not in kind. Design computation management is considered an emergent mode of architectural practice, beyond the specific aspects of form making - bridging project, development and research dynamics. The research and design methodologies laid out here should be read as steps towards an epistemological foundation for prototype driven organisational learning with respect to design computation in architectural practice.

Key words: architectural practice, design computation, assemblage theory, action research, prototype

Making Space, adding value; locating and defining the 'creative space' of spatial production.

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Abstract

Ideas are born within a mental 'creative space' and are valued across creative disciplines. However, as architectural practice frantically responds to demands of time, economy and style, the value of such 'creativity' and 'space for creativity' is often overlooked or treated as an add-on. Despite expectations on architects to improve the built environment, neither ongoing changes to the role of the architect, nor imminent changes to educational structures recognise and value the imagination as key to the synthesis of professional knowledge and design vision. As part of a larger research project exploring the relationship between mentally imagined space and physically experienced place, this paper focuses on defining and locating the mental 'creative spaces' within invisible structures of creative practice. The findings of focus-groups with architects, artists, students and educators from a range of disciplines identify themes linked to invention and synthesis within the design process; exploring where these 'spaces' exist within design methodologies, practices and educational structures. Discussions and analysis are guided by underlying concepts such as 'the outside', 'third space', 'rhythmanalysis' and 'undirected thought'. Conclusions will be used to reassert the salience of, and need to protect the 'creative space' within modes of architectural practice and educational pedagogies.

Key words: architecture, creativity, neuroscience, pedagogy, undirected thought