

THE ROLE OF THE DESIGN PRACTICE AS AN ARENA FOR INNOVATION

Toru Eguchi, Robert Schmidt III and Andrew Dainty

Department of Civil and Building Engineering, Loughborough University, Loughborough, Leicestershire, LE11 3TU, UK

Typical monographs on design practice showcase the architect's generative concept sketch along with drawings and images of a final asset, but very little attention is paid to the environment within which creativity and innovation takes place. As such, the role of the practice environment and culture in shaping design innovation is often downplayed in comparison to the designer's agency which is usually given primacy over other influences. This paper presents a research framework and early findings of research which explored the culture of three design practices to gain fuller insights into their role in shaping design innovation. The particular focus is on the design of adaptable buildings, the development of which demands innovative design practices which challenge much of the traditional design orthodoxy associated with modern buildings. It examines to what extent certain tools, mindsets, and interactions play a role in shaping design outcomes, and explores how decisions are made, by whom, and at what point in the process. This comparative approach helps to reveal the different levels of organizational culture which enable creative solutions to burgeon. On the basis of these findings, a set of provocations are proffered for encouraging designers to think about the way in which they innovate and frame their design interaction and decision making.

Keywords: architectural practice, practice culture, design process, innovation.

INTRODUCTION

Typical monographs on architectural design practice have largely downplayed the role of the 'practice environment' and culture in shaping design innovation in favour of examining the designer's agency (Cuff 1991 and Yaneva 2009). This paper presents the research framework and early findings into the culture of three design practices to gain fuller insights into the shaping of the material construct within the practice environment. This early work derives from a set of preliminary interviews providing insights into each of the design practices and how their individual characteristics are seen to influence design practice.

The majority of buildings are designed and constructed to suit a particular use at a certain time, with relatively little thought given to the future. Designing for future change demands innovative solutions which challenge traditional design orthodoxy. The Adaptable Futures research group is investigating the development of adaptable buildings in the UK that can better accommodate an often uncertain future (Gibb *et al.*, 2007, Schmidt III *et al.*, 2009). Part of this study aims to explore people process and organizational influences which shape the resultant design solutions in order to: 1) develop insights into designer's interaction and behaviours around the development of design solutions, 2) examine decision making processes within different design practices and 3) identify characteristics of cultural environments likely to support adaptable building design. This paper focused on the third objective of this research in examining the practice culture as an influence on design innovation associated with adaptable buildings. There is a significant literature on accommodating adaptability, while very little acknowledgement in literature was given regarding the role of the practice.

LITERATURE REVIEW

Innovation in adaptable design

As alluded to above, the particular design innovation investigated in this study was the development of adaptable solutions. There are several levels of adaptability as an innovative idea in terms of the scale and process of buildings. Schmidt III *et al.*, (2010) identify six dominant strategies to accommodate change: adjustable, versatile, convertable, scalable, refittable, and movable and then insist "Adaptability forces design to become an ongoing social process between designer and user over time" through analysing how they relate to other dimensions, such as types of change (e.g. space, function, size), decision making levels, physical scales and time cycles.

Design practice as an arena for innovation

The role of architects in design innovation can be observed through the design process. The approach towards adaptability as a design innovation is "good management of the relationship between stakeholders", such as "to keep their motivation high and sharing benefits between (them)" and "to maintain a good communication between designers and manufacturers" to adopt latest technology (Eguchi *et al.*, 2010).

The behaviour and mindset of architects as a member of organization are affected by the culture of practice they belong. Schein (2004) analyses culture of organization at several different level to understand the role of leadership and describes "Once a set of shared basic assumptions is formed ..., it can function as a cognitive defence mechanism both for the individual members and for the group as a whole"(Schein 2004:36).

Recently there has been an attendant focus on the role of the design practice as an active agent in shaping design (Yaneva 2009, Houdart and Minato 2009). Yaneva (2009) describes that the buildings designed by the practice she looked at as "emerging as a relational effect of a whole network." Her research adopts an Actornetwork theory (ANT) approach, a material-semiotic perspective through which with the agency from both human actors (such as designers), and non-human actors (such as drawings and models) are explored in relation to their interaction as a network (Latour and Yaneva 2008). Through an ANT approach, this literature shows how innovation permeates the design practice, such as "Invention happens in the process of 'taking model seriously, experimenting and expressing by means of models" and "There are no conventions, like material, or even formal language". These descriptions imply how non-human agencies created by the practice affect their solutions.

Another approach is storytelling. Heylighen and colleagues discuss the nature of knowledge by looking at how it can be captured, disseminated and shared in architecture through the storytelling of buildings (Heylighen *et al.*, 2007a and 2007b). Heylighen *et al.*, (2007a) describes the knowledge of architectural practices as "largely tacit and embedded within the design process" and then sees the value of this approach which "allows for several important issues to be addressed in terms of the complexity of architectural design and making".

Several recent studies see the value in exploring the interactions at design process in order to understand the role of practice. For example, Cuff (1991) observe "the production of places is a social process" and describes the basic task of architectural work is to interact with all participants

(such as designers and stakeholders). Cohen *et al.* (2005) describes the architects' mindset of the profession through their accounts of their working lives and reveals the gap between what it wants to be and what it is. This literature also points out the accounts are more about "negotiation and accommodation" rather than "wholesale change" which implies designers recognize the interactions between forces shaping their solutions and the management of that process is their professional job.

RESEARCH FRAMEWORK

This research is looking at how design evolves through daily interactions, the events of which are shaped by the practice environment. In order to examine this we initially interviewed designers about their design philosophy and mindsets toward adaptability. We then carried out a secondary observation study of their internal design meetings as a window on how this plays out in practice. This afforded the observation of the interplay on several agencies on design innovation including physical and social aspects of the practice, and the project-specific elements of practice. We adopt an ANT-inspired approach in understanding how the networks between these agencies are formed and stabilized in shaping the production of adaptable design solutions. In this study, we focus on innovative design, particularly adaptability, as a complex design objective. To unpack this complexity, we examine the design process by expanding the black box around adaptability. Figure 1 highlights some of the typical features associated with adaptability in the centre box, and looks to expand to include other physical and social parameters. Our assumption is that innovative ways of thinking, managing and structuring the practice are needed to accommodate a more adaptable solution.



Figure 1: Expanding "black box" of adaptability

Fieldwork method

The research design comprised practice-based case studies to explore the influence of practice culture towards adaptable design solutions via interviews and observation. Three disparate architectural practices were chosen for this study representing different firm scales, design ethos/ approaches, project types/ clients, and origins. This comparative approach helps to reveal the artefacts, espoused values and behaviours, and points towards some of the underlying assumptions which enable creative solutions to emerge. Figure 2 depicts the range of influences explored within the practices in order to disentangle the project influences by mapping the network of interactions

for various design elements which ultimately play a role in shaping the final building. This suggests as a characterization how the design element interacts with several human and non-human agencies reshaping both the design element and the influences. By adopting this perspective it is hoped that this will reveal the nuances of the design process as the building's generative life reveals, transforms, rescales and stabilizes its influences. The observations provide traces in which to investigate the elasticity and malleability of design concepts as the project pull plays out amongst the sometimes disparate influences.

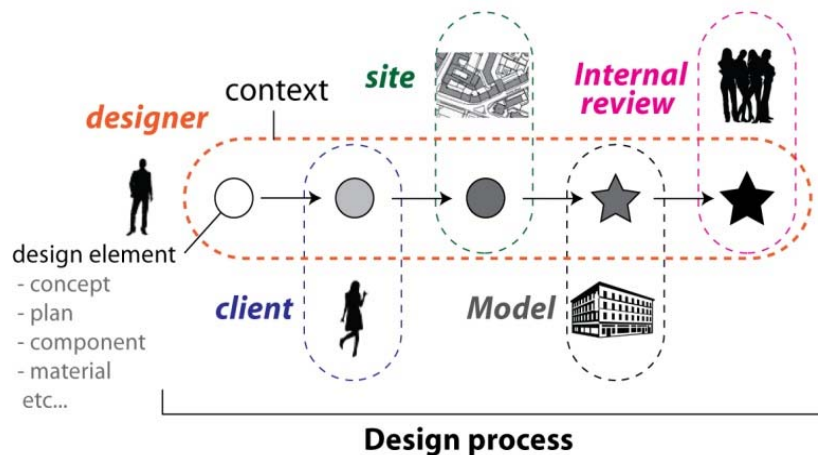


Figure 2: Design process and influencers

Organizational culture perspective

According to Schein, “culture can be analyzed at several different levels, with the term level meaning the degree to which the cultural phenomenon is visible to the observer.” (Schein 2004: 25). Schein’s perspective provides a useful analytical device for understanding the culture of architectural practice and is applied within this paper.

ANALYSIS OF THREE ARCHITECTURAL PRACTICES

The interviews within the three architectural practices were semi-structured with a range of people within one practice; typically a founding partner who is familiar with the origins, overall ethos, work of practice (high-level understanding); as well as a senior member of staff, typically a senior associate or project architect who is heavily involved with the day to day work of the practice. An initial set of questions attempted to examine the practice itself – the organizational structure, values and beliefs (conscious mindset), and their approaches to design. A second set of questions looked more specifically at understanding the influences (human and non-human) in the process which shape the resulting building.

The three practices (the artefacts)

“We’ve had the opportunity to shape a practice in the way in which we want to do. We’ve come together, I believe, because we’ve all wanted to come together.” Senior member, Practice B

Practice A’s roots go back over thirty years ago from a small practice working with local communities to a practice today of over a 100 staff members working out of two offices within the UK and overseas. Their portfolio has a wide range of project typologies, but tends to work more

with public commissions (educational and civic buildings) and a handful of select developers. The practice operates as a partnership based on the ideals of a cooperative encasing a large number of partners (23) providing a flat, egalitarian structure. As the practice grew, issues around management, organizational structure, and communication all became an important aspects to address. As the senior partner of practice A alluded to “When you have a practice of say twenty people you can gain information by osmosis. You don’t need very complex systems to be able to communicate, basically people over hear conversations, you can walk around, you can talk to people, you can have meetings that are quite manageable and all that sort of things.” The practice developed themselves as a series of cells within the overall organization. Each ‘cell’ or studio is comprised of approximately 20 people who have a studio leader and two or three senior people who work ‘independently’ from the other studios. While the senior partners and the leaders of each studio form a representative board which takes on a cross practice role. The senior partners along with a managing partner cut across all the studios contributing to the overall project vision and assuring each studio/ project is operating successfully. The practice is very open and consultative about the decisions made regarding the direction of the practice giving everyone a sense of awareness about how much money the practice makes, how they make it, and what they spend it on.

Practice B was founded only six years ago. In that short time, the practice has developed with rapid success growing from a handful of members in their first year to currently over 80 members of staff. It is a collection of personas containing shapemakers, process driven designers, and inspirationalists. While many of their initial projects were fuelled by private clients, as their practice has grown they have diversified into a larger range of public and private projects. Practice B is also based on a partnership model, allowing people a chance to voice their views, share in the decision making process and profits, as well as, forming a collective responsibility for the destiny of the practice. In reality, a hierarchy exists implicitly through given responsibilities, experience, and the level of trust displayed. Increased responsibility both in terms of the practice and project are seen as the primarily motivator for rewards fueling a creative and amoebic environment. Practice B doesn’t have any sort of formal training or rigorous tools for learning. One senior member mentioned, “We have to recognize as an organization (in the creative field) there are people, bright people, that actually sometimes react badly against being told how to do things in a formal setting.” In turn, they encourage a more organic approach for people to look around them, to have confidence to walk around, to talk informally, to grasp the inherent intelligence of the ‘knowledge network’ that exists inside the practice.

Practice C was formed just under twenty years ago as a small practice of less than ten people and grew through undertaking retail refurbishment work. While over the years, the practice has grown to over thirty members of staff and the work has developed into more of a balance between new build and refurbishment work varying in scale and typology. The practice is governed in a more traditional sense with a set of directors and hierarchical staff which branches from the top. A lot of the practice’s work is now commercial or residential developments, some of which is delivered as part of a framework contract. Learning is encouraged through an informal and open work environment, along with more formalized opportunities which offer chances for internal design reviews, development of a particular skill or knowledge (internally), and external training sessions. Responsibility again is seen as a primary reward for members of the practice distributed in a more conventional way upon proven displays of a particular strength

(e.g. successful client relationship, specific sector knowledge, etc. or through the passing of professional exams.

The structure of these practices is quite different and they give significant value in maintaining and developing a better environment for design, through an openness of practice, types of projects and types of employees as well. All the practices we interviewed see the value to know each other and their works “by osmosis” (i.e. more casual communication) rather than formal training tool and this experience based knowledge is a characteristic of the culture of practice (Heylighen *et al.*, 2007a).

Practice ethos (beliefs) and approaches (operation of beliefs)

“I think the most important thing in terms of any design practice, particularly architectural practices, is knowing where you are coming from – what are the founding values and ethos of the practice.” Senior Partner, Practice A

Practice A offers a very clear message about their ethos, founded on the two cornerstone principles of social and environmental issues. Environmentally, the origins arose from high energy costs in the 1970s and through the increased use of passive design techniques. Today, they engage early on in the project with environmental engineers influencing the shape of their buildings in terms of their function and performance capacities. The social dimension burgeons from community engagement, working more closely with user groups and the end use of the buildings rather than the commissioners in an effort to provide an evolution of building typologies fit for contemporary needs. The work is driven by thinking about the life of the buildings and how they as designers can make an active contribution to the transformation of that building typology – “how it can better respond to modern lifestyles and how we might live differently.” This motivation moves them beyond simply thinking about the spaces which are defined in the brief to the spaces that are left out such as corridors, stairs, entrance halls, external spaces, etc. all of which have a large transformative potential in how people communicate, where they meet and interact enhancing user experience and how the building operates. Practice A’s approach derives from a modernist understanding of the arts and crafts tradition. Expressing materials and embracing the craft itself is visibly expressed through their emphasis on quality and clean articulation of natural materials using renewable sources and reducing the use of toxic materials whenever possible promoting a long life for their buildings. Unlike other practices which have strong design ideas and use other disciplines only in a supporting role, a third defining principle of Practice A is to work as collaboratively as possible. This fully integrated approach engages with the design team and consultants in an open manner all of whom have the potential role of adding to the character of the architecture – “The best work of most design practices, is when they debug themselves of as much as possible, and allow themselves to be more open and more influenced and be more inventive.”

Practice B’s non-hierarchical character is not just in terms of their management style, but also in terms of the way in which design is developed. As a practice their ethos is ‘our attitude’ rather than a style, a state of mind, giving birth to an appearance of eclecticism not attached to any single driving force for their architecture. Ideas are generated from anyone within the team as opposed to just senior practitioners. The design process usually starts by a very specific engagement with the site and client. It begins by asking all the questions and seeks to make sure that the architecture and the urban design is a response to place – “We very much see ourselves as responding to the situation- project specific.” This is manifested in recognizing the mindset of the client and listening to what’s being said, using that information to inform their response, and putting it back into the

project context – “We are happy to work with agendas and structures that are around us. And that means listening and responding to those things we hear, and I think that is a very strong bonus to us that we will.” This process was further articulated by one designer as every project they do being completely unique, although he admitted that there will be repetition in both product and process.

At the heart of every project the practice undertakes is a single concept which distils one guiding principle to aid with design decisions. Appropriate rules can be attached to the concept as well, but all follow a single clear logic which helps guide their problem solving. They argue that this propels them to be innovative, as they recognize project constraints as an important driver for innovation – “Innovation is pushing the boundaries in terms of engineering, sustainability, architectural form and etc. but also is an understanding of other things that make up a project.” They recognize that innovation embodies the way in which the building would operate as well, such as how do they get the right mixture of uses to drive the value up in relationship to understanding the way cash flow works as an alternative way of resolving the problem. In other words, “Innovation is not just interrogating the built form, but also interrogating the way in which it’s used.”

According to an Associate director of Practice C, they don’t have a very fixed firm philosophy and different directors will have different views on design. While they had trouble identifying a clear philosophy they did pinpoint three underlining themes which repeat within their work: a) context specific, b) practical, and c) a balanced set of views in aspiration towards a good level of design. Without an overriding mantra for the practice, the starting point for each project is typically a direct reaction to external conditions – a site specific analysis. This informal approach’s usual first step would be to assess a site through a series of mental questions defining the characteristics and quality of the surrounding area. In the urban setting, such as London, there are several dimensions along the streetscape which will influence the design: planning laws, conservation areas, surrounding building characteristics (materials, proportions), local uses, etc. Through the site investigation they would look for the factors that would have a greater impact to generate a concept around which to frame the design – “A foundation or a structure around which to make decisions otherwise everything is just all in the air”. This site specific view is part of their approach to architecture that forms a part of their latent ethos. Other dimensions such as client requirements inside the brief or social agendas like sustainability (energy costs) will play a role in their response. While the approach remains completely guided by external conditions, the internal elements of the building lend themselves more freedom to allow the designers to apply their practice ‘signature’.

The ethos of each of the practices is different but there is an underlying similarity – a tension between uniqueness and repetition of their solution. Designers prefer responding project specific context (e.g. site and client’s requirement) but they cannot be completely free from their past experience which leads to a form of repetition.

In terms of adaptability, closer engagement with stakeholders (e.g. engineers and users) that can add to the character of the building is a key approach, particularly in Practice A. Their work is driven by thinking about the life of the building, such as user experience and building operation. This approach leads them to the idealized form of work – “what it wants to be” (Cohen *et al.*, 2005).

Project influences

“There is a desire to have as many forces come upon the architecture as possible...we like constraints and issues that need to be responded to.” Senior Partner, Practice A

In conversation with practice A, three primary sources of influence arose. The first relates to the roles differing procurement routes can play in framing the level of influence the designer can pose through the configuration and hierarchy of the design team, the sequence of events, and types of constraints presented. Private Finance Initiatives contracts were used as a good example which typically restricts the designer’s design period, form and material considerations, and client/ user communication opportunities – “The contractors are controlling it, they are directing it, we are playing our part in it, which is a long way from a position of the traditional role of an architect.” While Practice A expressed enjoying working with contractors and getting input from them, they emphasized the importance of the timing of that type of engagement allowing the designer to develop a fundamental response to place and the users before receiving a list of prescriptive and recipe type constraints. Secondly, as a designer, you are compiled of numerous past experiences which have a tendency to guide your design response. An important skill for the designer is the ability to free oneself to be influenced as much as possible, giving life to a more creative response – “there are certain projects that I feel we have reduced our baggage and genuinely responded to the external forces...those are the most interesting projects, the ones that do have that transformational shift agenda.” While on the other hand, the type of client, the challenge and clarity of the brief, time constraints in the process all can lead to a more repetitious response encapsulating the designers own language and preoccupations. Today, many projects are awarded to the designer with the most experience in that sector generating sector specific architects that tend to follow a more formulaic understanding of that project type through an excessive repetition of work. The key, as alluded to by the senior partner of Practice A, is being able to find a satisfactory balance between external differentiation and internal repetition within your mode of operating.

A third, and potential exacerbation of the above two influences is the amount of time given for the design phase. This is important not only for the designer’s ability to undergo appropriate design iterations, but more importantly proper communication with the client and their capacity to understand design conventions, spatial issues, technical issues, etc. in a very abbreviated period of time – “in terms of the design it is all out of that dialogue and if that dialogue isn’t given the space to develop you will end up with a very constrained response.” This becomes an unsatisfied reality when this stifled dialogue creates the physical environment which the users will endure for years to come.

Practice B begins every project with the belief that tensions exist and it is their role to frame stakeholders with the proper mindset to be able to deal with them. This point reiterates design team collaboration particularly focused on the demand side relationships. In general, developers and clients are more interested in future profit margins from the project and how the design can save initial costs. On the other hand, through a particular project example, the designers noted that the client was very supportive and open to their proposal and asked them to work with quantity surveyors and other consultants from an early stage. This helped to deliver a building that everyone was happy with, and emphasized for the designers the importance of the influence an open minded, progressive client can have. Moreover, social perceptions/ agendas affect this relationship as well,

for example, now clients understand that sustainability is more than just strapping bits of technology onto a building that it encompasses a wider set of design strategies and responses.

Design team collaboration is also key in delivering innovative responses again helping them to readjust/ (re)vision their understanding – “Consultants are an absolute major player in how the architectural consequence of that manifests”. The level of complexity presented with today’s buildings makes that collaboration an imperative dimension far more than in the past. This engagement extends to planners as well, and making sure design ideas are evinced early on. While regulations and planning policies have a huge potential influence on shaping the outcome there is an opportunity for planners to ‘buy into’ the processes of embedding potential change when they see it as collectively beneficial to see regeneration happen – “There is always the paradox of that kind of document... it’s trying to impose a general framework, but by definition that framework needs to be dissolved by the actual specific arrangements on site.”

A third influence mentioned is the advance of design tools through digital technology. Where it was seen on one hand to embrace a kind of freedom for designers allowing more complex/ formal permutations, there is also an increasing notion of repetitive elements – “There is always a dilemma; you want to be able to deliver products cheaply and at a great quality. But what that gives you then is the potential repetitive monotony which can be a horrible thing. So we are always fighting against that.”

As illustrated with Practice C’s approach to design, the site context has a major influence in their design process and heavily drives their internal reaction to the brief. Another interesting dimension discussed with the designers was the varying roles of the larger design team members. Structural engineers were viewed as the most positive and most ‘in tune’ with what the designers wanted to do. While quantity surveyors and services engineers were seen as potential enablers, this was characterized as a very low percentage of the time. Most quantity surveyors were stereotyped as adding unwanted time and cost constraints to the design process, while services engineers were more neutral but very conventionally driven. Project managers were also viewed in a negative light providing a very narrow focus on the larger design aspirations and goals. The structure and nature of the design team was critical as the designers saw innovation being hinged on trust. This becomes very hard to do when, “Project managers often act as a barrier between you and the client...(and) when you sit behind the project manager it is very hard to develop that trust.” Several external factors act as an influence in the design process generated from the designers’ comments. For example, type of contract, past experience of designers, amount of time to design, stakeholders mindset, digital technologies and social agenda are potential constraints to designers’ desire. However, they alluded that these constraints help to create a unique solution and in order to do that designers seek to balance the tensions through collaborative work with design team and stakeholders.

CONCLUSIONS

Architecture as a field of study is highly complex. Designers have to be conscious of how to disentangle and integrate the inherent complexities within their design approach. This paper set forth a research framework developed to look at the role of design practices as an arena for innovation. The initial data introduced here focused on presenting two levels of organizational culture for the three practices: artefacts and espoused beliefs and values. The preliminary findings

have begun to reflect designer's interpretations of project influences and some ways in which they may respond differently to them.

This paper reveals some potential influences and the integration of them as the designers' role. Designers try to collaborate with both internal and external actors in an effort for a better architecture and seek unique solutions responding to the specific context of the project utilizing their own approaches. These types of interactions which take place between human and non-human actors to reach architectural design solutions are affected by the culture of practice.

This paper presents only a glimpse of a continued effort needed to disentangle the nuanced complexities of the design process between the iterative interactions of human and non-human elements. Additional work is currently underway through further interviews and practice observations.

REFERENCES

- Cohen, L, Arnold, J, Wilkinson, A and Finn, R (2005) Remember I'm the bloody architect!, architects, organizations and discourses of profession. *Work, employment and society*, **19** (4), 775-796.
- Cuff, D (1991) *Architecture: The Story of a Practice*. The MIT press.
- Eguchi, T, Schmidt III, R, Dainty, A R J, Austin, S and Gibb, A (2010) The Design of Adaptable Building in Japan. *CIB W104 16th International Conference -Open and sustainable Building*, 17-19 May 2010, Bilbao.
- Gibb, A, Austin, S, Dainty, A R J, Davision, N and Pasquire, C (2007) Towards adaptable buildings: Pre-configuration and re-configuration – two case studies. *ManuBuild 1st International Conference*, 25-26 April 2007, Rotterdam.
- Heylighen, A, Martin, W,M, and Cavallin, H (2007a), Building Stories Revisited: Unlocking the knowledge Capital of Architectural Practice. *Architectural Engineering and Design Management*, **3**, 65-74.
- Heylighen, A, Neuckermans, H, Casaer, M and Dweulf, G P M (2007b), Building memories. *Building Research and Information*, **35**(1), 90-100.
- Houdart, S and Minato, C (2009) Kuma Kengo, *An Unconventional Monograph*. Paris: Editions Donner Lieu.
- Lautor, B. and Yaneva, A (2008) Give me a gun and I will make all buildings move: an ANT's view of architecture. In: Ed. R. Geister, *Explorations in Architecture: Teaching, Design, Research*. Basel: Birkhauser.
- Schein, E H (2004) *Organizational Culture and Leadership*, 3ed. San Francisco: Jossey-Bass.
- Schmidt III, R, Eguchi, T, Austin, S and Gibb, A (2009) Adaptable futures: A 21st century challenge, Paper presented at *Changing Roles – New Roles; New Challenges*, Rotterdam.
- Schmidt III, R, Eguchi, T, Austin, S and Gibb, A (2010) A critical look at the meaning of adaptability in the building industry. *CIB W104 16th International Conference -Open and sustainable Building*, 17-19 May 2010, Bilbao.
- Yaneva, A (2009) *Made by the Office for Metropolitan Architecture: An Ethnography of Design*. Rotterdam: 010 Publishers.