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8. FRAGILE CONSTRUCTIONS

Processes for Reshaping Learning Spaces

INTRODUCTION

From the emergence of modern educational institutions in the wake of the 18th century western Enlightenment, until the early 21st century, the spaces of learning appeared to have attained an ideal type-form. Within this institutional tradition, learning takes place in rooms that provide a stable, neutral environment; free from external distraction. Teacher and class face each other, the teacher backed by a clearly visible surface upon which shifting arrays of information can be temporarily inscribed or projected. The classroom and the lecture theatre reflect this basic configuration. The seminar room and library provide variants catering to group discussion and individual study respectively. For well over a century these arrangements seemed unquestionably to provide the right kind of environment for learning. However there is nothing natural or necessary about such arrangements. They are a construction arising out of a negotiation of cultural assumptions and institutional priorities. The robustness of this construction, its continuing, and virtually unquestioned dominance throughout the radical technological and social changes of the 19th and 20th centuries, seems finally to be about to be unseated.

Learning in higher education is experiencing revolutionary change; some say as dramatic and significant as the scientific and industrial revolutions of the 18th and 19th centuries (Burrowes, 2001). The communications revolution driven by new, digital technologies over the past quarter-century, alongside new conceptions of learning, have posed a decisive challenge to both institutional ideas about the nature of learning, and learners' assumptions about the role and authority of learning institutions. Revolutions de-naturalise previously unquestioned configurations of the world; the interests that have held these configurations in place are unsettled and rendered vulnerable. Apparently robust orderings of the world are newly revealed as fragile constructions, holding sway only provisionally. Equally fragile is the re-negotiation of relationships within a new or emerging order. Stakeholders, though recognising the failure of existing arrangements, struggle to conceive of how things could be done differently.

It is in the character of our times that apparent 'matters of fact' reveal themselves to be 'matters of concern'; solid-seeming artefacts disclose themselves as assemblies of contradictory issues (Latour, 2004; 2008:4). Bruno Latour has argued that design plays a special role in helping us negotiate such matters. He terms design 'a cautious Prometheus' that brings to the task of making and *re*-making, a

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radically careful, and carefully radical, sensibility. (2008:3–7). This characterisation of design belongs more to an emergent, 21st century context of collaborative and participatory design than to the legacy of heroic claims and stances associated with design in the 20th century (Loewy, 1950, 2002, 2007; Bel Geddes, 1932 etc[1]; Fry, 2002). Opposed to the culture of designer as celebrity, this more modest (and more crucial) conception positions design at the heart of an ongoing negotiation of "complex and contradictory assemblies of conflicting humans and non-humans [things, ideas, agendas, interests]" (Latour, 2008:6).

The project that this chapter draws upon belongs within this new conception of design. The focus of the project was the brief development process for next generation learning spaces. A design brief is a crucial document, crystalizing and communicating stakeholder desires for the outcome of a building program. The process that leads to the formulation of a design brief is often compromised by the complexity attendant on inclusion of multiple stakeholder voices, and by the constraints presented by limited time, communication difficulties and the inertia that tends to reproduce habitual dispositions within new gestures. The aim of the research project was to design tools, models and other supports for enabling a collaborative and participatory brief development process. It was hoped that the tools and other supports developed, would help to overcome some of the barriers that currently hinder the production of insightful briefs that open up alternate futures and facilitate the design of innovative, next generation learning spaces.

This chapter focuses on two aspects of the research. First, we give an outline of practice theory, which provided researchers with a theoretical starting point for orienting the brief development process to the requirements of 'authentic' learning. Second, we discuss the centrality of participatory processes and playful engagements for fostering inclusive conversations between diverse stakeholders. Within the liminal space that play affords, visual tools are introduced to prompt generative dialogues. The special role of the visual in eliciting understandings that can cross boundaries between different stakeholders, negotiating their often-conflicting values and concerns, is discussed. Together these two approaches - practice theory and the use of participatory processes and playful, visual prompts - may enable the construction of dialogues, and ultimately briefs, that envision new kinds of learning spaces, more appropriate to our new century.

PRACTICE THEORY

Within contemporary, discipline-specific education which aims to prepare, or further qualify, students for participation in particular professions, there has been an emerging emphasis on 'authentic learning'[2]. Authentic learning is understood to take place when the learning scenario experienced by the student reflects contexts for action typical of those for which the student is being prepared. In other words, authentic learning is authentic to the practice context within which the learned skills and understandings will be performed (Herrington & Oliver, 2000).

In many ways the desire to foster authentic learning has arisen from recognition of the centrality of 'practices' to human motivation and striving. In referring to

'practices' we draw upon a body of theory that builds on 20th century phenomenological, hermeneutic, anthropological and sociological arguments. This emergent theoretical direction, which references influences from (late) Wittgenstein and Heidegger, gained impetus in the wake of Bourdieu's *Outline of a Theory of Practice* (1972), Giddens's *Central Problems in Social Theory* (1979) and MacIntyre's *After Virtue* (1981), and has been further mobilised since the turn of the century in the texts of Theodor Schatzki (2001), and Andreas Reckwitz (2002). Within this theoretical context, and especially in the most recent arguments by Reckwitz, the term 'practice' refers to an identifiable constellation of activities, know-how, orientations, values and striving that is entered into, embodied and performed by those who are engaged in the practice.

Practices range from the everyday, including activities such as cooking or gardening, to complex professional practices, such as medicine and law. Each practice encompasses myriad activities and, conversely, activities can belong to multiple practices. For example the activity of cooking can belong within a parenting practice, a friendship practice and a culinary practice. Not all those who perform an activity are participants in every practice to which that activity can belong. If I cook a family meal, but am more concerned (on such occasions) with nutritional balance and with pleasing the limited palette of my child than with the delicate blending of flavours and aromas that informs the culinary art, then the striving that informs my cooking, my effort to produce something that will be enjoyed, arises from a desire to parent well, rather than a desire to further the culinary arts. It is possible, however, that my participation in the activity of cooking, whether as a part of my parenting practice or in the quite different context of socialising with friends, may open me to an engagement with cooking as a culinary practice. Activities lie in the intersection of multiple practices, and so open participants in one practice to the potential pleasures and disciplines of another.

Practices are not just clusters of related activities and associated know-how, but are rich collections of associations, embodied experiences, and engagements with the world through designed things, environments, and interpretive frameworks (Oosterling, 2009). For example, gardening is a practice characterised by particular activities such as soil preparation, planting, watering, weeding, fertilising, pruning and so on. Expert gardeners share a body of know-how, enabling them to recognise the condition of the soil and the plants; they have an eye for the flourishing of the garden, and for its latent possibilities. They know where to cut, what to remove, how deep to dig. However the true gardener is one who has become disposed, through gardening, to particular pleasures and pains, bodily disciplines and sensitivities. For a gardener, activity in the garden is accompanied by a deep sense of joy in the responsiveness of the garden to their care. The aching of knees and back, the feeling of dirt under the fingernails, calluses on the hands, and sunburn on arms and legs; the registration of labour and exposure upon and within the body; these sensations are shared and understood by those who garden. Similarly the embodied experience of loose-fitting or protective clothing, of broad-brimmed hats and cumbersome gloves, the feel of spade against hand and boot, the slight crunch or scrape of the soil against its blade; these sensuous accompaniments to

the activity are cumulatively embedded in the experience and memories of the gardener.

Other practices, such as nursing, law, design or journalism, each share their own particular set of embodied ways of doing, feeling and knowing. In each, the body and the understanding of practitioners are disciplined in different ways; attuned to different subtleties. Further, and importantly, those who share in a practice share particular pleasures and motivations. The rewards for striving within the practice are given through specific joys experienced through exemplary performance within that practice. A gardener feels keen pleasure in the budding of plants; notices this budding in a way quite different from the noticing of such things by those outside the practice. For those who have been inducted into a practice and have become bearers of that practice, pleasure is felt in the accomplishment of goals that are meaningful within the practice itself.

Because practices motivate people, and make their activities meaningful, practices are the site of learning. Although learning can happen outside a practice, the learning is grasped as meaningful only insofar as it relates to a practice in which the learner is a participant. This has consequences for those who seek to induct learners into new practices, especially in formal learning contexts, where entrants to a practice may have no initial desire to learn, or context for making that learning meaningful. Learners are not yet bearers of a practice. They do not automatically embody a disposition for particular kinds of striving; they may not be attuned to the dispositions of the world that are desired within that practice, nor do they yet feel pleasure in the subtleties of expert performance. The transitional process of learning (Boys, Chapter 4; Sagan, Chapter 5) gradually opens them to feeling and performing in these ways. The learning environment can play an important role in supporting this process of attunement, this cultivation of a disposition for what is best within a practice.

PRACTICES AND LEARNING SPACES

Not all practices are the subject of formal education. Those that are have become so because the particular disciplines that educational institutions seek to impart are held to also be necessary to the wellbeing of that practice. Western educational institutions took their modern form during the 19th century as vehicles of the enlightenment project of 'bildung', the development of a "scholarly consciousness ... within which the mind has a special, free mobility" (Gadamer, 1989:15). The cultivation and performance of this scholarly consciousness belongs to a practice of its own, distinct from those other practices, such as medicine, engineering or urban planning, that are now also cultivated in institutions of higher education. The gradual assignment to the university of responsibility for induction into these other practices, which took place from the 19th to the late 20th century, was done out of a desire to endow each of those practices with the same capacity for scholarly and critical self reflection, and the same qualities of free mobility, that were the goals of university education. Contemporary students of higher education are being inducted into a particular practice of their choice, whether it be mathematics or law

or music, but they are also being inducted into the enlightenment culture of scholarship, intellectual mobility and critical reason (Boys, Chapter 4). The mix of harmonious or dissonant dispositions created by each particular conjunction of enlightenment agendas and practice-specific orientations, and the weighting of each at different moments within the student's education, colours the student's learning experience.

Recognition that what is learned is made meaningful in the context of the practice in which the learner is engaged has important implications for the design of learning spaces. If learning is a process of induction into a practice or practices, and the purpose of education is to ensure that the next generation of practitioners will be capable of taking their practices in new and promising directions, then spaces catering to authentic learning need to enable and support the informal transmission of attitudes, disciplines and dispositions as well as know-how and more explicit formal understandings relevant to each practice. In other words, the learning environment can play an active role in the acculturation of the student to the practice they are being trained for.

Traditional institutional learning spaces reflect the enlightenment emphasis on the universality and neutrality of a mobile, inquiring, scholarly disposition. The classroom and lecture theatre strive to support a focussed, disembodied attention to the information being imparted by the teacher. Chairs support the body; tables support the activity of note taking; lighting and climate control eliminate interference by weather or temporal cycles. The learner is placed, as far as possible, in a space that allows the mind to be engaged and the body to be neutralised. However the idea that learning should be primarily a cultivation of mind, supported by a disciplined, but passive, body, is not only inadequate to authentic learning, but also to the overarching project of the university, *bildung*; the production of a mobile and critical consciousness. The profound 20th century critique of the enlightenment project overturned the divorce of mind from body. Institutional learning spaces have yet to follow suit.

How, then, can an attention to the specific practices that students are being inducted into inform learning space design? Focus groups with students reveal the ease with which they are able to identify incongruities between their learning spaces and the practices they seek to engage. Students enrolled in *Leisure, Sport and Tourism* at one institution complained of the almost windowless rooms in which they were taught, and the long corridors that separated them from outdoor playing fields. "We are students of *sport*!" they exclaimed. Similarly, students and staff in design schools constantly grumble about the impossibility of fostering a 'design culture' within the over-scheduled spaces of their schools. Design culture requires you to "hang around in the studio together," informally engaging with each other's projects. Evident to both learners and experienced participants within the practice, these mismatches are not readily addressed within the over-stretched efficiencies of contemporary, production-oriented, education provision.

Although incongruities between educational spaces and the practices they cater for can be identified with relative ease by those within a practice, these incongruities tend to be accounted for in terms of function. The rooms in which students of sport

are taught ought to open onto outdoor spaces, preferably sporting spaces; the studios in which design is taught ought to be available for students to 'hang around in'. Yet such amendments to the layout and accessibility of these spaces do not address more subtle questions concerning the fitness of institutional spaces for the acculturation of students into particular practices. Those questioned in focus groups about their learning spaces are able to mobilise the language of functionality in their attempt to pinpoint what does not work, but have no means of articulating - no language for - the failure of their learning spaces to evoke the proper 'mood' and disposition for their practice. Practice theory alerts us to the need to attend to the emotional tenor of stakeholder discussions about their learning spaces. Often an exclamation of frustration will signal an absence, a lack, in existing learning experiences; an expression of affection for a particular space may signal its particular fitness to the practice being learned, perhaps in some quite subtle respect. These communications are more likely to be indirect than direct. Practice theory helped us to notice and interpret such moments within stakeholder engagements. Recognition of the importance of such moments has had consequences in our research project for the design of the tools for stakeholder engagement within the participatory design process[3]. It was important to elicit informal and tacit understandings of both the practice and of what works and what fails in existing learning experiences. The following section outlines the thinking that informed our articulation of a particular participatory design process for the collaborative development of briefs for learning space design.

PARTICIPATORY DESIGN

Higher education is a complex system that involves external drivers, institutional values and directives, funding, preconceptions, curricula, pedagogy, teachers, learners, space, resources, infrastructure and technology, each contributing to the learning experience and the quality of that experience. When new learning spaces are proposed, these various forces, stakeholders and facilities mobilise, or are mobilised, to determine what kind of space is to be provided. The pre-briefing conversations, that set in place the agendas and constraints that will dominate decision-making throughout the design process, have been typically driven by high-level agendas and institutional values. Within such contexts, the particularity of the practices that the new spaces are to house is discounted, because largely unknown to those admitted to these high-level discussions. In recent years, however, there has been an active endeavour to open up this process, to enable more innovative and practice-relevant possibilities to be considered. It was as part of this endeavour that our project for developing protocols to guide processes for generating innovative and appropriate design briefs for new learning spaces, was conceived. The inclusion of our project team leader in working parties for the development of a number of new learning spaces, for 18 months prior to the formulation of the project, provided insight into the challenges presented by established processes. The urgency of developing new processes to better meet the needs of changing learning agendas was evident, and was felt at the highest institutional levels. Thus the project was

well supported, and opportunities were readily available for trialling proposed new processes and tools within a number of real building projects.

Observation of the dynamic within typical stakeholder meetings revealed several important obstacles to the generation of innovative and appropriate new learning spaces within these institutional settings. The first, and perhaps most intractable difficulty, lay in the tendency of stakeholders to advocate for, and defend, territory traditionally controlled by their own interests. Stakeholders represent and embody an array of conflicting priorities, values, opinions, and agendas and a range of professional vocabularies. They see their own position as being of the utmost priority and are unwilling or unable to relate to other stakeholders' concerns. Often the conversations between stakeholders in such groups are inflexible, laden with biases, politics and power play. Facilities (estate) managers' concerns about efficiency and value for money, managers' concerns about cost, public profile and student experience, teachers' concerns about 'deep learning', curriculum and engagement, learners' concerns about understanding, achievement and resources; all are legitimate and have their place within the conversation. The adversarial character of many traditional stakeholder meetings works to push less powerful voices aside in order to reduce the complexity of the task. A first concern of the project, then, was to find ways of diffusing power play, to allow decision-making to be informed by a more balanced negotiation of priorities.

A second, and perhaps even more challenging, concern, lies in the difficulty experienced by almost all stakeholders in imagining possibilities other than those they have experienced and are familiar with. Despite the volumes of research showing that students learn little in traditional lecture theatre based, information-delivery oriented, learning scenarios (Bligh, 1998; Gibbs & Jenkins, 1992; Ramsden, 1992), students consulted in focus groups continue to identify lecture theatres as desirable learning spaces. Despite the desire of educators to encourage active learning, many continue to advocate for spaces configured to allow their own voice to dominate. Despite the ongoing maintenance workload for facilities managers, generated by a perceived need to maintain predetermined configurations of room furnishings, the specification of such configurations remains a focus of their concern. Despite the awareness that industry representatives have of rapidly changing practices within their workplaces, both their criticisms and their expectations of learning spaces tend to draw on their own educational experiences, often twenty or thirty years previously. In each case the problems attached to existing ways of doing things, although often acknowledged, remain largely unaddressed in the pre-briefing conversations about new facilities. Assumptions about the nature of learning spaces, informed by habit and a preference for the familiar, are built into the brief, and so fuel the designer's own tendency to reproduce known models (Heimstra, 1991). The power of design to re-configure, rather than simply reproduce, educational practices, is thus elided within these traditional brief-development processes. Participatory design processes, developed and popularised since the 1990s, (Schuler & Namioka, 1993; Muller, 1991, 1993; Blomberg, 1998; Sanders, 1993), offered a way of addressing the above concerns. Interestingly, participatory design has rarely been used in developing spatial design briefs; and where it has

been used in developing briefs for educational environments, these have typically been in the context of school-based K-12 learning[4].

The issues identified above as inhibiting the development of innovative and appropriate design briefs within higher education contexts are characteristic not just of learning-space design scenarios, but are typical of complex settings within which change is being collaboratively negotiated. It is to address the needs of such settings that participatory design has been developed as a strategy over the past two decades. The success of participatory design, in meeting this need, stems primarily from its recognition of the enabling power of play (Sagan, Chapter 5). Play is a universal experience. Like learning, play permeates our lives. As humans, we are characterised 'not just by our thinking or achievements, but by our playfulness: our curiosity, our love of diversion, our explorations, inventions and wonder' (Gaver, 2002). The efficacy of play within participatory design arises from three of its enabling capacities; play defuses the power relations that exist between players prior to (and outside of) the game; it opens up a liminal space within which unreflective and tacit understandings can come to view; and it enables players to deal with change and envision alternate and open-ended futures in a risk free space (Gaver, 2002; Kolb 2010). Play within participatory design is initiated and directed through tools, prompts and frameworks devised for the particular design context. These tools can be of various character, however often they emphasise the visual.

The use of visuals or images as triggers or conversation pieces is not new. The introduction of the visual provides a non-linguistic way of developing generative narratives and interpretable artefacts. Anthropologists, social scientists and psychologists have been using images in their practice, through photo elicitation, photo ethnography, photo journals and photo interviews, for their potency to draw forth memories and emotions and their capacity to record events or scenes in their entirety (Banks, 2001; Harper, 2002; Hurworth, 2003; Styhre & Gluch, 2009). Vision, as an embodied intelligence, connects to the multiplicity of human experience without the linear or analytical distraction of language (Styhre & Gluch, 2009) or its socio-political power (Meier, 2007). The visual speaks to tacit understandings of culture, values, and their associated action; they speak to embodied knowing. Images, drawings and photos can be conceived of as socio-cultural probes that elicit feelings, draw forth thoughts and beliefs, and provide triggers for projecting alternate futures through the ascribing of meaning onto the image (Robinson & Parman, 2010). If play is the first strategy of participatory design, then, elicitation of ideas and understandings through engagement with the visual is the second. Of the participatory tools developed in previous projects that we examined, none provided the right focus or level of granularity needed for the development of briefs for next generation learning environments. Here the complex relationships between curriculum, technology, space, the practice(s) and myriad stakeholders needed to be made visible.

One of the primary tasks of our project was therefore the development of playful, visual stimuli, and guiding frameworks for engagement with these stimuli, that would enable communication between stakeholders and encourage them in open-ended exploration of innovative possibilities for future learning spaces in

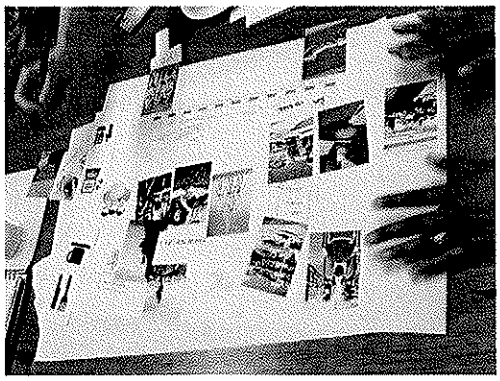

Figure 8.1. Early development and testing of tools and models - 'Day in the Life' exercise, Scaffold Workshop, Sydney 2009. Photograph: Susan Sherringham.

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Figure 8.2. An activity-scape being developed – 'The Parallel University' game, Scaffold Workshop, Interdisciplinary and Social Sciences Conference, Cambridge, 2010. Photograph: Susan Sherringham.

higher education. The tools designed for our project have been specifically conceived of as 'group thinking' and 'epistemic tools' (after Henderson, 1999 & Brecht, 2003) and 'playful triggers' (after Loi & Burrows, 2006) with the capacity to bridge different professional and practice groups (Styhre & Gluch, 2009). They are what Henderson refers to as visual meta-indexicals (Henderson, 1999).

The workshops with stakeholders focus on imaginative development of what we have termed 'activity-scapes'. An 'activity-scape' is the supportive experiential, spatial, equipmental and service environment immediate to the performance of a particular activity. For example the 'activity-scape' relevant to the writing of this

paper includes a particular focussed attentiveness to both the unfolding argument and to the voice of the co-author, an equipmental environment of digital software and hardware, lighting, table-top and chairs, coffee-cups, reference texts and so on, and a background supportive environment of services connecting us variously to texts and colleagues, and to sustaining supply lines of food and caffeine. The boundaries to the activity-scape determine how open the activity is to other influences, to the bleeding of sounds, smells and temptations from adjacent environments, or to more distant influences that penetrate the space either virtually or by other means.

From the above account we see that an activity-scape develops from an exploration of five dimensions;

1) what kinds of orientations, embodied experience, communications and interactions need to be supported within the activity;
2) what different aids, inputs and facilities are needed;
3) what tools and technologies will be taken up;
4) what is needed to support those technologies;
5) what the boundary conditions of the activity should be.

These dimensions then need to be considered in terms of practice-oriented preferences for a particular atmosphere or aesthetic that may further support the learning activity. Within our participatory design workshops for a specific group of learning space stakeholders, the starting point for developing an activity-scape is the identification of a practice-relevant disposition or set of dispositions that educators wish to develop within the students. For example, nursing educators may wish to develop a disposition within their graduates, for being observant of the body language of their patients, and a capacity for recognising the relationship between bodily conditions and medical need. In this example, the generators of the activity-scape focus upon the need for students to develop a focussed attentiveness to bodies and then begin to explore the different ways that bodies may be made present to students within the learning space, how those bodies might be experienced, what can be observed and how that observation can be impacted by the immediacy of access to inputs and aids, the environmental conditions and available technologies of the space. Workshop participants are supplied with sets of cards offering multiple options for identifying various needs, supports or conditions for learning from which they can discuss and choose preferences. The cards range from fairly abstract visual prompts to explicit words and cues. Once an array of cards that successfully evokes stakeholder desires for the activity-space has been selected, the second phase of the workshop begins.

If the first phase of the workshop is generative of a desired learning activity-scape, the second critically tests and iteratively develops that conception. Workshop tools enable rapid development of user-personas and learning scenarios. A set of 'what if?' cards introduces possible shifts in the context for learning, including broader changes to the physical, technological, social, political and economic environment of the educational institution. The activity-scape is also tested against both present and future institutional identity and industry expectations. In this way the workshops are modelled to create a form of reciprocal learning, within which

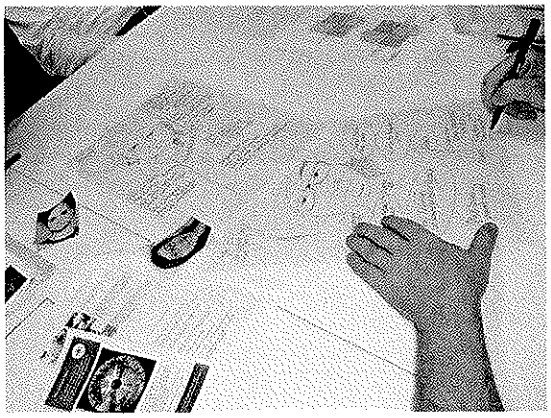

Figure 8.3. Persona Development - Scaffold Workshop, Sydney, 2010. Photograph: Susan Sherringham.

stakeholders and designers engage in playfully framed exchanges. The interactions with others and the generation of narrative through justifying, resolving, actively listening and achieving consensus, shapes understanding around what is being discussed (Costa in Hyerle, 2009). The process facilitates learning about self, about others and about different futures. Through the social construction of new possibilities, suggestions for change can be generated and owned by the stakeholders (Kolko, 2010). A sense of ownership creates positive engagement with the workshop outcomes, and encourages ongoing commitment to realisation of the vision generated. Such principles are central to participatory and co-design processes and draw on the principles of appreciative enquiry and positive psychology (Whitney & Bloom, 2010; Passmore & Hain, 2005).

CONCLUSION

The relationships between space and learning are not straightforward. Rather they are fragile and constructed, personally, culturally and institutionally. These constructions are subtle, often invisible, and generally unspoken. The traditional processes of brief development often fail to access these webs of significance, or to mobilize stakeholders toward promising change. To enable the envisioning of promising change these processes must be looked at anew.

The social and technological revolutions of our times call for a new consideration of how and where learning takes place. The processes and tools being developed through this project offer a particular way of enabling looking, noticing and 'relooking' at what we want students to learn and the supportive contexts and environments within which learning might take place.

Practice theory brings a new focus to conceptions of learning environments where practices are understood as the site of learning. It acknowledges learning as situated within authentic activity, experience, context and culture. Practice theory provides ways of highlighting the dispositions that are valued and desired within a practice, the learning activities and performances central to the development of these dispositions, and the support and technologies that need to be at hand. Through practice theory we are drawn to those embodied aspects of practice that call for authentic spatial responses.

As an exploratory process the development of activity-scapes enables creative, imaginative and interrogative engagements with new learning scenarios. The participatory design tools developed within the project aim to 'scaffold' stakeholders in their collaborative development of these activity-scapes. Through this participatory process stakeholders are invited to play, to spin webs of meaning, of action, of affectation, and of embodied knowing. Thus a rich tapestry of socially constructed information, a 'thick description', is developed for the designer to interpret and translate. Thus, through the lens of practice theory, the aesthetic and embodied dimensions of what might constitute an authentic learning environment can be articulated. The creative processes of participatory design engage stakeholders in design moves, framing and reframing perspectives and understandings in their co-generation of a design brief for new learning spaces, relevant to them and to the educational requirements of the contemporary generation.

NOTES

1 The 20th Century, in the vein of connoisseurship and modernism, continued the tradition of heraldry, that of great men, great objects, great stories within which architects and designers as individuals were held up as heroic figures, and their work as canons.

2 Authentic learning draws on situated and experiential learning. It aims to provide authentic contexts to support authentic activities that reflect the way information is accessed and shared, the way knowledge is created and used in real life practice. This includes access to and or integration of appropriate tools, equipment, technologies, access to expert performances and modelling of processes providing opportunities for students to engage in multiple roles, to collaborate in the construction of knowledge and to promote reflection to enable abstractions to be formed. Whilst the authors here refer to Herrington and Oliver (2000) and practice theory, see also Boys, Chapter 4, for reference to a related but differently framed idea of practice, the community of practice models of Lave and Wenger (1991).

3 This chapter outlines research stemming from an Australian Learning and Teaching Council (ALTC) Priority Project Grant "A protocol for developing curriculum-led human-centred next generation learning environments in higher education"; initiated in 2008 and involving a partnership between the University of Technology, Sydney as lead partner with Monash University and the University of Melbourne. The ALTC is an initiative of the Australian Government Department of Education, Employment and Workplace Relations. The views expressed in this paper do not necessarily reflect the views of the ALTC. http://www.altc.edu.au/project-protocol-developing-uts-2008.

4 There are a few examples of participatory design tools specifically developed for higher education environments; the Learning Landscape project lead by Lincoln University partnering with design consultancy DEGW (http://learninglandscapes.lincoln.ac.uk/) and the Explore It Toolkit: Effective

Spaces for Working in Higher Education (http://exploreacademicworkplace.com/) are exceptions. These projects use evaluation, diagnostic, mapping and charting tools to define shared parameters for expression, efficiencies, and effectiveness within an institution and draw on the institution's own identity, aims and values to build models of learning and work as specific patterns of social and spatial organisation (see also Duggan, Chapter 11).

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