

# Re-Shaping Learning: A Critical Reader

The Future of Learning Spaces in  
Post-Compulsory Education

Anne Boddington and Jos Boys (Eds.)



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*The Future of Learning Spaces in  
Post-Compulsory Education*

**Edited by**

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# TABLE OF CONTENTS

List of Illustrations ..... vii

Acknowledgements ..... ix

Reshaping Learning - An Introduction ..... xi

*Anne Boddington and Jos Boys*

## **PART 1: WHERE ARE WE NOW?**

1. Doing Learning Space Evaluations .....3  
*Brett Bligh and Ian Pearshouse*

2. Methods for Understanding the Relationships between Learning  
and Space ..... 19  
*Clare Melhuish*

3. What do We Know About What is Being Built?: New Typologies  
of Learning Spaces .....33  
*Jos Boys and Hilary Smith*

4. Where is the Theory?.....49  
*Jos Boys*

## **PART 2: WHAT KIND OF SPACE IS LEARNING?**

5. Between the Lines: The Transitional Space of Learning .....69  
*Olivia Sagan*

6. What Matters About Space for Learning: Exploring Perceptions  
and Experiences .....81  
*Clare Melhuish*

7. Research Spaces .....93  
*Maggi Savin-Baden*

8. Fragile Constructions: Processes for Reshaping Learning Spaces.....105  
*Susan Sherringham and Susan Stewart*

## **PART 3: LEARNING SPACES AND INSTITUTIONAL IDENTITIES**

9. ‘Learning Landscapes’ as a Shared Vocabulary for Learning Spaces .....121  
*Angela Thody*

TABLE OF CONTENTS

10. Learning Spaces as Social Capital .....137  
*Paul Temple*

11. Some Models for Re-Shaping Learning Spaces .....147  
*Fiona Duggan*

12. Learning beyond the University: The Utopian Tradition.....155  
*David Anderson*

**PART 4: RESHAPING THE FUTURE OF LEARNING SPACES**

13. Configuring Learning Spaces: Noticing the Invisible.....167  
*Ronald Barnett*

14. Designing Education and Reshaping Learning.....179  
*Anne Boddington*

15. Social Learning Capacity: Four Essays on Innovation and Learning  
in Social Systems .....193  
*Etienne Wenger*

List of Contributors .....211

Index.....217

# LIST OF ILLUSTRATIONS

## FIGURES

<i>Figure 3.1. Interior of Idea Store, Whitechapel, London. Photograph: Jos Boys</i> .....	39
<i>Figure 3.2. Masters course facilities, White Space, University of Abertay. Photograph: Jos Boys</i> .....	41
<i>Figure 4.1: Learning space framed through the patterning of binary associations and oppositions (re-printed from Boys, 2010, p. 5)</i> .....	49
<i>Figure 4.2. Learning space framed as the patterning of socio-spatial practices (re-printed from Boys 2010, p. 7)</i> .....	51
<i>Figure 4. 3: Analysing socio-spatial practices (adapted from Lefebvre, 1991 and re-printed from Boys 2010, p. 81)</i> .....	56
<i>Figure 6.1. InQbate Creativity Zone, University of Sussex. Photograph: Clare Melhuish</i> .....	82
<i>Figure 6.2. Centre for Excellence in Learning and Teaching through Design (CETLD). Photograph: Clare Melhuish</i> .....	85
<i>Figure 6.3. The Creativity Centre, University of Brighton. Photograph: Clare Melhuish</i> .....	86
<i>Figure 8.1. Early development and testing of tools and models - 'Day in the Life' exercise, Scaffold Workshop, Sydney 2009. Photograph: Susan Sherringham</i> .....	113
<i>Figure 8.2. An activity-scape being developed - 'The Parallel University' game, Scaffold Workshop, Interdisciplinary and Social Sciences Conference, Cambridge, 2010. Photograph: Susan Sherringham</i> .....	113
<i>Figure 8.3. Persona Development - Scaffold Workshop, Sydney, 2010. Photograph: Susan Sherringham</i> .....	115
<i>Figure 12.1. A studio workspace, with associated computer facilities at the Sackler Centre, V&amp;A Museum, London. Photograph: Hilary Smith</i> .....	161

LIST OF ILLUSTRATIONS

TABLES

*Table 3.1. Examples of informal learning design in the UK (reprinted from Boys, 2010 pp. 20–21) .....34*

*Table 3.2. Example pattern of citations of UK learning space examples .....35*

*Table 15.1. Configuring social learning capacity - structural interactions between governance and accountability .....208*

*Table 15.2. Configuring social learning capacity - creating patterns of vertical and horizontal accountability .....208*

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ANNE BODDINGTON AND JOS BOYS

## **RESHAPING LEARNING - AN INTRODUCTION**

### BACKGROUND

The impetus for gathering the authors and essays for this publication was our growing recognition of an emerging and complex field that resides under the collective title of ‘learning spaces’. This is situated at the confluence of a number of disciplines including education, museum studies, architecture, estates planning, human-computer interaction, and policy and management; so although there are many shared concerns, participants come to their engagement with the field from varied perspectives and with very different methodologies. All the papers touch upon and contribute to our understandings of learning spaces in post compulsory education – which in the UK and Australian contexts covered here - means further, higher and adult education post-16. Where contributors are writing about a specific part of this sector they will talk about education in universities, colleges or museums. We believe, however, that many of the examples are more generalisable, to a wider international audience and context. This includes the schools sector, other settings where learning takes place and a consideration of learning spaces in the context of a productive and fulfilling workplace. Our initial review of learning spaces revealed that much high quality research was being undertaken in and across different disciplines, but that its different ‘locations’ has prevented the consolidation and distillation of ideas, and made it hard to develop a picture of the field as a whole or to communicate this work easily to its many audiences. In addition, and despite considerable interest, the quality of many reports remain uneven and few are linked to contemporary research in either education or design. This has resulted too often in a reiteration of many simplistic divisions between ‘old’ formal teaching spaces and ‘new’ informal and social learning space. Our main aim, then, was to connect the work of disparate disciplines in one place, bringing together a substantive body of learning spaces research which could inform the future development of the field.

In the UK, the first decade of the new millennium saw significant public investment in the physical and digital spaces and educational infrastructure of universities, colleges and related environments. In turn this stimulated a growing interest in the re-examination of learning and the spaces in which learning takes place; to try and ensure their fitness for purpose, and to see whether they meet the needs of 21st century learners, academics and other related publics. This has opened up interesting questions, first, about the lack of any theoretical understanding as to how such spaces should be conceived or designed; and second, about the shifting purposes of post-compulsory education and the institutional role of the University. Pragmatically it has also revealed a lack of effective frameworks for

either the development of contemporary learning spaces or for assessing their impact on learning and research. Each of these areas urgently needs more knowledge-sharing and constructive dialogue across disciplines, and more rigorous research into the appropriate conceptual frameworks and methodologies for analysing and improving learning spaces.

The book is therefore designed as a 'critical reader' which can enable researchers, academics, students and managers across the fields of post compulsory education, estate management and architecture to share and engage with some of the key academic ideas, issues and texts from many different places. It is intended for anyone interested and wanting to think more about learning spaces, whether as users, clients or managers or with a more general interest in relationships between the social and the spatial (for example, anthropologists, architects, designers, sociologists, sociolinguists, geographers and human-computer interface designers). *Reshaping Learning - the future of learning spaces in post-compulsory education* intends to both problematise and to develop a constructive critique of the current assumptions about learning space. It offers examples of cross-disciplinary research by leading scholars in the field, as they grapple with the complexities of understanding the intersecting interrelationships between space and the learning, teaching, research and management that happens within it. Taking a variety of perspectives, these essays begin to map that field and to question what kinds of reshaping – conceptual, social and/or physical – may be brought to bear on post-compulsory learning, teaching and research.

As already noted, the experts chosen for this collection come from many different fields. Education is well-represented (Ronald Barnett, Paul Temple, Etienne Wenger, Maggi Savin-Baden, Olivia Sagan and Angela Thody) since so little research about learning spaces is being undertaken from this perspective. But there is also research and writing from architecture and design (Anne Boddington, Jos Boys, Susan Sherringham and Susan Stewart), from anthropology (Clare Melhuish), from estates management (Fiona Duggan), from museums education (David Anderson), and from computer science (Brett Bligh and Ian Pearshouse). Each discipline thus has the opportunity to engage with ways of looking 'outside' of their usual frameworks. In this way, the book hopes to increase the number of fruitful cross-disciplinary connections and debates.

In addition, contributors use a variety of voices and references. Some are most interested in unravelling what happens in particular learning encounters, others are more concerned to address the institutional agenda, and others again explore the potential of articulating learning through its spatial 'conceptualisations'. Thus this work, as a collection, begins to both open up the field of learning spaces to its many complexities and difficulties, whilst also offering the developing clarity that different kinds of focus can bring. What the contributors share is an understanding that learning is always *situated* and *embodied*, not just in material space but also in individual, social, cultural, economic and political contexts. Space can only be viewed in relation to its occupation, that is, as *socio-spatial practice*. This means that learning spaces are not so much a matter of aesthetics or innovative design, as about the processes of learning, teaching and research and the ways in which

relationships between these are categorised, organised and connected (that is, in what is ‘named’ and identified and what is not; what is revealed, what is kept together and what is disaggregated and dispersed) both conceptually and materially.

*‘Talking Back’ from a Design Perspective*

The development of this book was supported by the Centre for Excellence in Teaching and Learning through Design (CETLD), a partnership led by the Faculty of Arts at the University of Brighton in collaboration with the Victoria and Albert Museum (V&A), the Royal Institute of British Architects (RIBA) and the Royal College of Art (RCA) which ran from 2005–2010. Though the locus of the CETLD was design and learning, learning spaces was a key theme from the beginning and the developing research programme aims for a much wider influence on other, more mainstream, educational and professional learning theories and practices. Superficially at least this may appear an unexpected step. Art and design education is rarely aligned to much that is written about post-compulsory teaching and learning. Teachers within these fields often find little connection with pedagogic theory and many do not see much use or value in the concept of ‘learning space’ itself (Boys, 2010 p. 8). Very infrequently do the ‘commonsense’ arguments in favour of more informal learning spaces make any sense to art and design teachers who are already dealing with the complex overlays of ‘creative subjects’ and the wide range of spaces they utilize (including conventional lecture theatres and seminar rooms, studios, workshops and laboratories). Yet, at the same time, art and design education is often cited as an innovative paradigm for contemporary learning. This is because it is multidisciplinary, problem, project and often professionally-based and developed around collaborative critique and self-reflective iteration. We believe that the creative disciplines can offer an alternative and distinctive perspective on learning from much of the contemporary literature, and throw a different light on pedagogy more generally. We want it to ‘talk back’ constructively and creatively to ideas both about the formation of learning and about space. So, although the authors represented here come from a wide range of disciplines there are considerably more from design subjects than would usually be found in such collections. This is deliberate; it situates design as a kind of ghost at the heart of the educational machine.

## CHAPTER STRUCTURE

The book is divided into four sections:

*Part 1: Where are we now?* – brings together key reviews and critiques of the field of learning spaces; clarifying and discussing what it is that we already ‘know’ and reflections on how to develop and method for analysis.

*Part 2: What kind of space is learning?* – presents examples of the latest research exploring how to analyse learning as an activity that is socially and spatially embedded

*Part 3: Learning Spaces and institutional identities* – examines the issues for considering learning spaces strategically within an institutional context

*Part 4: Reshaping the future of learning spaces* –explores how we might re-think the ‘shape’ of learning in the post-compulsory sector, conceptually, socially and physically.

*Part 1: Where are We Now?*

In chapter 1 Brett Bligh and Ian Pearshouse set the scene with a critical analysis of the current learning space evaluations methods in post-compulsory education across the UK. Given the significant value of the estate for the majority of institutions this chapter reveals the limitations of short-term methods of analysis that fail to provide objective methods from which to gather data and feedback about the role space has in affecting learning. In chapter 2 Clare Melhuish reviews the different ways in which relationships between learning and space can be analysed and explores some useful approaches, with particular reference to architectural studies, social anthropology, geography and environmental psychology. She argues for methods that elucidate the participant’s view, rather than that of the researcher, and that build on a rapport between participant and researcher to reveal insights that could not be achieved through established, objectified and behaviourist methods. In chapter 3 Jos Boys and Hilary Smith present a critical review of the current design of learning spaces in the UK. They examine what is being presented as innovative and ‘good’ learning space (irrespective of supporting evidence) and the kinds of spaces that remain less visible. Importantly they argue that the current tendency to use metaphor and to make analogous links between learning and its formal and visual representation (e.g. informal learning equates to bright colours and soft furnishings) maybe be considerably more problematic than it first appears because such actions mask or invert key relationships between the social practices of learning and the design of the associated spaces. Jos Boys closes this first section. Chapter 4 explores what kinds of contemporary theories and ideas drawn from education and architecture might better inform our understanding of the relationships between learning and space. The aim here is to see how theory can begin to advance practice and the debates about learning spaces, by providing ways to address the complexity, diversity and fluidity inherent in such a subject.

*Part 2: What Kind of Space is Learning?*

In chapter 5 Olivia Sagan applies the concept of transitional space (Winnicott, 1971) to the question of precisely where learning takes place, suggesting it happens in the ‘space’ between the taught and the learned. She challenges an educational discourse already saturated with spatial descriptors, such as notions of ‘top’ and ‘bottom’ grades, of ‘under’ graduate, ‘foundation’ level, and ‘higher’ education. As a counterpoint she examines the place of learning in which ‘aspects of the self are created and transformed in relationships with others and with the matrices of culture’ (Day-Sclater, 2003 p. 326). This relational process is both fraught and

gifted with emotional investment and risk. Her chapter explores the constituent elements of such a place, and considers how these might be provided for, within an educational environment that is increasingly constrained. In chapter 6, Clare Melhuish applies some of the ethnographic methods outlined in chapter 2 to the study of three new learning spaces in post-compulsory education. Her aim is to examine individual participants' perceptions (students and staff) of particular physical spaces and the perceived impact on their learning. The study focused on two specific issues: on participants' understandings of the institutional agenda, and on their interpretations and experiences of the spatial, material and sensory qualities of each space. Her research demonstrates how, if asked specific questions participants can engage with physical space in a rich and multi-layered way that extends across, social, spatial symbolic, functional and experiential interpretations. In chapter 7 Maggi Savin-Baden usefully moves into a discussion of what kinds of the learning spaces support research. She suggests that in the UK, as public funding for higher education reduces, student numbers expand and research demands and aspirations increase, there has been relatively little attention given to the nature and needs of research space. Yet, she argues, like learning spaces, it is essential that spaces and places for research are recognized and developed because they are vital for the sustenance and wellbeing of the higher education community. In chapter 8, which concludes this section, Susan Sherringham and Susan Stewart also argue that the relationships between space and learning are fragile and constructed, personally, culturally and institutionally. The chapter outlines their research, supported by an Australian Learning and Teaching Council (ALTC) Priority Project Grant, which centres on mapping the relationships between curriculum, pedagogy, technology, learning activities, learning stances and spatial affordances, to develop more informed insights as to how and if space supports learning. They have designed and tested a set of tools and techniques, which enable participants to articulate and negotiate their understandings of learning through mainly visual means, which, the authors argue, opens up debate and development both creatively and productively.

### *Part 3: Learning Spaces and Institutional Identities*

In chapter 9 Angela Thody explores what general agreement there is on meanings of 'learning landscapes' as a concept to unite an understanding of learning spaces at the institutional level. Her aim is to find a shared vocabulary between different constituencies and perspectives, as well as to propose methods to support this understanding, with particular reference to both university conceptualisations past and present, and to participatory ways of working. In chapter 10 Paul Temple outlines the complexities of assessing the effectiveness of learning spaces for the educational institution and focuses on how visual and spatial design, at the level of the campus, can communicate "messages" both internally and externally. Intuitively, he notes, it does appear that some learning spaces and campus designs work "better" than others and are for instance, more welcoming, on a human scale. The lack of empirical evidence however arises from the challenges of designing studies that could demonstrate convincingly a cause-and-effect relationship where there

are multiple variables. Here Temple demonstrates how concepts such as ‘encounter management’ and ‘social capital’ may help to articulate the interactions that occur and can begin to create a sense of belonging and institutional identity. As a complement, in chapter 11, Fiona Duggan offers practical insights for learning space development projects by educational institutions. She outlines a series of ways of working that constructively bring together different perspectives on space, and presents some models for articulating different kinds of spatial and learning values across organisations, each developed pragmatically from particular educational contexts and leading to the design of new post-compulsory learning spaces. Concluding this section, in chapter 12 David Anderson extends these ideas beyond the campus and considers learning spaces in the museum. He outlines how galleries and other spaces in museums, although less structured as learning environments than in schools and universities, are relatively more formal, structured and rich in material culture than daily life. Articulating these places as micro-utopias, he argues that such learning spaces are vital and distinctive as public spaces and can actively contribute to cultural and social dialogue. Drawing both on theoretical and cultural ideas he also examines the development and ethos of the new Sackler Centre for arts education at the V&A Museum in London (opened in 2008) and some related public and cultural collaborations for the local area.

*Part 4: Reshaping the Future of Learning Spaces*

This final section explores future propositions from a range of different perspectives. In chapter 13 Ronald Barnett problematises the potency of the metaphor of space in the phrase ‘learning spaces’. He suggests that though seductive it invites many questions. He focuses on the scope of learning spaces, their connectedness and their depth, visibility and invisibility and the implications in the idea of learning spaces of spaciousness, particularly its connection with the expansiveness of outlook that universities in particular have long been felt to provide. This invites pertinent questions for the contemporary period. He asks what are the available and appropriate spaces within which to learn, and what is or should be their scope, for the future of education and to further disciplinary knowledge. In chapter 14 Anne Boddington reflects on the experiences, ideas and research findings from the Centre for Excellence in Teaching and Learning through Design (CETLD), to posit ideas about the potential position of designerly activity in the shifting roles of academe. She also examines how potential convergence and/or collaborations with other cultural and learned institutions might reposition and present new possibilities for supporting citizen-learners, scholars and researchers in the 21<sup>st</sup> Century. Chapter 15 is the concluding chapter, written by Etienne Wenger. It provides some reflections on his involvement with the EQUAL Initiative, a European Social Fund project designed to support the spread of social innovation and collaboration across groups and activities. Here Wenger uses the case of social innovation to explore four key elements of social learning capacity: social learning spaces, learning citizenship, social artists and learning governance. Interest in these factors reflects a significant shift in the way education is understood. He goes

beyond learning as something acquired through a fixed curriculum, to a process inherent in our participation in social systems. He concludes by suggesting that increasing the learning capacity of these social systems is becoming an urgent concern in a world where we face daunting learning challenges.

CONCLUSION: FUTURE CHALLENGES FOR RESEARCH AND PRACTICE

By bringing these authors together it has been possible to see, within and across the diversity of concerns represented, a series of underlying key themes beginning to emerge. Learning spaces remains an under-developed field, and we suggest that each of these themes presents opportunities for important future research, discussion and development.

*Opening Up Different 'Angles of View'*

Throughout this collection there is an awareness of the considerable complexity of interrelationships between learning and space. This serves to demonstrate the need to resist reductive or over-simplified approaches. To grapple with the difficulties of exploring such complexities, authors have taken a variety of positions in relation to theory and practice. The essays gathered here draw principally from three theoretical pillars. These are, first, Lefebvre (1991), who has suggested methods for investigating the interactions between occupation and space, and has had a considerable influence across both architecture and the social sciences (including psychoanalytic theory) where these are concerned with space. Second, many authors draw in some way from Latour's Actor Network Theory (2008), which incorporates into its framework both human and non-human conditions, so ensuring that any analysis captures detailed contextual understanding. Third, is the considerable impact of Wenger and Lave's Communities of Practice model (1991), as well as Wenger's later work (1998), is having on ideas - particularly in education - about learning as a long-term journey, centred on the making of social meanings.

It is also interesting to see different intellectual trajectories and values being played out across different contributors, disciplines and locations. For example, 'within' architecture, Lefebvre and other writers in this (mainly Marxist) tradition such as Foucault (1977, 1984), De Certeau (1984) and Bourdieu (1984) are currently influencing understanding of spaces as socially constructed and embedding problematic power relations. From 'within' education there is a stronger tendency to refer to researchers such as Hillier (1996/2007), Hutchinson (2004) and Dovey (2008). These latter authors - who tend to come from a scientific and humanist background- focus more on the potential of material spaces to incorporate 'universal' qualities, such as a sense of place (ideas that are eternally unstable, and often questioned within architecture). An important value of the book is in making available these different approaches in one place, so that cross-comparison becomes easier. But, in bringing together a variety of voices concerned with the emerging field of learning spaces, we must also take the opportunity to have - and set up frameworks for - more explicit, critical debates about both our various theoretical positions and our 'commonsense' assumptions.

*From Solution to Illumination*

Not surprisingly, the variety of theories ‘brought to bear’ on the subject of learning spaces inevitably lead to different ontologies that serve to conceptualise and construct arguments and to form conclusions. What is more, some disciplines will tend to emphasise bespoke, site-specific designed solutions, focusing on the detailed specificity of each situation and context, while others will be more interested to attempt generalisable conclusions. This is particularly clear in the first chapters where the very situatedness of Melhuish’s anthropological case study methods raises issues about what kinds of wider conclusions can be drawn; whilst the more structured and comparative methods offered by Blight and Pearshouse can suffer - as they appreciate - from being unable to achieve any such fine-grain analysis. This problem also appears later in, for example, the differences between the pragmatic, case-by-case customised work of Duggan and the more abstract and theoretical conceptualisations of Barnett and Boys.

Similarly, contributors vary as to the ‘slice’ of learning spaces they investigate. The different sections in this collection highlight the various foci this tends to produce. So Part 1: *Where are we now?* concentrates on detailed modes of analysis, particularly in relationship to learning encounters in real environments, while Part 2: *What kind of space is learning?* also examines learning encounters but from a more theoretical perspective. The questions asked in Part 3: *Learning Spaces and Institutional Identities* tend to be of a different scale and type - mainly engaging with issues of organisation and identity. Finally Part 4: *Reshaping the future of learning spaces* looks both at learning as an activity, and at institutions as learning providers, but tends to expand how these aspects of learning spaces might be imagined, both conceptually or - in the widest sense - politically. Some authors attempt to provide ways of articulating these different ‘levels’ from direct learning encounters to societal conceptualisations, which are explored by different essays; for example Barnett’s division of learning spaces into material space, educational space and the student’s ‘interior’ space; or Boys’s adaptation of Lefebvre’s spatial triad as everyday socio-spatial learning routines, designed environments, and individuals perceptions and experiences of both learning routines and the spaces in which they take place.

Of course, we can learn many lessons from all these different kinds of examination of learning space, at whatever scales and granularity they are framed. Given the complexities we have revealed, it is vital that we develop both theory and practice with the many kinds of both rigour and richness being offered here. We need *both* better conceptual frameworks and more appropriate methods that enable some degree of summative analysis and a range of methods and tools that reveal, assist and inform rather than dictate and fix the management and construction of learning spaces, whether physical, digital or intellectual. Again though, as with different academic positionings, the underlying issue is to make sure that we are comparing like-with-like and are providing relevant supporting evidence. Most contributors agree on a few key points. First, examinations of learning spaces are best constructed as ‘thick descriptions’ (Geertz, 1973), which capture the complexity of social and spatial relationships. Second, whatever

methods we use, the overall aim should be to assess *value* (however that comes to be defined). Bligh and Pearshouse, and Duggan in this volume both deal at length with this issue of value. And, third, the outcome of proposing conceptual frameworks, making arguments, and gathering data - whether to inform a learning space project or to evaluate it - is not to provide easy solutions but to *illuminate* our understanding of learning spaces (Parlett and Hamilton, 1972).

### *Recognising the Ambiguity of Space*

Of critical concern is the ambiguity of space as a category. It is evident throughout the various chapters that in the context of learning spaces, there is considerable slippage in the use of terms between the conceptual, the physical and the metaphorical; between individual, community and public space; and between personal and imaginary space, institutional spaces (whether digital or physical), and the public realm. While partially caused by the varied use of language in different disciplines it is nevertheless vital to unpack and understand the many assumptions about, and meanings given to, learning spaces as they are used in this anthology. While space is already clearly ambiguous as a category in terms of the material world, we should also note that, with the recent ‘spatial turn’ in cultural theory more generally (Deleuze and Guattari, 2000), it is increasingly used as a means to explore or communicate at the level of *ideas*, what we have called socio-spatial conceptualisations of learning. Whilst this is opening up debate in a potentially very exciting and enlightening way, we need to be clear about how - and if - such spatial conceptualisations of learning connect with either actual material spaces, or individual and group embodied perceptions and experiences.

The other central ambiguity of space is in the different ways it is assumed to ‘translate’ educational ideas and learning practices into built form. So there is, for example, a tension throughout the collection around the usefulness of metaphor in general as a way of generating ideas about space, and/or in making actual environments; and also differing emphases on space as a representational medium (expressing, for example, identity) and as an events-based process (that is, as a kind of choreography). As before, explicitly exploring these differences is potentially a very creative and constructive way to open up and progress debate and development.

### *Developing a Relational Understanding of Learning Spaces*

We started the book with the clear understanding that learning spaces is a deeply complex and as yet under-researched field. As these chapters have been drawn together, two things became increasingly clear. First, we still do not have a generally shared language for articulating what is distinctive about post-compulsory learning as an activity. We remain poor at explaining how learning at this level *works*, either to those within or to those beyond the academy. However, overall, this book shows some emerging similarities in understanding and descriptions of post-compulsory learning that can be usefully developed. As many of these authors

show, in educational theory, learning spaces are increasingly understood as moments of transition between different states of learning, with many boundaries and thresholds to be negotiated (Meyer and Land, 2006; Lave and Wenger, 1991; Wenger, 1998). Many essays therefore explore how students (and staff) can both be supported in their learning journeys and enabled to take risks; and how both conceptual and material space is implicated in that process. This has been voiced in a variety of ways - as recognition and validation, as belonging and as being challenged. Second, and growing out of this first point, the design and development of learning spaces requires a relational understanding of individual and collective learning, within and beyond the physical boundaries of institutions. Learning spaces are therefore not about seeking singular solutions to particular problems. They are about patterns of learning, teaching and research, the development of knowledge as a generative and shared activity; and the role of different kinds of spaces (conceptual, personal, social, material) in this process. In seeking to create a shared understanding and to articulate the important characteristics of learning spaces a number of descriptors have been proposed such as 'learning landscapes' or 'learning ecologies.' These are indicative of continuous and more dynamic spatial relationships although it is not entirely clear whether these ultimately serve to confuse by overlaying metaphors one upon another. What has become obvious is that learning spaces bring together existing socio-spatial practices, designed places and individual perceptions of both practices and actual places and their place alongside institutional processes/ relationships and societal ideas.

What has also become apparent is that what is fixed and revealed and what remains transient, impermanent and relational are critical decisions that can clearly be transformative and/or destructive. Refining our knowledge of how to establish optimal conditions for investing in learning spaces is vital given the scale of the investments and how little we really know about the educational process and practices or about how these intersect with the conceptual, physical or aesthetics of space. This realization alongside Savin-Baden's parallel and related observations about the spaces of research, reveal important issues and opportunities for future research particularly in the changing contemporary context in the UK.

### *Envisaging the Future of Education*

Space, then, cannot be separated from its occupation; changing learning spaces for the better is thus about understanding and improving the *socio-spatial practices* of education. Second, the design of learning spaces is not so much about providing solutions as enabling the optimal *conditions for learning*. Each social and spatial aspect requires detailed understanding and a relational tolerance that enables designers of (physical and virtual) spaces and designers of learning (be they teachers or students) to both generate and complete the learning space between them through embodied encounters. Learning spaces are only 'completed' through this inhabitation, and will only work well when this is understood and where there is a relational and conceptual alignment between physical spaces, the invisible governance systems of the institutions, and the conceptualisations of learning that

underpin the educational process (and so that the potential for creative learning is not obstructed).

Moving towards such an alignment challenges the very nature of learning institutions themselves as well as the ‘shape’ of education more generally (what is learnt, where, by whom?). It suggests that universities, colleges and adult education providers will need better ways of dynamically modelling what they do, and of acting flexibly and creatively in adapting and transforming their learning provision through time. Post-compulsory educational institutions need to learn how to learn and evolve, and how to embed responsive mechanisms within their governance structures. As UK further and higher education undergoes a significant transformation over the coming decade there are challenges to its role, to the idea of ‘learning for its own sake’ and for personal intellectual development. Post-compulsory education has become increasingly focussed on and driven by professional formations and on its direct benefit and service to the economy. This is, then, a critical moment to reflect upon how the interrelationships between the academic infrastructures for learning, teaching and research can be developed alongside and in tandem with more responsive and intelligent models and systems of management and governance. This collection and its diverse range of authors bring together a series of perspectives in this emerging field and we believe it offers some initial essential steps in responding to these important and urgent questions.

#### REFERENCES

- Barnett, R. (2007). *A will to learn: Being a student in an age of uncertainty*. Maidenhead: McGraw-Hill/Open University Press.
- Barnett, R. (2010). *Being a university*. Abingdon: Routledge.
- Bourdieu, P. (1979/1984). *Distinction: A social critique of the judgement of taste*. London: Routledge.
- Boys, J. (2010). *Towards creative learning spaces: Re-thinking the architecture of post-compulsory education*. London and New York: Routledge.
- Day-Sclater, S. (2003). What is the subject? *Narrative Inquiry*, 13, 317–330.
- De Certeau, M. (1979/1984). *The practice of everyday life*. Berkeley, CA; London: University of California Press.
- Deleuze, G., & Guattari, F. (1988). *A thousand plateaus: Capitalism and schizophrenia*. London: Continuum.
- Dovey, K. (2008). *Framing places: Mediating power in built form*. Abingdon: Routledge.
- Foucault, M. (1977). *Discipline and punish: The birth of the prison*. London: Allen Lane.
- Foucault, M. (1984). *Of other spaces (1967) heterotopias*. Retrieved from <http://foucault.info/documents/heteroTopia/foucault.heteroTopia.en.html>
- Geertz, C. (1973). Thick description: Toward an interpretive theory of culture. In *The interpretation of cultures: Selected essays* (pp. 3–30). New York: Basic Books.
- Hillier, B. (1996/2007). *Space is the machine*. London: Space Syntax.
- Hutchinson, D. (2004). *A natural history of place in education*. New York: Teachers’ College Press.
- Latour, B. (2008, September 3). *A cautious prometheus? A few steps towards a philosophy of design* (with special attention to Peter Sloterdijk). Keynote lecture for *Networks of Design*, meeting of the Design History Society, Falmouth, Cornwall.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Lefebvre, H. (1991). *The production of space* (D. Nicholson-Smith, Trans.). Oxford: Blackwell.

## BODDINGTON AND BOYS

- Meyer, J. H. F., & Land, R. (Eds.). (2006). Threshold concepts and troublesome knowledge: Issues of liminality. In *Overcoming barriers to student understanding: Threshold concepts and troublesome knowledge*. Abingdon: Routledge.
- Parlett, M. R., & Hamilton, D. (1972). *Evaluation as illumination: A new approach to the study of innovatory programmes*. Workshop at Cambridge, and unpublished report Occasional paper 9, Centre for research in the educational sciences, University of Edinburgh.
- Savin-Baden, M. (2008). *Learning spaces: Creating opportunities for knowledge creation in academic life*. Maidenhead: Open University Press/McGraw-Hill.
- Temple, P. (2007). *Learning spaces for the 21st century: A review of the literature*. York: Higher Education Academy. Retrieved from <http://www.heacademy.ac.uk/ourwork/research/litreviews>
- Temple, P., & Barnett, R. (2007). Higher education space: future directions. *Planning for Higher Education*, 36(1), 5–15.
- Wenger, E., (1998). *Communities of practice: Learning, meaning and identity*. Cambridge: Cambridge University Press.
- Winnicott, D. W. (1971). *Playing and reality*. London: Tavistock/Routledge.

## **PART 1: WHERE ARE WE NOW?**



## 1. DOING LEARNING SPACE EVALUATIONS

In this chapter we argue that evaluating learning spaces is a valuable activity that can generate operational insights into *how physical space affects learning*, and can thus feed into processes of learning space design. The broader context is a desire to improve learning by designing better spaces within post-compulsory education. However, while it is clear that the configuration of space profoundly impacts human activity generally (Hillier, 1996/2007), Learning Space evaluation (LS-e) must contend with the reality that explicit links between space and theories of learning remain poorly explored and that theories of learning themselves rarely emphasise the importance of space (Jamieson, 2003; Neary et al., 2010). Thomas (2010), for example, has argued that ‘in short, our difficulty in understanding and articulating the nature of learning is *partly brought about by our inability to articulate where learning takes place*’ (p. 502, our emphasis).

If learning theories fail to discuss physical space explicitly, they nonetheless profoundly affect it by suggesting new forms of learning activities, which many existing spaces in post-compulsory education are manifestly not designed or configured to support; as Van Note Chism (2002) has noted, recent developments ‘have challenged the adequacy of traditional learning spaces’ (p. 9) and on this basis the creation of new learning spaces is seen to be much more crucial than in the past. Thus, LS-e must make reference to theories of learning if it is to have explanatory power and we argue that evaluations, suitably constructed and disseminated and in sufficient numbers, can allow us to start constructing an understanding of the links between theory and physically embodied learning through aggregated experience. Melhuish (Chapter 2) echoes these concerns, arguing that the anthropology of education needs to become more spatially aware, and can begin to better understand spatial practice by using ethnographic methodologies and constructing Geertzian ‘thick descriptions’, understood as academic fictions.

Yet, in addition to coming to a contextualised understanding of Learning-Space relations, evaluators are routinely tasked with representing that understanding in ways which are convincing to funders and other stakeholders, are useful in future planning, propose design solutions to be implemented in other locations, and which suggest ways to improve current spaces. Thus, as we shall argue in this chapter, LS-e tends to balance a set of core values about what is (or is believed to be) important about the space under evaluation against a set of more pragmatic constraints, often related to institutional context. In our view, it is the management of this balance that discriminates good evaluations, which generate useful insights, from mediocre ones, which fail to do so.

At least some of the problems with LS·e we wish to outline have their roots in learning space *design* limitations. Reasonably, given the lack of available theoretical guidance, design teams base decisions on their (limited) understanding of spatial purpose (Temple, 2008, p. 231). Furthermore, timescales of estates refurbishment and decommissioning within Higher Education (HE) mean that many spaces, or elements of spaces, outlast learning theories' prevalence even where attempts are made by designers to embody such theories (Thomas, 2010, p. 503). So evaluating spaces in terms of pedagogic intent is difficult because such intent either was never explicit in the mind of the designer or evidence of the intent was not available to the evaluators. Thus, success criteria for LS·e have usually been derived from other sources, including space evaluation practices used outside the education sector. Roberts and Weaver (2006) describe how, even as late as the early 1990s, LS·e was seen 'only in relation to stock and weeding policies, not clients and certainly not 'learners'' (p. 97). In the UK context, Temple (2008, p. 230) points out that the University Grant Committee's quantitative, traditionalist spatial 'norms' from the 1960s and 1970s continue to influence university planners' judgements of building size and design, notwithstanding that they have ceased to have official recognition. These spatial norms are 'traditionalist' in the sense that they evaluate what we here call *demand*, and have limited explanatory power since they do not take into account the factors generating utilisation or occupancy and nor refer to pedagogical principles. Yet 'space management' certainly *impacts* on pedagogy, despite being based on such quantitative blunt instruments, because it affects the relative availability of space types and thus privileges chosen learning activities. Here, we suggest that, since LS·e carries implications for learning and also impacts upon institutional identity, there is an urgent need to develop more subtle instruments than space allocation metrics alone. Partly we draw upon our Joint Information Systems Committee (JISC)-funded study of these issues, *A Study of Effective Evaluation Models and Practices for Technology Supported Physical Learning Spaces* (hereafter 'JELS', Pearshouse et al., 2009), which investigated what methods and tools were already being used to evaluate the contribution to *learning and teaching* of physical Learning Spaces (ibid., p. 6). This project concluded that, despite the existence of some plausible *models* in the literature, most *actually existing* examples of LS·e were of modest ambition compared with the spaces they were examining, were often fragmented and often only aspirational. Mainly utilising data such as footfall and surveys to establish demand or satisfaction, most evaluations we reviewed failed to consider learning as an activity, while others seemed content that new ways of learning and teaching were 'enabled' (ibid., pp. 12–14). Furthermore, links between LS·e and design were not usually explicit and the dissemination of project outputs was poor (ibid., pp. 14–16). Our conclusions – that future practice for LS·e should seek to build flexibility into design, relate design to intended pedagogy, consider infrastructural provision including spare capacity, better relate to established professional guidelines, and better understand the context and legibility of proposed designs – were thus focussed on the *shortcomings* of existing evaluations across the UK.

This chapter follows on from that research by seeking to unpack what kind of evaluations *can* be plausibly undertaken. It offers a typology of evaluation types, contrasting the benefits and drawbacks of different models relative to common evaluation contexts. We then draw attention to factors that crucially affect LS·e practice – such as initiation and timescale, relationship to design, the identity of the evaluators, and data gathering methods. We conclude by emphasising the interdisciplinary nature of LS·e, by recognising the relative merits of the available evaluation models, and by arguing that the scholarly potential of LS·e has been insufficiently recognised. The quality of evaluation should ultimately be judged by the *insights* gained into the ways spaces *support learning* and the ways in which these insights are shared within a community of interested practitioners.

#### A TYPOLOGY OF LEARNING SPACE EVALUATIONS

Aiming to classify LS·e into types privileges certain properties as fundamental. We contend that it must also operate at a suitable level of detail for practitioners, who should be able to place their current practice into context and re-examine their assumptions. Previously, Powell (2008, p. 28) has sought to distinguish *appraisal* evaluations, which seek to validate a learning space's 'success' in a manner reminiscent of many examples uncovered by JELS - outlined below - from *design studies*, which seek greater detail about which facets of a design can be linked to useful outcomes. These latter thus more closely resemble academic research. While this distinction is useful and perhaps necessary, since it demarcates a genuine boundary line between different approaches to LS·e, it is nonetheless insufficient for our purpose, since each category could be applied to a large number of heterogeneous evaluations. Roberts and Weaver (2006, pp. 96–97), on the other hand, begin their discussion of LS·e by setting out a list of potential *insights* which evaluation might provide – demonstrations of interactivity, approaches to learning technology development, supporting the needs of diverse learners, researching impact on learning, and so on (p. 96) – and subsequently provide a (lengthy) list of the *reasons* why an evaluation might occur. Examples include providing evidence for return on investment, to assist with future planning, and to connect project outcomes to institutional contexts. Unfortunately, the relations between these insights and reasons are not made explicit, and while we acknowledge that these attributes can be applied to many of the evaluations we have encountered, we consider that this model operates at a level *too* fine-grained to distinguish usefully between models of evaluations. Similarly, some practitioners define evaluations in terms of their sources of data (especially if these are innovative, for example utilising a Web 2.0 platform), but we argue that this factor is also not fundamental since innovative data collection leads to better evaluation outcomes only when linked to appropriate evaluation questions and analytical methods (Pearshouse et al., 2009, pp. 11–12). Instead, we begin by examining the *values* (success criteria) of the evaluations themselves, since we

believe these offer insights into the assumptions of the evaluators, and suggest clustering LS·e models as follows:

- **Demand model:** quantitative analysis of conventional space metrics (occupant density, booking statistics), or financial income (external bookings, internal market calculations), etc.;
- **Outcomes model:** evaluating changes in learning outcomes;  
**Satisfaction model:** collecting data about the *experiences* and satisfaction of space users;
- **Scenario provision model:** examining space *provision* (technology, configuration, size, etc.), in light of *judgments* about the *activities* which need to be supported;
- **Activity support model:** evaluating activities undertaken within a space *in practice*, often using observation-based methods;
- **Spatial ecology model:** examining configurations of, and relationships between, the variety of spaces available;
- **Brand model:** evaluating spaces' contribution to institutional image, as projected to entities including media, external partners, prospective and current students and staff, etc.

These LS·e models describe *ideals* (archetypes) that may not be mutually exclusive in practice. For example, evaluation programmes may encompass several models for 'triangulation' purposes (to construct a more holistic picture or to reach more confident conclusions). Or one evaluation may give rise to another as a *reaction*; Powell (2008) notes a common need to defend innovative new learning spaces against charges of being 'space hungry' (p. 30). This might involve deploying a Satisfaction or Activity Support model to challenge Demand Model conclusions (even though the outputs generated by the different models are not likely to be directly comparable). In addition, the values of LS·e are often constrained by the context, which affects what kinds of study are achievable.

Our assumption above of a relation between the values of an LS·e programme and those of the evaluators themselves also needs to be clarified. The JELS project encountered many cases of evaluations whose conclusions precisely met expectations, trumpeted success or even justified decisions to *cease evaluating* on the grounds that success had been achieved (Pearshouse et al., 2009, pp. 14–15). We found little evidence of genuinely problematic evaluation conclusions, leading us to suspect at the time 'that reports which contradict initial expectations were unlikely to be publicly acknowledged' (ibid., p. 53). More insidiously perhaps, the very construction of LS·e frames of reference itself serves to render negative results unlikely, and thus problematic reports are rarely written. Here we use reverse engineering to focus on those values for which evaluation programmes appear to demonstrate high regard. If contextual demands have constrained LS·e to the extent that the programmes do not reflect the values of those undertaking the evaluations, then this discrepancy deserves to be underlined so that the evaluation processes, institutional constraints — or even the values themselves — become open to challenge. Starting points for such challenges could be: whether the values and assumptions of the evaluators are appropriate, whether the evaluation carried out

matches the values from which it claims to proceed, and whether the evaluation has the resources needed to ensure a usable outcome. LS·e strategies are typically affected by factors including:

- Pragmatics of data availability in order to generate ‘quick wins’: data that already exists, or that can be gathered using automated techniques, is often preferred to data which must be gathered manually (Pearshouse et al., 2009, p. 11);
- Resources available to undertake an evaluation (timescale, budget, staff allocation);
- Externally imposed funding timescales or project staging guidelines which impose ‘decision gates’ (Radcliffe, 2008, p. 14) on an evaluation.

We continue by providing a brief overview of each of the models outlined above.

### *Demand Model*

The Demand Model for LS·e arises because university estate is a resource with large associated costs – typically the second largest cost overall borne by an institution within HE behind staff costs (NAO, 1996). This model proceeds from the basis that such a resource should be used, above all, *efficiently* (Neary et al., 2010, p. 46). The UK Space Management Group (SMG, 2006, p. 3) defined space utilisation, a measure of how space is used, as a function of frequency (proportion of time a space is in use) and occupancy (proportion of a space’s capacity taken up when in use). Alternate models measure space per student or space per staff member (*ibid.*, p. 6). The model addresses issues such as what size of estate is affordable, whether resources deployed in support of under-consumed space should be re-directed, and the opportunity costs of supporting inefficient spaces (*ibid.*, p. 3). This model is overwhelmingly dominant across Higher Education LS·e (Pearshouse et al., 2009; Neary et al., 2010, p. 32). The advantages of Demand Model LS·e are that it can be:

- Holistic, developing a picture of provision across a variety of spaces;
- Benchmarked, and linked to estimates of what an institution can afford;
- Suggestive, since it can be used to set utilisation targets, emphasise spaces that may need to be marketed more widely, or suggest priorities for investment;
- Analysed and presented in formats which influence policymakers (*ibid.*, p. 4).

However, the model also presents considerable drawbacks:

- Change in utilisation rates over time tends to be minimal, so meaningful comparison can be difficult;
- Measuring demand is reactive, and does not suggest innovative solutions;
- Objective measures can correlate poorly with the perceptions of staff and student about overcrowding or lack of available spaces;
- Differing measures (such as calculating space per full-time equivalent (FTE) instead of utilisation) highlight different trends, and it is unclear which of these delivers more insight (SMG, 2006, p. 6);
- Data collection is inconsistent and often of dubious quality, consistency and sample size, which in turn can render comparisons between institutions problematic (SMG, 2006, p. 7);

- The method does not discriminate between the factors that cause a space to have given levels of utilisation or occupancy (ecological properties, technology provision, popularity etc.).

Such a model can also be criticised because it does not relate to teaching and learning. The SMG's (2006) own work acknowledges the need to 'balance' minimising cost against 'meeting the pedagogical and research needs of staff and the learning and support needs of students' (p. 3). The latter places a greater emphasis on social and pedagogical aspects of space rather than efficient use (Neary et al., 2010, p. 46), and it is clear that the Demand Model can provide little guidance with regard to such issues. We therefore contend that such a model is necessary for institutional space management, but certainly not sufficient.

### *Outcomes Model*

Discovering causal benefits between space design and learning outcomes would perhaps be the best way of raising the profile of the learning spaces agenda across the post-compulsory education sector. But we contend that identifying such tangible links in practice is difficult, and probably implausible, because they are weak, indirect and easily 'masked' by other factors (Temple, 2008, p. 237). Nonetheless some authors do argue that we cannot shy away from these issues. Warger and Dobbin (2009), for example, argue that 'ultimately learning success must lead these evaluations: what contributes to students' mastering academic content, finishing courses, and completing degrees?' (p. 11). In making such comments, Warger and Dobbin imply that LS-e should focus on issues more traditionally associated with the theory of Student Involvement (Astin, 1984/1999), which is indeed connected with space in that it emphasises 'environmental influences on student development' (p. 518). Yet the institutional evaluation programmes which do exist, informed by Student Involvement theory, necessarily take the form of wide surveys of student experiences whose conclusions cannot be taken as support for notions of spatial causality.

To gain insight into the kind of work that needs to be undertaken to establish the impact of learning spaces on learning outcomes, it is useful to consider the quasi-experimental work of Brooks (in press). Brooks *isolates* the effects of space by controlling (keeping constant) confounding factors such as time of day, course materials, assignments, instructor behaviour, and so on and is thus able to demonstrate a statistically significant difference between the predicted and actually achieved grades of different groups of students whose teaching occurred in two classrooms with different designs. As a piece of research, this work is useful in demonstrating that physical space *can* improve learning, yet as a technique for LS-e this work is problematic both in its construction (we design learning spaces with the understanding that tutor behaviour, teaching session duration etc. *will* change) and in its intensiveness of labour (it seems impractical for institutions to conduct such pair-wise comparisons of spaces separately for each learning scenario they wish to evaluate, at the scale that would be necessary to answer Warger and Dobbins' Student Involvement-inspired challenge).

A further illustration of the difficulties in operationalising Outcomes Model ideas can be found in the work of Hunley and Schaller (2006, 2009). In 2006, these authors set out an Assessment Framework for Learning Spaces, focussing on institutional growth, quality of person-environment interaction, learning outcomes and personal engagement (Hunley and Schaller, 2006, p. 13.3). Within this framework, the possible aggregation of learning outcomes with student evaluations of teaching quality is discussed (*ibid.*, pp. 13.1–13.2). However, writing three years later, Hunley and Schaller (2009) advocate using *engagement* as a proxy measure for learning ‘due to the complexity of assessing specific learning outcomes’ (p. 28). Ultimately, while we agree with Warger and Dobbin (2009, p. 12) that student outcomes constitute a quantitative measure of success for the whole institution as a ‘learning environment’, we believe that direct measurements of these outcomes within LS-e are unlikely to be fruitful. Instead, we advocate accepting proxy measures for learning outcomes, as other models do below, and ensuring that LS-e is appropriately co-ordinated with other, complementary institutional evaluations such as those investigating retention or the student experience.

### *Satisfaction Model*

The JELS project found that a strong driver of LS-e – especially of internally initiated service evaluation programmes – was to respond to the demands of the UK National Student Survey (NSS) (Pearshouse et al., 2009, p. 4). Thus, to align with the focus of that survey, many LS-e programmes value occupants’ *satisfaction* with the spaces they encounter. Furthermore, *students’* satisfaction is privileged, not that of academics or support staff. One such example asked ‘how people perceived the space and the impact it had on them as individuals, learners’ (*ibid.*, p. 11). This model often uses data collection tools such as surveys, interviews and focus groups, and we concluded (*ibid.*, pp. 3–4) that the apparent success of these tools in addressing NSS concerns acts to prevent other forms of evaluation from flourishing. Within the UK literature, for example, the SOLSTICE centre’s common evaluation framework (Roberts and Weaver, 2006) invokes the language of the ‘student experience’ (p. 104) in defining its central aims, but this framework commendably complements this by emphasising the importance of obtaining staff viewpoints.

Associated drawbacks include the fact that many other factors influence satisfaction in HE *more* than (or despite the) properties of spaces (Temple, 2008, p. 238), which may confound response validity. Students may also lack the confidence to project their ‘voice’ with regard to spatial experiences, and may need support to do so (Neary et al., 2010, p. 29). Finally, ostensibly related issues – such as the engagement between a space and its occupants (Thomas, 2010, p. 503) and the effects of spaces on ‘how students feel about their *place* in the institution’ (Temple, 2008, p. 233, our emphasis) – point towards a need for deeper understanding of the affective experience of space, which can only ever be partly addressed by constructing a narrative around student satisfaction.

*Scenario Provision Model*

A prominent focus within LS·e is the *enabling* of new teaching and learning *scenarios*, particularly ‘ensuring that spaces are being utilised, and utilised in an exploratory and innovative manner, in line with design ambitions’ (Pearshouse et al., 2009, p. 12). Compared with the models above, this model is innovative in that it explicitly refers to spatial design and thus implies a link to design processes. What this model usually involves in practice is making judgements about which activities (scenarios) a space needs to support and ensuring that the space, its contents (furniture, technology) and its basic infrastructure are appropriate for such activities – and, in some cases, keeping logs of the activities which occur in the room over time.

Anticipating the activities a space needs to support is crucial in design (Watson, 2007, p. 258) and linking evaluation to these considerations is similarly crucial to understand how students and staff engage with designed space. Such a model runs into the problems we outlined in our introduction, that many designs are informed by (often dubious) assessments of what a space is required to do and are not related to well-developed pedagogical models. Furthermore, the language of ‘learning styles’, often invoked to underpin design (Neary et al., 2010, p. 42) in the absence of more convincing guidelines, can be used to justify predetermined conclusions independent of context and thus to imply a minimal role for LS·e in suggesting design solutions. Instead, we need to design spaces with a clear understanding of their pedagogic purpose, and subsequently *evaluate* whether our aims were achieved. With regard to the implications of learning styles, perhaps a more appropriate response is to ‘design for diversity but with the aim of resourcing individuals to explore alternative modes of learning – rather than only reinforcing entrenched preferences’ (Crook and Mitchell, submitted).

Evaluating Scenario Provision often involves collecting data on ‘occupancy, usage and scenarios’ (Pearshouse et al., 2009, p. 13) rather than examining the activities actually taking place. While useful, this model thus operates with insufficient granularity to take into account the ‘design gestures’ (deliberately designed affordances, *ibid.*, p. 25) which support the scenarios. Used alone, we consider the Scenario Provision Model to be in danger of allowing *spatial determinism* – generous resourcing (of technology, for example) is claimed to have supported innovative pedagogy by an evaluation process which cannot theorise *how* this support occurs and whose analytical framework would not be able to refute such claims were they untrue. Similar problems have been noted with strategies sometimes used to evaluate collaborative learning technologies (Bielaczyc, 2006, p. 308), which we argue can best be overcome by evaluating activity within the space in which it takes place.

*Activity Support Model*

Activity Support LS·e investigates the learning interactions of students and staff and locates those within physical space. This often involves mapping *back* to physical and cultural affordances (for example the configurations of students, teachers and machines within space, or how the social identities of the actors within

the space are understood by those present), as opposed to Scenario Provision LS-e, which establishes activity checklists from design assumptions and maps these forward to occupancy. Such a mapping would ideally constitute a *dialogue* between design and evaluation through time. However, this dialogue is often thwarted by both the problems of theoretical contributions to design which we have already noted, and a lack of institutional memory about design principles (as the intentions behind a space are not understood by its occupants, and may be increasingly forgotten by support staff due to factors like staff turnover even if designers originally articulate their intentions well through staff presentations or brochures). Furthermore, many evaluators utilising detailed observations and other ethnographic data-gathering techniques may be influenced by theoretical traditions that disapprove of *a priori* assumptions - such as designers' suggestions about what a space is designed to accomplish - and wish instead to identify relevant themes from the data, as outlined by Melhuish (Chapters 2).

So Activity Support LS-e usually starts with observation, formulates conjectures about learning activities and attempts to map these back to spatial properties. When using these methods in the context of LS-e (as opposed to fundamental research), the idea is to subsequently compare findings against (reverse engineered) ideas about a space's design purpose. Such processes fit well with the *exploratory and descriptive evaluation of space* of our own Framework for the Evaluation of Learning Spaces (Pearshouse et al., 2009, p. 19). Such a model for LS-e closely borders scholarly research into teaching and learning, with a number of plausible models detailed within the literature (Radcliffe, 2008; Powell, 2008; Fraser, 2009; Pearshouse et al., 2009; Bielaczyc, 2006; Sandoval, 2004; Melhuish, Chapter 6). Yet at present, the Activity Support model is relatively uncommon in practice (Pearshouse et al., 2009, pp. 12–14), being heavily outnumbered by Scenario Provision programmes even where evaluators claimed to be investigating learning activities. Activity Support approaches allow for close examination of what Temple (2008, p. 234) terms micro-design, as well as designed flexibility (Watson, 2007, p. 260). The opportunities for design insight mean that Activity Support LS-e should be coupled with actual design processes so as to iteratively improve designs. Many of these approaches place emphasis on *coming to understand* the design objectives of the space, since they may be lost or only implicitly understood for reasons we have already seen. The Framework for Evaluating Learning Spaces (FELS), for example, encapsulates *what* is being evaluated through its Context, Practice and Design dimensions (Pearshouse et al., 2009, p. 21). The Theory of Change model used by Levy (cited in Pearshouse et al., 2009, p. 16) to evaluate spaces in the Sheffield Information Commons, negotiates theories about space to determine whether it 'met those targets through the routes expected' (Fraser, 2009, pp. 9–11). The Social Infrastructure Framework explicitly embodies conjectures within educational designs and identifies and refines those conjectures through research (Bielaczyc, 2006). If the methodology chosen does not allow *a priori* assumptions, then the coupling between processes will be necessarily looser, but it is still essential that conclusions are communicated back to designers in as accessible a manner as possible.

Within the literature, Bligh and Lorenz (2010, pp. 18–22) provide a micro-level spatial description of teaching within a small group seminar series, drawing attention to the physical affordances for teaching of space and technology. Crook and Mitchell (submitted) use an array of methods including audio diaries, scan sampled ethnological observation, on-task conversations and focus groups to examine student behaviours within a technology-rich library setting. The methodological challenges of such approaches include:

- How can evaluations focussed on micro-design provide guidance broad enough for institutions to utilise?
- How can non-academic staff be supported in undertaking activities they may regard as ‘research’ and therefore the domain of academics? (Pearshouse et al., 2009, p. 4)
- How can links between design and evaluation processes be operationalised?
- What kind of knowledge is produced by these research-like evaluations?

This latter problem is particularly important, since significant problems are often encountered when *transferring* Learning Space designs to new locations. As Neary et al. (2010, p. 27) have noted, such problems are often derived from a failure to appreciate the wider contextual factors, which contribute to a design’s success *in situ*, resulting in problems of conservatism as design ideas are superficially re-used again elsewhere without attempting either to recreate the wider original context or to adapt the design to its new setting. Evaluating situated activities produces knowledge that is inherently specific and *local* (Sandoval, 2004, p. 213), raising questions about the generalisability of LS·e conclusions and whether particular designs can ever be directly transferred to other contexts.

### *Spatial Ecology Model*

Spatial Ecology LS·e highlights the fact that spaces derive much of their value from physical context and connectedness with other spaces. An *ecology* of Learning Spaces cannot be understood by simply evaluating each space individually, since it is likely to be affected positively or negatively by other provision within the ecology. For example, Temple (2008, p. 232) argues that centrally driven plans to increase space utilisation may reduce opportunities for informal learning. So a space provides benefit to students if its affordances complement other surrounding spaces (such as an informal area surrounded by lecture theatres), a fact which smaller scale, more intensive LS·e models such as the Activity Support model can fail to capture. Writing about *campuses* as learning spaces, Jamieson (2003) states that: ‘Overall, a university campus needs spaces designed to generate interaction, collaboration, physical movement, and social engagement as primary elements of the student learning experience’ (p. 121). Students also need a variety of space types which provide different opportunities; Wilson (2008, p. 20) suggests a suitable model of space types for post-compulsory education.

A prominent tool that takes into account this view is the Campus Mapping Profile of Neary et al. (2010). The tool evaluates campus expression, efficiency, and effectiveness – asking questions about identity and branding, condition and

maintenance, circulation and permeability, flexibility, way-finding and orientation properties, effective use, and security. From an LS-e perspective, the tool provides a ‘spatial framework within which the performance of the learning landscape can be considered’ and a ‘supply’ side analysis of the estate against an institution’s vision, allowing for a new method of ‘Gap Analysis’ [to] support prioritisation of possible areas of intervention’ (ibid., p. 34). Another ecological method to analyse space is Space Syntax (Hillier, 1996/2007), a model based upon quantitatively understanding space as a *movement economy*, which operates at a variety of scales. Though we have yet to see examples of such work appear in the learning spaces literature, examples by Kaynar (2005), operating within open plan museums, provide a glimpse of how such techniques could be used to understand ecologies of spaces within post-compulsory education.

### *Brand Model*

The fact that innovative learning spaces are sometimes conceived as grand architectural statements is often viewed negatively within the literature (Temple, 2008, p. 230), since architectural prestige is often seen to take precedence over learning and teaching considerations. Yet an emphasis on strong design image need not be counterposed against teaching and learning if it acts as a crucible for innovative new teaching and learning methods (instead of the more usual conservative reproduction or reactivity), if it demonstrates respect for students and staff, if it acts as a showcase for the pedagogical aspirations of management, and so on. From a US perspective, and perhaps more cynically, Graetz and Goliber (2002) argue that a central function of the ‘brand’ of a post-compulsory education institution is to generate student ‘place attachment to their college’ (p. 16), implying that greater student alumni contributions in the future will be the result. The Learning Spaces field needs to better problematise branding and identity considerations, but to retain our focus here on LS-e we restrict ourselves to a few brief points:

- Genuinely innovative new spaces may initially ‘perform’ less well than more conventional facilities (which reproduce well-understood socio-spatial cultural relations). Evaluating the institutional *prestige* of a new and innovative space may offset negativity and encourage a willingness to take risks which, it has been argued, is much needed in the field of learning spaces design (Watson, 2007, p. 256);
- It is important to link teaching and learning sites and campus master plans to institutional values and aspirations (Neary et al., 2010, p. 7);
- Attractive architecture plays a role in attracting prospective students, thus indirectly impacting on teaching and learning climates;
- Valuing space’s ‘iconic’ status foregrounds maintenance issues, which may have a large impact on learning (Temple, 2008, p. 238).

### FACTORS AFFECTING LEARNING SPACE EVALUATIONS

While this chapter divides LS-e into categories according to the ways in which they value space, there are cross-cutting factors, and we address a range of these here.

### *Initiation and Timescale*

Many LS-e programmes seem to be initiated at the post-occupancy stage, are designed to catalogue ‘quick wins’ (Pearshouse et al., 2009, p. 11) and are conceived as one-off processes (ibid., p. 14). Though funding bodies and stakeholders may stipulate evaluation milestones (Roberts and Weaver, 2006, pp. 101–102), we would suggest that evaluations would be improved if they were:

- Undertaken at the proposal stage for learning spaces, as part of a process of competitive funding decisions (Powell, 2008, p. 28);
- More longitudinal, to better distinguish between ‘factors arising out of novelty’ and those remaining once a space is established (Roberts and Weaver, 2006, p. 102);
- Related to the life-spans and *capacity for change* (Watson, 2007, p. 257), of the different elements of the building (site, building structure, cladding, internal design, decoration, furniture, etc.);
- Ongoing, and *accessible* to those undertaking design projects (Neary et al., 2010, p. 21);
- Constructed to allow enough time for the necessary *trajectories of change* (Bielaczyc, 2006, p. 322) to occur.

Yet conversely, proposals for extensive, time-consuming evaluation need to be balanced against institutional needs for conclusions within practical timescales, especially if they are to inform policy and subsequent designs.

### *Relationship to Design Process*

To produce better spaces, robust LS-e should be used as a basis to inform designs for other learning spaces (Powell, 2008, p. 27). As well as timescale co-ordination between evaluation and design processes, the literature points to the need for common language so that disparate, interdisciplinary teams can communicate successfully (Neary et al., 2010, p. 22; Thody, Chapter 9). Watson (2007, p. 261) has argued for the use of *metaphor* to describe learning spaces, giving examples such as ‘the busy city’, ‘the airport departure lounge’ and the ‘domestic living room’, which act to support rich conversations about design, whilst others are more critical and appeal for caution here (Boys, Chapter 4). There is also a need for evaluation and design processes to be documented (or to be *self-documenting*) (Radcliffe, 2008, p. 14), to ensure that principles remain explicit through multiple evaluation-design iterations. Also important is student and staff involvement in evaluation and design (Thomas, 2010, p. 503; Neary et al., 2010, p. 22), which can act to ground and enrich both processes.

### *The Identity of the Evaluators*

LS-e activities have often been conducted by Estates teams (Roberts and Weaver, 2006, p. 102; Van Note Chism, 2002, p. 7), which allows work to be informed by institutional reality and outputs to be related to policy. But LS-e is an activity which involves making judgements about many factors, such as pedagogy and

technology, which fall outside Estates' traditional areas of expertise. Thus, many LS·e programmes need to be carried out by interdisciplinary teams, which could involve technical support staff, academics, students, architects and Estates departments and others; crucially, these groups are themselves not internally uniform in outlook or specialism. Such problems of collaboration around LS·e have been addressed from various angles within the literature: Jamieson (2003, p. 123) considers it crucial that academic developers (trainers) are involved; Neary et al. (2010, p. 7) consider that the central issue is how academics, from disparate disciplines, communicate with Estates; Bligh and Lorenz (2010, p. 12) consider the situation to be a 'superset' of the collaboration which happens around educational technology roll-out; and Roberts and Weaver (2006, p. 104) consider the formation of new academic teams to address such issues. Crucially, LS·e programmes must involve sufficient personnel to influence policy. Therefore we would emphasise the need for dialogue between those concerned with policy (senior management), design (architects, estates professionals), pedagogy (academics, learning technologists) and experience (students, teachers, support staff), critically engaging with others in ways which acknowledge areas of relative expertise, including taking account of ecological considerations.

### *Data Gathering*

Though many evaluators tend to distinguish between projects according to their data gathering techniques, above we have suggested that such techniques are secondary to the *values* of evaluation programmes (and to some extent, need to be derived from these values). Rather than attempting to provide a catalogue of data collection methods, here we content ourselves with a few key points:

- Evaluators should choose data collection and analysis techniques based upon *what they want to know* – rather than deciding which data is easy to collect, and then reverse engineering *what they claim to have wanted to know* (Pearshouse et al., 2009, p. 11);
- It is sensible to use pre-collected or automatically generated data if these genuinely relate to an evaluation's terms of reference;
- Evaluations need to be co-ordinated with wider institutional evaluation programmes – to avoid 'evaluation fatigue' (Roberts and Weaver, 2006, pp. 102–103) and to foment the notion, if possible, that LS·e is an important component of institutional evaluation strategies;
- It is worth considering immersive (interactive) modes of evaluation in addition to the 'harvesting' of data, for example, by using innovative spaces for workshops, enrolling Estates staff on academic modules to experience space from a different perspective, etc.

### CONCLUSION

We have argued that the *model* of evaluation used, and the *values* which underpin it, define an evaluation programme better than surface-level features such as data collection mechanisms. Furthermore, since LS·e inevitably takes place within an

institutional context, the skill of the evaluators is crucial in *balancing* an evaluation's core values against contextual constraints, in *relating* evaluation outputs to institutional contexts so that they can be used, and in rendering context *explicit* throughout the process (including in outputs) so as to minimise the risk of the learning space design being transferred to other locations in inappropriate, conservative or simply misunderstood ways. LS·e critiques the ways in which space affects learning and is a crucial site where non-academic staff (estates managers, technical and information professionals) can engage with issues outside their usual remit – pedagogy, student experience, and academic voice. The involvement of academics in such processes forces a focus on the physicality of their pedagogic and research practice, and the involvement of students can be empowering and enable ongoing processes of dialogue.

Since it is possible to read our JELS report (Pearshouse et al., 2009) as lamenting the lack of what we have here called Activity Support LS·e, it is important to state that we do not wish to privilege certain models of LS·e over others, though we do view the Outcomes Model as unhelpful in many practical contexts, and we argue that some Scenario Provision evaluations might better meet their own stated objectives if they were constructed differently. Generally though, as a result of programmatic triangulation or as a reaction to other evaluations, these models often co-exist. This ecosystem of LS·e models accurately reflects the fact that learning spaces are valuable in different ways, to different people, and can be interpreted at a variety of levels.

We would like to end by arguing for better *reporting* and dissemination of LS·e outcomes to other interested practitioners. There are still comparatively few in depth reports of evaluations, and fewer still which found significant problems with spaces or which highlight adoption obstacles. Furthermore, those commendable reports that do exist are often not widely disseminated in ways that mirror the distribution of research outputs (such as publication in peer-reviewed periodicals, or presentations at relevant conferences). Institutions do not relish embarrassment, yet progress in other investigative fields occurs because reports emphasise the *insights* that are gained rather than a specific project's success. Rigorously reported and properly disseminated LS·e outputs can provide experience of how spaces affect learning across a wide variety of contexts; also fuelling learning spaces itself as an important field of interdisciplinary enquiry which can explore the spatial implications of learning theories and, on that basis, go on to challenge those theories as evidence is accumulated and meta-analysed. Simultaneously, LS·e provides an opportunity to investigate the ways in which institutional context constrains learning activities and (under certain conditions) can contribute to a process of challenging those constraints politically by reporting problems upwards within institutional hierarchies and outwards to the post-compulsory education sector more widely. Were such a step change to be achieved for LS·e, then the resultant discussion around LS·e programmes might truly allow them to achieve their aim of incrementally improving learning space design, drawing more generalisable conclusions, and enabling suitable cross-transfer to other contexts, thereby impacting more usefully on learning.

## REFERENCES

- Astin, A. W. (1984/1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, 40(5), 518–529.
- Bielaczyc, K. (2006). Designing social infrastructure: Critical issues in creating learning environments with technology. *The Journal of the Learning Sciences*, 15(3), 301–329.
- Bligh, B., & Lorenz, K. (2010). The rhetoric of multi-display learning spaces: Exploratory experiences in visual art disciplines. *Seminar.net: International Journal of Media, Technology and Lifelong Learning*, 6(1), 7–27.
- Brooks, D. C. (in press). Space matters: The impact of formal learning environments on student learning. *British Journal of Educational Technology*.
- Crook, C., & Mitchell, G. (submitted). Ambience in social learning: Student engagement with new designs for learning spaces. *Cambridge Journal of Education*.
- Fraser, K. (2009). *Investigating how the theory of change approach can inform the evaluation of a learning space: Sheffield University's information commons*. Unpublished MA dissertation, The University of Sheffield, Sheffield.
- Graetz, K. A., & Goliber, M. J. (2002). Designing collaborative learning places: Psychological foundations and new frontiers. *New Directions for Teaching and Learning*, 92, 13–22.
- Hillier, B. (1996/2007). *Space is the machine*. London: Space Syntax.
- Hunley, S., & Schaller, M. (2006). Assessing learning spaces. In D. G. Oblinger (Ed.), *Learning spaces*. Boulder, CO: Educause.
- Hunley, S., & Schaller, M. (2009). Assessment: The key to creating spaces that promote learning. *Educause Review*, 44(2), 26–34.
- Jamieson, P. (2003). Designing more effective on-campus teaching and learning spaces: A role for academic developers. *International Journal for Academic Development*, 8(1/2), 119–133.
- Kaynar, I. (2005). Visibility, movement paths and preferences in open plan museums: An observational and descriptive study of the Ann Arbor Hands-on Museum. In A. Van Nes (Ed.), *5th International Space Syntax Symposium Proceedings* (Vol. II). Amsterdam: Techne Press.
- NAO. (1996). *Space management in higher education: A good practice guide*. London: National Audit Office.
- Neary, M., Harrison, A., Crellin, G., Parekh, N., Saunders, G., Duggan, F., et al. (2010). *Learning landscapes in higher education: Clearing pathways, making spaces, involving academics in the leadership, governance and management of academic spaces in higher education*. Lincoln: Centre for Educational Research and Development.
- Pearshouse, I., Bligh, B., Brown, E., Lewthwaite, S., Graber, R., Hartnell-Young, E., et al. (2009). *A study of effective models and practices for technology supported physical learning spaces (JELS): Final report*. Bristol: Joint Information Systems Committee.
- Powell, D. (2008). Evaluation and the pedagogy-space-technology framework. In D. Radcliffe, H. Wilson, D. Powell, & B. Tibbetts (Eds.), *Learning spaces in higher education: Positive outcomes by design*. St. Lucia: The University of Queensland.
- Radcliffe, D. (2008). A pedagogy-space-technology (PST) framework for designing and evaluating learning places. In D. Radcliffe, H. Wilson, D. Powell, & B. Tibbetts (Eds.), *Learning spaces in higher education: Positive outcomes by design*. St. Lucia: The University of Queensland.
- Roberts, S., & Weaver, M. (2006). Spaces for learners and learning: Evaluating the impact of technology-rich learning spaces. *New Review of Academic Librarianship*, 12(2), 95–107.
- Sandoval, W. A. (2004). Developing learning theory by refining conjectures embodied in educational designs. *Educational Psychologist*, 39(4), 213–223.
- SMG. (2006). *Space utilisation: Practice, performance and guidelines*. Lincoln: Space Management Group.
- Temple, P. (2008). Learning spaces in higher education: An under-researched topic. *London Review of Education*, 6(3), 229–241.
- Thomas, H. (2010). Learning spaces, learning environments and the dis‘placement’ of learning. *British Journal of Educational Technology*, 41(3), 502–511.

BLIGH AND PEARSHOUSE

- Van Note Chism, N. (2002). A tale of two classrooms. *New directions for teaching and learning*, 92, 5–12.
- Warger, T., & Dobbin, G. (2009). *Learning environments: Where space, technology and culture converge*. ELI Paper 1. Boulder, CO: Educause.
- Watson, L. (2007). Building the future of learning. *European Journal of Education*, 42(2), 255–263.
- Wilson, H. (2008). The process of creating learning space. In D. Radcliffe, H. Wilson, D. Powell, & B. Tibbetts (Eds.), *Learning spaces in higher education: Positive outcomes by design*. St. Lucia: The University of Queensland.

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## **2. METHODS FOR UNDERSTANDING THE RELATIONSHIPS BETWEEN LEARNING AND SPACE**

### INTRODUCTION

The increasing impact of computer technology and other media on educational processes has stimulated a wave of recent research initiatives. These are directed at evaluating the benefits or otherwise of technological interventions in post-compulsory educational settings. This material, much of which is readily available online, provides a starting-point for an exploration of methods for understanding relationships between learning and space. However, whilst studies of the impact of new technologies on learning are adding to our knowledge of contemporary learning experiences, this paper will argue that - in order to understand how designed settings affect teaching and learning - research studies need to make space and its occupation central. It therefore explores the potential of using ethnographic research methods drawn from the disciplines of social anthropology and environmental psychology.

### EVALUATING THE IMPACT OF TECHNOLOGY

Since 2005 the Joint Information Systems Committee (JISC) has commissioned a number of studies focussed on the impact of new learning technologies. The Lex study – research into learner experiences of e-learning (Mayes, 2006; Creanor et al., 2006) – was prompted by an awareness that although ‘e-Learning is widely perceived as a learner-friendly mode of learning, offering alternative, self-paced and personalised ways of studying’ (O’Brien and Beetham, 2008 p. 1), little was known at that time about learners’ own perception of e-learning. The research was based on a sample of 55 mainly skilled digital learners (71% of whom were in employment) ‘to avoid undue emphasis on the anxiety and frustration that frequently characterise those in the throes of learning new skills’ (ibid., p. 5). The data was collected through face-to-face interviews, and Interview Plus (recall enhanced by reference to a blog or resources in an e-portfolio), using an Interpretative Phenomenology Approach (IPA), as popularised in healthcare research, a method I will return to later in this chapter. The key findings were that today’s learners lead complex lives, requiring sophisticated time-management skills; that the boundaries between learning and other aspects of learners’ lives are increasingly blurred; and that e-learning helps to negotiate those boundaries.

Control and choice are of great importance – for example, being able to personalise the learning environment by selecting technologies meaningful to the learner – and, although learners value tutors who are fully engaged with e-learning, they also rely heavily on informal support networks. While older learners feel the young have an advantage, as a group, effective e-learners of all ages are flexible, resourceful, self-aware and highly motivated.

This study was followed by *LXP: Student Experiences of Technologies* (Conole, Darby et al., 2005–06), which explored disciplinary differences in uses of technology by university students through a variety of quantitative and qualitative methodologies, including an online survey, interviews and audio logs. This sample was much larger, involving some 400 learners across medicine, dentistry and veterinary medicine; economics; information and computer sciences, and languages and linguistics. The findings in this case were that e-learning resources are widely supplemented by personal technologies – mobile phones, laptops and PDAs – and that learners also make use of standard software to create, manipulate and present content. Internet search engines are preferred to libraries for information retrieval and, again, peer support provided by informal networks of friends and family, using email, texting, MSN® Messenger, chat or Skype™, provides an underworld of communication and information-sharing invisible to tutors, and one that complements the work of tutors themselves. Learning is here approached as another form of consumer practice, where personal choice is of central importance.

In 2007, JISC funded a further study entitled the *Design and Management of Open Plan Technology-Rich Learning and Teaching Spaces* (Watson et al., 2007), which was more spatially focussed. It comprised 24 case studies of large, open-plan spaces, mostly on a library scale, within a variety of study environments. However, it did not include any evaluation of student responses to the new spaces. It did highlight the fact that the spatial setting hosts learning practices, which, in general, have become more social in nature, and that this can often cause problems, such as disruptive noise levels, mobile phone use, and food and drink consumption; another consistent problem was temperature control. One of the institutions included in the study (Glasgow Caledonian University) had carried out its own survey evaluation, which found its resource to be popular with users, but probably too lively for study at graduate level.

In 2008, JISC put out a podcast on ‘student learning experiences’ accompanied by a publication and CD-Rom, *In Their Own Words* (O’Brien and Beetham, 2008), which gave a platform to the ‘voices’ recorded in the earlier LEX and LXP studies. The conclusion was that, although the new communications technologies, including e-mail, instant messaging, message boards, and wikis were very useful in promoting flexible, open and personalised learning networks, characterised by both increased autonomy and increased social interaction, there were also some concerns. These were that there was a lack of training in the skills required to operate programmes such as PowerPoint, and that a minority of learners without their own equipment faced problems and were quickly disadvantaged and marginalised in an e-learning environment. This was followed in 2009 by a suite of tools and checklists for learner-centred evaluation based on this and further research into learners’

perceptions of blended learning, the distinctive experiences of learners with disabilities and – in an important longitudinal study – how learners use technology differently as they progress from one stage of education to another’ (O’Brien and Beetham, 2008 p. 4). In addition, Pearshouse et al. (2009) produced *A study of effective evaluation models and practices for technology-supported physical learning spaces*. This was undertaken on the basis that

new spaces and technologies disrupt the old modes of teaching and learning as they are often based on a shift from a transmission model to a deliberately flexible, student-centred approach... the role space plays in creating productive higher education communities is not well understood.(p. 4)

The study looked further at the spatial implications of new technologies, and specifically investigated ‘good practice’ in methods of evaluation that have been and might be used to assess what design features of the new, technology-supported spaces contribute to learning (Bligh and Pearshouse, Chapter 1).

The UK government also commissioned a Committee of Inquiry into the Changing Learner Experience, headed by Professor Sir David Melville CBE, to consider the impact of the newest technologies such as social networking and mobile devices on the behaviour and attitudes of students coming up to and just entering higher education, and the issues they raise for universities and colleges. Published in 2009 under the title, *Higher education in a Web 2.0 world: report of an independent Committee of Inquiry into the impact on higher education of students’ widespread use of Web 2.0 technologies*, it concluded that higher education has a key role, in partnership with students, to develop approaches to learning and teaching informed by the impact of ICT, but not only focusing on ICT-based teaching and learning:

Rather it means adapting to and capitalising on evolving and intensifying behaviours that are being shaped by the experience of the newest technologies. In practice it means building on and steering the positive aspects of those behaviours such as experimentation, collaboration and teamwork, while addressing the negatives such as a casual and insufficiently critical attitude to information. The means to these ends should be the best tools for the job, whatever they may be. (Pearshouse et al 2009, p. 40)

#### RE-CENTRING PHYSICAL SPACE

Although JISC has commissioned some research into the implications of technology for the design of the physical setting of learning within the educational institution, there is a danger that the emphasis on technology *per se* and its implications for learning may lead to a neglect of spatial quality in the learning environment. As Paechter et al. (2001) point out, the advantages of ‘virtual space’ are that it effectively ‘disembodies’ learners, allowing ‘alternative identities’ to be developed, ‘which are powerful and empowering’ (2001, p. 3). However, where learning still takes place within the territory of the educational institution ‘the localised contextual nature of learning’ needs to be recognised; in other words, ‘how we as

embodied individuals are changed by our experiences in these spaces' (p. 1). Czordas, in his discussion of cultural phenomenology, draws attention to the fact that embodiment is a condition – that of being a 'bodily being', interacting with the world through the senses, not just the mind – that humans cannot escape, a fundamental dimension of experience (Czordas, 1999). Similarly, Paechter et al. (2001) stress that learning takes place not only in the mind, but 'embodied learners occupying particular spaces.' 'We have learned that ... the environmental conditions for learning (objects, people, symbols, and their relationships) are much more influential than we've previously thought...', write Trilling and Hood (Paechter et al., 2001, p. 14). In their 10-point challenge list (pp. 26–27), they underline the need to balance the 'virtual and the visceral' in the learning environment, to incorporate 'places for constructive tinkering', and for students to 'forget about technology once a day'. As Scott affirms later in the same volume, the 'situated' and 'socially embedded' (p. 40) dimensions of learning are fundamental to the experience of the process. And indeed, as Hirsch and Silverstone have shown in the domestic context, the experience of using technology must itself be understood as a situated and socially embedded experience which needs to be analysed with some care (Hirsch and Silverstone 1992).

The power of physical space to affect learning processes has been recognized by architects and educationalists since the end of the 19th century, resulting in many interesting European experiments in the design of schools and universities – see for example the work of Duiker, Teragni, Beaudoin and Lods, Dudok, Candilis Josic Woods (Berlin Free University), Lasdun (Hallfield School, London), Aalto, van Eyck, Scharoun (Geschwister-Scholl-Gymnasium, Lünen) and Hertzberger. In the main, the trend has been away from tight, regularised, hierarchical learning spaces, where the emphasis is on discipline and transmitted learning, and towards free-flowing, 'loose-fit', multi-purpose environments, which encourage individual creativity, social interaction and the confidence to shake off mental straightjackets and develop exploratory thought processes. As Dudek (2000) points out, designers working in these fields have drawn considerably in recent years on the emerging discipline of environmental psychology, including the work of authors such as Hall (cf. Hall in Proshansky et al., 1976), Lofland (1976), Lofland and Lofland (1995), Rapoport (1969), Goffman (1956, 1963) and others on the social use of space. Dudek's survey of new school architecture describes a renewed movement towards the

encouragement of spaces which themselves further the development and learning of the child through his or her comprehension of space.... A consideration of more esoteric factors such as the effects on behaviour of colour, light and texture will be woven into the more practical aspects of designing for comfort, health and education (Dudek, 2000, p. xiv).

In addition, designers are paying increased attention to the relationship between interior and exterior, private and communal space, through the treatment of thresholds and boundaries; to the incorporation of specific cultural references where appropriate, the achievement of multivalent, non-hierarchical, and non-segregating

spatial structures; and making integrated relationships between material and virtual space, focussing on how technology is installed and operated in learning spaces to balance the two.

Dudek makes a point of highlighting the drawbacks of computer technology, specifically at school-age level, but also in terms of the possible implications for human environmental awareness generally. As Paechter et al. (2001) acknowledge, virtual space can provide a valuable alternative to, and escape from, the restrictions and restraints potentially imposed by contested physical space. Dudek notes, in the context of children's interest in computer games, that 'part of the attraction lies in the visual and aural representation of three-dimensional spaces, which can be manipulated and effected by the operator'(Dudek 2000, p. 39). But the fact that most popular computer games are based on interactions which are essentially destructive in character is potentially problematic: 'a generation of children is developing a relationship with space, through their computers, which is obsessive and violent'. While this may sound extreme, Dudek's more general observation that 'their ability to develop an environmental awareness is limited, since the spaces of their computer are at best engaging only three of the senses' underlines a valid concern about the implications of this for the production and inhabitation of real space in future generations. These observations, in line with those of Paechter et al. (2001), suggest that, even as technology takes on an increasingly significant role within the learning environment, the quality of the physical setting, in terms of spatial form, colour, light and materiality becomes ever more important, in order to compensate for the potentially negative impacts of virtual space and interactions on embodied environmental awareness.

#### INVESTIGATING EMBODIED SPACE

Crucially though, physical qualities cannot be considered in absolute terms. Different individuals' experience of embodiment within particular settings, and their perception and response of the same settings may differ considerably, reflecting differences in age, gender, personality, physical characteristics and cultural and social experience. Gibson clearly states that 'perception of the environment is inseparable from perception of one's own body' (Gibson, 1977, p. 67). His key concept is of *affordances* - the physical properties (including other people) which a particular environment 'offers animals, what it provides or furnishes, for good or ill' (1977, p. 68) – both in terms of basic needs and a further 'astonishing variety of behaviours' (p. 75). This, however, does not address the significance of human temperamental, social and cultural diversity. Although certain qualities in an environment may be widely understood as beneficial or pleasurable, it cannot be assumed there will be a consensus over what makes a good or bad, successful or unsuccessful space. The wide variability in the conditions of human embodiment, cultural and social experience entails a level of complexity in evaluating the process of human interaction with spatial environments. Here, I want to next look at how this has been addressed through ethnographic research methods by some social anthropologists working in this area.

The anthropology of education - such as it exists - focuses on the social, political and moral aspects of educational processes in different cultural contexts. It has not examined the immediate spatial settings in which teaching and learning processes take place, or the impacts of spatial and material form (understood as a representation of particular social and cultural values) on those processes. According to Frederick Erickson, 'cognitive learning that has been deliberately taught' has been neglected altogether in anthropological studies, and he underlines the need for ethnographic inquiry into 'taught' cognitive learning. 'The literature of general ethnography contains few narrative accounts of taught cognitive learning... this might be because taught cognitive learning is seen by many anthropologists as school learning, a topic that has been avoided by anthropology...' (Erickson, 1982 p.149). In the field of social anthropology the most relevant literature to this discussion is that which specifically addresses spatial issues in the analysis of social relations and behavioural patterns, including literature which crosses the boundaries of social anthropology, geography and environmental psychology (e.g. Low & Lawrence-Zuniga, 2003; Katz, Mitchell & Marston, 2003). On the one hand, there is a danger in over-emphasising, or 'fetishising', the role of physical space in directing or determining human behaviours (Rogers & Vertovec, 1995) while neglecting to address underlying social issues, which may, in fact, be more significant. Social anthropologists such as Gans, for example, have underlined the fact that the effects of particular spatial and environmental conditions are not predictable, but contingent on the differences in lifestyles and socialisation of different social groups - they may be successful in one social context, but not in another (Gans, 1962). But others stress the importance of recognizing the role that physical space has to play in shaping behaviours and social rituals mapped onto space, and giving physical form to social structures and cultural dynamics. Space is not, then, neutral, pure or abstract, but has a significant role to play in terms of representing and, significantly, perpetuating social relations (Laguerre, 1990) - a fact which has been recognized by utopian urban thinkers and designers for centuries, with particularly dramatic results in the 20th century, as cities were radically redesigned in the services of new models of social organisation and bureaucracy (Pinder, 2005).

This understanding of the social and political potency of physical space lay at the heart of the urban and social theory propounded by French Marxist urbanists and sociologists during the 1960s and 1970s, notably Henri Lefebvre, who railed against the functionalist, rationalist reorganisation of urban social space in Europe (and its former colonies) during the post-war period as a manifestation of state-sponsored capitalism run by a technocratic elite (Lefebvre, 1991; Pinder, 2005). Anthropologists such as Chombart de Lauwe and Maurice Halbwachs engaged with planners and architects in a dialogue based on a structuralist analysis of urban and domestic space, reflecting the powerful influence of Levi-Strauss at the time, in order to reveal how it worked as a hierarchical, ordered system of potent symbolic elements. Bourdieu coined the term 'habitus' to describe the mesh of cultural, social, and physical elements, which makes up the specific environmental context of people's lives (Bourdieu, 1970, 1979). The effects of this debate were

eventually to lead the French government to sponsor the first sociological investigations into the impact of the new urban housing and planning initiatives on people's lives and experience at the end of the 1960s and early 1970s, with a view to understanding the problems that they seemed to have created.

Although this might seem remote from the university environments and culture of higher education teaching and learning in the UK in the early 21st century, the ethnographic methods which were employed are of considerable relevance to the study in hand and others which seek to explore the implications of spatial form and layout for social experience and, specifically, processes of institutional teaching and learning from one site to another.

### ETHNOGRAPHIC METHODS AND ANALYSIS

Augoyard's study of one of the new state housing projects at Grenoble (Augoyard, 1979/2007), which subsequently influenced de Certeau (de Certeau, 1979/1984), was a detailed phenomenological enquiry into the act of walking as a form of inhabitation of any particular environment. He calls it 'ambulatory practice', explaining that: 'daily strolls persistently confer value upon certain elements, spatial particularities that overflow the rightful functional partitions and shake up the territorial sequences' (Augoyard, 1979/2003, p. 73). He stressed the difference between the static, planned spaces designed by architects and planners, and 'lived space' as experienced phenomenologically, through the senses, through physical movement, and through the imagination, by inhabitants. Walking, movement, and the associated process of verbally naming, or describing, different elements of the environment, reveals much about the way different individuals relate to spaces and environments, and embodies the social dimension which activates and often also deconstructs the original formal intentions mapped out on the drawing board. In other words, design intentions may end up being derailed by the subsequent process of inhabitation in specific socio-spatial contexts, underlining the need for analysts to be cautious in attributing deterministic qualities to space itself.

Augoyard's analysis was based on detailed observation, mapping, photographic documentation, interviews, and a quasi-scientific notation of individuals moving around the housing project in the course of their daily business – the basic research methods of the ethnographer/anthropologist (Hammersley & Atkinson, 1983), but tempered by an aspiration towards objectivity, which was rejected by anthropologists of the hermeneutic, Geertzian school, who stressed the essentially personal and subjective character of interpretation. The phrase 'thick description' was coined by Geertz to refer to a process of cultural observation and interpretation, which drew inspiration from literary theory rather than the scientific-objective approach of French structuralism, and which presented culture in the form of a fiction written by the ethnographer (Geertz, 1973). Geertz's work was not specifically concerned with the intersection of culture and space, but his subjective, interpretative approach parallels that of the environmental and architectural phenomenologists who have promoted an understanding of space as subjectively perceived, through

the senses and the imagination, by the individual – such that the same space may be experienced and described by different individuals in quite different ways (cf Seamon 2005).

Following this rubric, research into the relationship between people and their environment should be entered into free of any ‘a priori’ theory and concepts or predetermined methodological procedures. It is essentially an empirical method of study, wherein the researcher must remain fundamentally open-minded as to s/he observes in the field, what responses s/he may elicit from respondents, and what those responses may signify. These are the accepted fundamental principles of any ethnographic research, where the ethnographer, as ‘author’, must aim to set aside any preconceptions and personal bias when entering the field so as to draw out rather than prompt responses from participants; whilst ultimately acknowledging, through the process of interpreting the data, the ways in which the final analysis is shaped by the inescapable conditions of the author’s own background and prior experience. This is very clearly set out by Clifford, who underlines the centrality of the process of writing or making texts itself to what anthropologists do (Clifford & Marcus, 1986), and the fact that the cultural accounts which ethnographers/anthropologists produce should be understood as ‘true fictions’ – constructed, artificial and invented – rather than as a set of objective, scientific truths. Ethnographic writing, he argues, is essentially an art form, which, as he demonstrates (Clifford, 1988), has been closely linked historically to literature and fine art practices, especially French Surrealism in the 1920s, with which it shared an interest in the techniques of collage and juxtaposition and the cultural valorisation of impurity and syncretism over and above rationalism and order.

#### LEARNING FROM HEALTHCARE STUDIES?

Ethnographic methodology has, however, gained currency in recent healthcare research (in a somewhat limited form based heavily on the collection of verbal data). Here it is largely known as Interpretative Phenomenology Approach or IPA. It was initially seen as a radical approach, in contrast to the behaviourist paradigmatic methods of traditional psychology, because it premised the participant’s view rather than that of the researcher. This required the establishment of a rapport between participant and researcher in order to draw out insights that could not be achieved through the old, objectifying methods. Smith and Osborn state that ‘the main currency for an IPA study is the meanings particular experiences, events, states hold for participants ... it involves detailed examination of the participant’s lifeworld ... personal experience ... personal perception...’ (Smith & Osborn, 2003, p. 51). The researcher must make sense of that personal world through the process of empathetic, interpretative activity – in other words it is a ‘double hermeneutic’. They point out that it owes a debt to the school of symbolic interactionism (with ref to Denzin, 1995), which set out to explore how meanings are constructed and communicated by individuals interacting in a social and personal world.

IPA emphasises the need for in-depth, qualitative research, as opposed to quantitative and experimental methodology. It favours small samples of respondents,

and painstaking, detailed analysis on a case-by-case basis, rather than the construction of generalizations through the use of large-scale survey techniques and questionnaires associated with conventional sociological research. Semi-structured interviews are regarded as the best way to collect data, rather than written personal accounts, diaries, etc., since they allow researcher and participant to engage in a dialogue, and provide the researcher with the flexibility to probe any interesting areas that may arise during the course of the conversation. As Clifford points out, 'verbal structures ... determine all representations of reality' (Clifford and Marcus, 1986, p. 10), emphasising the importance of the spoken word to our understanding of cultural behaviours. However, in ethnographic practice, verbal accounts form only one part of the cultural data to be collected, along with visual and textual evidence and detailed observation of behavioural patterns - all of which is subjected to a process of decoding and recoding in the effort to understand the complex social forms, conventions and institutions which humans engage in and construct around themselves. In IPA, by contrast, it is the recorded and transcribed interview that constitutes the primary raw material for interpretation, directed towards the identification of significant themes ('coding') and comparative analysis of those themes across the sample.

Smith, Jarman and Osborn (1999) clearly distinguish IPA from Discourse Analysis, which, following trends in linguistics and semiotics, emphasises the importance of language itself as a clear and objective measure of human intention and perception, capable of scientific de-coding:

DA regards verbal reports as behaviours in their own right which should be the focus of functional analyses. IPA by contrast is concerned with cognitions, that is, with understanding what the particular respondent thinks or believes about the topic under discussion. Thus IPA, while recognizing that a person's thoughts are not transparently available from, for example, interview transcripts, engages in the analytic process in order, hopefully to be able to say something about that thinking. (Smith, Jarman & Osborn, 1999, p. 219)

The process of 'coding' in IPA involves identifying, from the raw material (and not *a priori*) relevant themes that can be used to describe specific aspects of individual and shared experience. Smith, Jarman and Osborn cite some examples - e.g. 'types of relationship' (within a medical setting), specifically 'types of nurse-patient relationship', might be defined as either parental/ partnership/ supervisory, or friendship - or different combinations of those. The 'nursing role' theme might be defined as: caring-loving/ responsibility/ human-nursing/ demanding-tiring/ and or wanting to help. And the 'features of relationship' might include: trust/ resistance/ involvement/ distance/ emotions/ anger, etc. They stress that the process of analysis in IPA is essentially personal and interpretative. As in the ethnography practiced by anthropologists, the creative, speculative, and intuitive approach means that one person's interpretation of the raw data may be quite different from another's. There can be no objective 'truth' as such. But, on the other hand, there will be unique, qualitative insights that could not have been delivered by any other route.

## ILLUMINATING RELATIONSHIPS BETWEEN LEARNING AND SPACE

This chapter has explored methods for better understanding relationships between learning and the physical space in which it takes place. In Chapter 6 in this volume I will develop this approach through a case study (see also Boys, 2010). Finally, it should be noted that the methods recommended here are not intended to result in either design ‘solutions’ or guidance on how to design new physical spaces for post-compulsory education. This follows Parlett and Hamilton (1972) who argue that the primary concern of evaluative research ‘is description and interpretation rather than measurement and prediction’ (pp. 10–11) so as ‘to contribute to decision-making’. As they go on to write:

Each group or constituency will look to the [research] report for help in making different decisions. [...] A decision based on one group’s evaluative criteria would, almost certainly, be disputed by other groups with different priorities. A ‘mastery of fundamentals’ for one group is, for another, a ‘stifling of creativity. [...]

Illuminative evaluation thus concentrates on the information-gathering rather than the decision-making component of evaluation. The task is to provide a comprehensive understanding of the complex reality (or realities) surrounding the program: in short, to illuminate. In [their research], therefore, the evaluator aims to sharpen discussion, disentangle complexities, isolate the significant from the trivial, and to raise the sophistication of the debate. (Parlett & Hamilton, 1972, pp. 31–32)

## REFERENCES

*a. Technology Focus*

- Ari, R. (2006). Expanding the boundaries through the use of technology in informal learning spaces. In *TenCate SIGUCCS '06: Proceedings of the 34th annual ACM SIGUCCS conference on user services*.
- Barker, L. J., Garvin-Doxas, K., & Roberts, E. (2005). ‘What can computer science learn from a fine arts approach to teaching?’ SESSION: The first year: Studies of student performance. *ACM SIGCSE Bulletin*, 37(1), 421–425.
- Carbone, A., & Sheard, J. (2002). A studio-based teaching and learning model in IT: What do first year students think? In *Annual joint conference integrating technology into computer science education. Proceedings of the 7th annual conference on innovation and technology in computer science education* (pp. 213–217).
- Conole, G., Laat, M. de, Dillon, T., & Darby, J. (2005–2006). *LXP: Student experiences of technologies*. JISC.
- Creanor, L., Gowan, D., Trinder, K., & Howells, C. (2006). *LEX: The learner experience of e-Learning – Final project report*. JISC.
- Denk, J., & Fox, L. (2008). The evolution of learning spaces. In *Proceedings of the 36th annual ACM SIGUCCS conference on user services* (pp. 199–202).
- Dodero, J. M., Camino F., & Sanz, D. (2003). An experience of students’ participation in blended vs. online styles of learning. In *ACM SIGCSE bulletin* (Vol. 35, p. 4). New York.
- Ertl, H., Hayward, G., Wright, S., Edwards, A., Lunt, I., Mills, D., et al. (2007). *The student learning experience in higher education: Literature review report for the Higher Education Academy*. HEA. Retrieved from [http://www.heacademy.ac.uk/projects/detail/lr\\_2007\\_hayward](http://www.heacademy.ac.uk/projects/detail/lr_2007_hayward)

- Evaluating Learning Spaces, Flashlight Tools, TLT Group (Teaching, Learning and Technology). Retrieved from [http://www.tltgroup.org/Flashlight/Handbook/Learning\\_Spaces\\_Eval.htm](http://www.tltgroup.org/Flashlight/Handbook/Learning_Spaces_Eval.htm)
- Janz, K. D., & Moore, M. (2007). Envisioning new learning spaces: Creating a center for visualization at Indiana State University. In *SIGUCCS '07: Proceedings of the 35th annual ACM SIGUCCS conference on user services*.
- Holley, D. L. (2008). *Spaces and places: Negotiating learning in the context of new technology*. PhD thesis, University of London: London.
- Jeffers, D. (2008). Is there a second life in your future? In *Proceedings of the 36th annual ACM SIGUCCS conference on user services* (pp. 187–190).
- Kerr, S. T. (1996). Technology and the future of schooling. In S. T. Kerr (Ed.), *Yearbook of the national society for the study of education*. Chicago: NSSE.
- King, A. (1993). From sage on the stage to guide on the side. *College Teaching*, 41(1), 30–35.
- Laurillard, D. M. (1993). *Rethinking university teaching: A framework for the effective use of educational technology*. London: Routledge.
- Learners' Experience of e-Learning programme, JISC (suite of tools, final versions avail from Mar '09: checklists for practitioners and a learner-centered evaluation toolkit). Retrieved from <http://www.jisc.ac.uk/whatwedo/campaigns/studentexperiences/studentperspective.aspx>
- Lex project (learner experiences of e-learning). (2005). JISC.
- Mayes, T. (2006). *LEX: Methodology report*. JISC. Retrieved from [www.jisc.ac.uk/elp\\_learneroutcomes](http://www.jisc.ac.uk/elp_learneroutcomes)
- O'Brien, R., & Beetham, H. (2008). *Student learning experience*, podcast for JISC (Joint Information Systems Committee) & 'In their own words – investigating the learners' experience of e-learning' (associated publication).
- Pearshouse, I., Bligh, B., Brown, E., Lewthwaite, S., Graber, R., Hartnell-Young, E., et al. (2009). *A study of effective evaluation models and practices for technology supported physical learning spaces*. JISC (see associated learning study plan). Retrieved from <http://www.jisc.ac.uk/whatwedo/projects/learningspaces08.aspx>
- Razavi, M. N., & Iverson, L. (2006). A grounded theory of information sharing behavior in a personal learning space. In *CSCW '06: Proceedings of the 2006 20th anniversary conference on computer supported cooperative work*.
- Report of an independent Committee of Inquiry into the impact on higher education of students' widespread use of Web 2.0 technologies. (2009). *Higher education in a Web 2.0 world*. JISC. Retrieved from <http://www.jisc.ac.uk/publications/generalpublications/2009/heweb2.aspx>
- Watson, L., Anderson, H., & Strachan, K. (2007). *Design and management of open plan technology-rich learning and teaching spaces study*. JISC. Retrieved from <http://www.jiscinfonet.ac.uk/themes/tele>
- Webster, L. D., & Mirielli, E. J. (2007). Student reflections on an academic service learning experience in a computer science classroom. In *Conference on Information Technology Education (formerly CITC). Proceedings of the 8th ACM SIGITE conference on information technology education, Destin, FL. SESSION: Ethics and service learning* (pp. 207–212).

### *b. Ethnography, Space and Learning*

- Augoyard, J.-F. (1979/2007). *Step by step: Everyday walks in a French urban housing project*. Minneapolis, MN/London: University of Minnesota Press.
- Bourdieu, P. (1970). The Kabyle house or the world reversed. In *The logic of practice* (pp. 271–283). Cambridge: Polity Press.
- Bourdieu, P. (1979/1984). *Distinction: A social critique of the judgement of taste*. London: Routledge.
- Bourdieu, P., & Passeron, J.-C. (1990). *Reproduction in education, society, and culture* (T. Bottomore (Foreword) & R. Nice, Trans.). London; Newbury Park, CA: Sage, in association with *Theory, Culture & Society*, Dept. of Administrative and Social Studies, Teesside Polytechnic.
- Boys, J. (2010). *Towards creative learning spaces: Re-thinking the architecture of post-compulsory education*. London and New York: Routledge.

- De Certeau, M. (1979/1984). *The practice of everyday life*. Berkeley, CA; London: University of California Press.
- Denzin, N. (1995). *The cinematic society: The voyeur's gaze*. London: Sage.
- Dudek, M. (2000/2002). *Architecture of schools: The new learning environments*. Oxford: Architectural Press.
- Clifford, J., & Marcus, G. (Eds.). (1986). *Writing culture: The poetics and politics of ethnography*. Berkeley, CA: University of California Press.
- Clifford, J. (1988). *The predicament of culture: Twentieth-century ethnography, literature and art*. Cambridge, MA; London: Harvard University Press.
- Cole, M., et al. (1971). *The cultural context of learning and thinking: An exploration in experimental anthropology*. London: Methuen.
- Colomina, B. (1992). Domestic Voyeurism. In B. Colomina (Ed.), *Sexuality and space* (pp. 73–128). Princeton Papers on Architecture. New York: Princeton Architectural Press.
- Czordas, T. (1999). Embodiment and cultural phenomenology. In G. Weiss & H. Haber (Eds.), *Perspectives on embodiment: The intersections of nature and culture* (pp. 143–162). London: Routledge.
- Denzin, N. K. & Lincoln, Y. S. (Eds.). (1998). *Collecting and interpreting qualitative materials*. London: Sage.
- Erickson, F. (1982). Taught cognitive learning in its immediate environments: A neglected topic in the anthropology of education. *Anthropology and Education Quarterly*, 13(2), 149–180.
- Gans, H. (1962). *The urban villagers: Group and class in the life of Italian-Americans*. New York: Free Press of Glencoe.
- Gaver, W. H., Dunne, A., & Pcenti, E. (1999a). Cultural probes. In *Interactions: The Journal of Mental Health Nursing*, 6(1), 21–29.
- Geertz, C. (1973). Thick description: Toward an interpretive theory of culture. In *The interpretation of cultures: Selected essays* (pp. 3–30). New York: Basic Books.
- Gibson, J. J. (1977). The theory of affordances. In R. Shaw & J. Bransford (Eds.), *Perceiving, acting and knowing: Toward an ecological psychology*. Hillsdale; New York; London: Erlbaum.
- Goffman, E. (1956). *The presentation of self in everyday life*. Edinburgh: University of Edinburgh, Social Sciences Research Centre.
- Goffman, E. (1963). *Behaviour in public places*. New York: Glencoe Free Press.
- Hall, E. T. (1976). The anthropology of space. In Prohansky, Ittelson, & Rivlin (Eds.), *Environmental psychology: People and their physical settings* (p. 158). New York: Holt Rinehart and Winston.
- Hammersley, M., & Atkinson, P. (1983). *Ethnography: Principles in practice*. London: Tavistock Publications.
- Hirsch, E., & Silverstone, R. (1992). *Consuming technologies: Media and information in domestic spaces*. London: Routledge.
- Katz, C. (Ed.), with Mitchell, K., & Marston, S. A. (2003). *Life's work: Geographies of social reproduction*. Oxford: Blackwell.
- Laguerre, M. (1990). *Urban poverty in the urban Caribbean: French Martinique as a social laboratory*. Basingstoke: Macmillan.
- Lefebvre, H. (1991). *The production of space*. Oxford: Blackwell.
- Lock, M., & Farquhar, J. (2007). *Beyond the body proper: Reading the anthropology of material life*. Durham, NC: Duke University Press.
- Lofland, J., & Lyn, H. (1995). *Analyzing social settings: A guide to qualitative observation and analysis*. Belmont, CA: Wadsworth Publishing.
- Lofland, L. (1976). The modern city: spatial ordering. In H. M. Prohansky, W. H. Ittelson, & L. G. Rivlin (Eds.), *Environmental psychology: People and their physical settings*. New York: Holt, Rinehard and Winston.
- Low, S. M., & Lawrence-Zuniga, D. (2003). *Anthropology of space and place: Locating culture*. Oxford: Blackwell.
- McCleod, M. (2000). Everyday and "Other" spaces. In Rendell, Borden, & Penner (Eds.), *Gender space architecture: An interdisciplinary discussion* (pp. 182–202). London: Routledge.

## RELATIONSHIPS BETWEEN LEARNING AND SPACE

- Melhuish, C. (1996). *Architecture and anthropology*. Architectural Design Profile 124. London: Academy Editions.
- Norman, D. (1988). *The design of everyday things*. New York: Doubleday.
- Paechter, C. F., Harrison, R., & Edwards, R. (2001). *Learning, space and identity*. London: Sage.
- Paillard, J. (Ed.). (1991). *Brain and space*. Oxford: Oxford University Press.
- Pallasmaa, J. (1994, July). An architecture of the seven senses. In *A+U special issue: questions of perception: Phenomenology of architecture* (pp. 27–38).
- Parlett, M. R., & Hamilton, D. (1972). *Evaluation as illumination: A new approach to the study of innovatory programmes*. Workshop at Cambridge, and unpublished report Occasional paper 9, Centre for research in the educational sciences, University of Edinburgh.
- Pinder, D., (2005). *Visions of the city: Utopianism, power and politics in 20th-century urbanism*. Edinburgh: Edinburgh University Press.
- Rapoport, A. (1969). *House form and culture*. Englewood Cliffs, NJ: Prentice-Hall.
- Rogers, A., & Vertovec, S. (1995). *The urban context: Ethnicity, social networks, and situational analysis*. Oxford: Berg.
- Ryave, A. L., & Schenkein, J. N. (1974). Notes on the art of walking. In R. Turner (Ed.), *Ethnomethodology* (pp. 65–274). Harmondsworth: Penguin.
- Sacks, H. (1984). On doing being ordinary. In J. M. Atkinson & J. C. Heritage (Eds.), *Structures of social action* (pp. 413–429). Cambridge: Cambridge University Press.
- Seamon, D. (n.d.). Phenomenology, place, environment and architecture: A review. *Environmental and Architectural Phenomenology Newsletter*. Retrieved from <http://www.arch.ksu.edu/seamon/Seamon>
- Smith, L., Jarman, M., & Osborne, M. (1999). Doing interpretative phenomenological analysis. In M. Murray & K. Chamberlain (Eds.), *Qualitative health psychology*. London: Sage.
- Smith, J. A., & Osborn, M. (2003). Interpretative phenomenological analysis. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to methods*. London: Sage.
- Swales, J. M. (1998). *Other floors, other voices: A textography of a small university building*. Mahway, NJ; London: Lawrence Erlbaum.
- Smith, P. (1974). *The design of learning spaces: A report on a one-year pilot investigation, carried out in 1973 for the former National Council for Educational Technology*. London: Council for Educational Technology for the United Kingdom.
- Spencer, C., & Blades, M. (2006). *Children and their environments: Learning, using, and designing spaces*. Cambridge, UK; New York: Cambridge University Press.
- Tilley, C. (Ed.). (1994). Space, place, landscape and perception: Phenomenological perspectives. *A phenomenology of landscape* (pp. 7–34). Oxford: Berg.