Perceptions of three new learning spaces and their impact on the learning and teaching process at the Universities of Sussex and Brighton

Literature Review and Bibliography

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Introduction
The focus of this study is the interaction between spatial design, technology and human behaviour in three new learning spaces created at the Universities of Sussex and Brighton as part of the research programme funded through the joint Sussex/ Brighton Centre for Excellence in Teaching and Learning (InQbate) and the Centre for Excellence in Teaching and Learning through Design run by Brighton University Faculty of Art and Architecture in partnership with the Victoria and Albert Museum, the Royal Institute of British Architects and the Royal College of Art.   The aim is to produce a qualitative evaluation of the three spaces as *settings for learning and teaching*, using ethnographic research methods drawn from the disciplines of social anthropology and environmental psychology, which have been extensively applied in the field of healthcare, as Interpretative Phenomenological Analysis (IPA), but less so in the field of (higher) education.

1. *technology*
The increasing impact of computer technology and other media on educational processes has, however, stimulated a wave of more recent research initiatives directed at evaluating the benefits or otherwise of technological intervention in higher education settings. This material, much of which is readily available on-line, provides a starting-point for a focussed consideration of evaluation methods and findings with regard to students' experience of technological interventions in particular.

In 2005 the Joint Information Systems Committee (JISC) commissioned the Lex study - research into learner experiences of e-learning (LEX: Methodology report, Mayes, 2006, at www.jisc.ac.uk/elp_learneroutcomes; LEX: *The Learner Experience of e-Learning – Final project report*, Creanor et al., 2006). This 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*' (IOW 2008), 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*' (IOW 2008). 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 (see section 5). The key findings were:
• Learners lead complex lives and require sophisticated time management skills.
• The boundaries between learning and other aspects of learners' lives are increasingly blurred.
• Control and choice are of great importance – for example, being able to personalise the learning environment by selecting technologies meaningful to the learner.

• Learners wish to have tutors who are fully engaged with e-learning, but also rely heavily on informal support networks.
• While older learners feel the young have an advantage, as a group, effective e-learners 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. The sample was much larger, some 400 learners across medicine, dentistry and veterinary medicine; Economics; Information and computer sciences, and Languages and linguistics. The findings were:
• Personal technologies – mobile phones, laptops and PDAs – are widely used to support learning.
• Learners also use standard software to create, manipulate and present content.
• Internet search engines are preferred to libraries for information retrieval.
• 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.
• Learners, like sophisticated consumers, choose from the range of options available to them, adeptly selecting the most appropriate for the task.

In 2007, JISC funded a study into the 'Design and Management of Open Plan Technology-Rich Learning and Teaching Spaces' (Watson et al 2007), which comprised 24 case studies of large open plan spaces, mostly on a library scale, within a variety of study environments; however this survey focussed on the physical characteristics and fitting-out and did not include any evaluation of student response to the new spaces. It did highlight the fact that learning in general has become more social in nature, and that this is also associated with consistently identified problems including noise levels, mobile phone use, and food and drink consumption; another consistent problem was temperature control. One of the institutions included in the study (Caledonian University) had carried out its own survey evaluation, which found its resource to be popular with users, but probably too lively for graduate study.

In 2008, JISC put out a podcast on 'Student learning experience' (O'Brien and Beetham), accompanied by a publication and CD-Rom, *In their own words*: http://www.jisc.ac.uk/news/stories/2008/10/podcast58studentlearningexperience.aspx, which gave a platform to the 'voices' recorded in the LEX and LXP research. 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 where there was a lack of training in the skills required to operate programmes such as Powerpoint, and the problems facing a minority of learners without their own equipment who will be quickly disadvantaged and marginalised in an e-learning enviroment.

This year (2009), JISC will put out a suite of tools and checklists for learner-centered 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*' (IOW 2008): http://www.jisc.ac.uk/whatwedo/campaigns/studentexperiences/studentperspective.aspx (Currently available in draft at: https://mw.brookes.ac.uk/display/JISCle2/Workshop+Materials).

In addition, Hartnell-Young et al, at LSRO Nottingham University, recently produced for JISC 'A study of effective evaluation models and practices for technology-supported physical learning spaces' (JELS 2009). 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'.* The study looks further at the spatial implications of new technologies, and specifically investigates good practice' in methods of evaluation which have been and might be used to assess what design features of the new, technology-supported spaces contribute to learning. The listed objectives were:

- to identify tools, models and data sources that can be used to monitor learning activities, to inform the development of new spaces and help improve the layout and operation of existing spaces, thus enabling development of baseline information to inform the design of new projects,
- to identify aspects (and examples) of space configuration, and of elements within a space, that contribute to effective learning by individuals and groups.

The data was collected through two workshops conducted in newly-designed physical spaces using a range of technology tools, in addition to telephone interviews conducted by specialists on the team and a web-based survey. (http://www.jisc.ac.uk/whatwedo/projects/learningspaces08.aspx, and project website: http://www.lsri.nottingham.ac.uk/jels). Respondents included users and managers, designers and support staff, and architects and designers of the spaces under investigation. While the aim of the study was to establish criteria for evaluation methods, it also puts forward some outline findings regarding the design features that seemed to enhance learning, which highlighted flexibility, good infrastructure and service provision, location of the space in the wider context and 'legibility' of the design as significant considerations (all of which are borne out by the Sussex/Brighton case study which follows).

In the meantime, the Higher Education Academy has also published a literature review report on *The student learning experience in higher education* (Ertl, Hayward et al, 2008) http://www.heacademy.ac.uk/projects/detail/lr_2007_hayward; however this does not examine the role played by the physical setting itself in the learning experience.

The US-based Teaching, Learning and Technology Group (TLT), a not-for-profit organisation that helps college and university educators take advantage of changing technology so they can improve teaching and learning, has published a series of Flashlight tools for Evaluating Learning Spaces: Physics, Virtual and Blended: http://www.tltgroup.org/Flashlight/Handbook/Learning_Spaces_Eval.htm. It provides guidance on the types of questions which might be used for surveys or focus groups evaluating current learning spaces, which focus on the capacity of a particular space to enable specific activities, or, conversely, the aspects of such a space, or of the institutional set-up or students' own background, which create obstacles to its successful use in particular ways.

The UK government has recently commissioned a Committee of Inquiry into the Changing Learner Experience, headed by Professor Sir David Melville CBE, which is due to report back this year: http://www.clex.org.uk/. Its remit is '*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 entered higher education and the issues this poses for universities and colleges*'. The Committee is supported by Becta, JISC, HEA, HEFCE, Universities UK and a number of other key organisations in the field, and will bring together the whole range of research that has been carried out to date in a coherent form.

2. *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 point out, the advantages of 'virtual space' are that it effectively 'disembodies' learners, allowing 'alternative identities' to be developed, '*which are powerful and empowering*' (p3). 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 are 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 which came to be neglected as a result of the preoccupation with linguistics, or structures of language, during the 1980s (Czordas 1999). Similarly, Paechter et al stress that learning takes place not only in the mind, but is a process that happens to '*embodied learners occupying particular spaces*' (Paechter et al, 2001). '*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 (in Paechter 2001, p 14). In their 10-point challenge list (p 26-7), 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 once again, later in the volume, the '*situated*' and '*socially embedded*' (p 40) dimensions of learning are fundamental to the experience of the process. And indeed, as Hirsch and Silverman have shown in the domestic context, the experience of using technology is itself a situated and socially embedded experience which needs to be analysed with some care (Hirsch and Silverman 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 educational institutions such as schools and universities – see for example the work of Duiker, Teragni, Beaudoin and Lods, Dudok, Candilis Josic Woods (Berlin Free University), Lasdun (Hallfield School), 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 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 Edward T. Hall (cf Hall in Proshansky et al, 1976), Lynn Lofland (Lofland, L. ibid, and Lofland L. and J. 1995), Amos Rapoport (Rapoport 1969), Goffman (Goffman 1956, 1963) etc 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 the relationship between real space 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 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*'. 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'* (p39), underlines a valid concern about the implications of this for the production and inhabitation of real space in future generations.

Dudek's observations, in line with those of Paechter et al, 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.

However, 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 considerable, reflecting differences in age, gender, personality, physical characteristics, and cultural and social experience. Gibson clearly states that *'perception of the environment is inseparable from propioception of one's own body'* (Gibson 1977, p 67). But his concept of affordances, as physical properties (including other people) which a particular environment *'offers animals, what it provides or furnishes, for good or ill'* (p 68) - both in terms of basic needs and a further *'astonishing variety of behaviours'* (p 75) – does not address the significance of human temperamental, social and cultural diversity. Although certain qualities in an environment may, then, be widely seen 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, which has been addressed through ethnographic research methods by some social anthropologists working in this area.

3. *social anthropology and environmental psychology*
 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: *Anthropology and Education Quarterly*, Vol 13, No 2, pp 149-180).

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 (eg Low & Zuniga 2003, Katz, Mitchell and 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 and 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 1963). 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 (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 1960; 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 '60s and early '70s, with a view to understanding the problems which 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.

4. *methods and analysis: ethnography, IPA*

Augoyard's study of one of the new state housing projects at Grenoble (Augoyard 1979), which subsequently influenced de Certeau (de Certeau 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*' (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 deconstructs the original formal intentions mapped out on the drawing board.

Augoyard's analysis was based on detailed observation, mapping, photographic documentation, and a quasi-scientific notation of individuals moving around the housing project in the course of their daily business, and his interviews with them – the basic research methods of the ethnographer/ anthropologist (Hammersley and 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 n.d).

Following this rubric, research into the relationship between people and their environment, should be entered into free of any '*a priori theory and concepts, hypotheses, predetermined methodological procedures, statistical measures of correlation and the like*' (Seamon n.d). 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, to draw out rather than prompt responses from participants, but ultimately acknowledge, 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.

Ethnographic methodology has, however, gained currency, in a somewhat limited form based heavily on the collection of verbal data, in recent healthcare research. Here it is largely known as Interpretetive Phenomenological Analysis. 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, and the need to establish 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 and 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 (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 1986: 10), emphasising the importance of the spoken word to our understanding of cultural behaviours. In ethnographic practice, verbal accounts form only one part, however, 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 (in Murray and Chamberlain 1999, Chp 14) 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*' Murray and Chamberlain 1999, p 219).

The process of 'coding' in IPA involves identifying, from the raw material (and not a priori) relevant themes which can be used to describe specific aspects of individual and shared experience. Smith Jarman and Osborn cite some examples – eg '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.

Smith Jarman and Osborn stress that the process of analysis in IPA is essentially personal and interpretative (SJO 1999). 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.

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