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Visual methods and the visual culture of schools

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This article examines visual methods for understanding the visual culture of schools. It adopts an institutional culture perspective to equate the visual culture of schools with the 'hidden curriculum' of schooling. A range of visual sub-cultures is touched upon including architecture, non-teaching space and postures of teaching and learning. The possibility of conceiving the visual culture of schools as a holistic entity raises the problematic of devising broader more encompassing visual-centric methodologies combining mixed methods and cross-disciplinary approaches.

INTRODUCTION

Visual research is concerned with the production, organization and interpretation of imagery. It draws on analytical perspectives including sociology, media studies, psychology and cultural geography to study a wide range of topics ranging from community, power, and gender studies, to spatial relationships, and spectatorship. Over the last three decades visual studies have come to play a particularly meaningful role in educational research. Qualitative enquiry, one of whose main methods is observation, has led to the growing recognition that observable and tactile information is important in understanding the everyday realities of school life. One strength of visual research is it's the use of technology to slow down and repeat observations and encourage deeper reflection on perception and meaning (McDermott 1977; Mehan 1993). This is important since visual acuity questions the connotation, denotation and significance of observations that are too often taken for granted.

This special issue of *Visual Studies*, 'The Visible Curriculum', reflects emergent, substantive and methodological trends in the social sciences and grounds them in schooling. In his call for papers Eric Margolis encapsulated the multi-faceted nature of everyday visual schooling and insightfully reflects its complexity by posing an apparent conundrum. He asked 'what is visible? What is noticed?' and then juxtaposes this 'visible curriculum' with the notion of a pervasive 'hidden curriculum'. This paper adopts the 'visible but

hidden' conundrum as its starting point and goes on to explore an array of visual methods and examines how they contribute to educational research. I will argue for a methodologically framed, qualitatively driven, visually orientated, mixed-method approach to examining overarching and substantive educational themes and research questions which are central to understanding the quotidian nature of schooling in the twenty-first century.

'VISIBLE BUT HIDDEN' CULTURES OF SCHOOLING

The 'visible but hidden curriculum' is important because it reflects implicit powerful forces that shape everyday activities and also provides a methodological rationale for the study of overarching themes in education. A fuller explanation lies in an understanding of school culture. In 1963 Halpin and Croft applied the term 'organizational climate' to educational settings, transplanting longstanding concepts from studies of organizations (Lewin, Lippitt, and White 1939; Cornell 1955; and Argyris 1958). Subsequently a wide range of metaphors, for example, climate, ethos, atmosphere, character, tone and culture were used to evoke the uniqueness of complex organizations like hospitals, banks and schools. Ogbonna's definition of organizational culture captured the essence of these metaphors:

> … the interweaving of the individual into a community and the collective programming of the mind that distinguishes members of one known group from another. It is the values, norms, beliefs and customs that an individual holds in common with members of the social unit or group. (Ogbonna 1993, 42)

The notion of organizational culture is important to schooling for three reasons. The first is incumbent in Morgan's Zen-like definition: 'how organisations work when no one is looking' (1997, 145). This suggests that an organization's culture is embedded in everyday, taken-for-granted actions based on underlying assumptions. It is rarely observed or viewed as problematic. Hence, because school culture is

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'unquestioned and unconscious' (Schein 1992, 239) it forms a *'hidden curriculum'* that is all the more powerful because it is visible but unseen. Second, organizational culture is significant because it influences an organization's outcomes. For example, Rutter et al. (1979) used the term 'ethos' to link school culture with effectiveness thereby raising it on the agenda of educational researchers. Furthermore, Mortimore (1980, 68) connected statistical relationships between factors contributing to school effectiveness and the ethos of a school:

> Because … of the stability of the performance measures, it is likely that an influence more powerful than that of any particular teacher, school policies or indeed behaviour of dominant pupils, is at work. This overall atmosphere which pervades the actions of the participants we call ethos.

The third important characteristic of organizational culture is its methodological beneficence. The increased use of 'culture' over other metaphors was probably due to its analytic power in understanding school life (Hargreaves 1999), and because it offers, via ethnography, an accepted and fertile methodological framework.

WHAT IS THE VISUAL CULTURE OF SCHOOLS?

There are cases for convergence and divergence of visual culture and school culture. Educational research typically relied heavily on number and word-based methodologies and their different epistemological assumptions to shape education policies. Quantitative researchers thus view school culture as a holistic entity and use multi-level modelling to correlate various measures of school effectiveness. In contrast, qualitative researchers, including visual researchers, tend to view school culture as a dynamic system of distinct sub-cultures (Prosser 1999). This paper will attend to what constitutes visual culture and suggest available visual methods and their contribution to understanding.

'Visual culture' is useful term because it encompasses and combines three key elements – 'visual', 'culture', and 'schooling' – each worthy in themselves but in combination sufficiently distinctive and powerful to warrant further critical reflection. Arguably, the 'visual culture of schools', is as important as word and number-based constructions of school culture. Image-based methodologies can inform education policy. The first element in a visual centric method gives primacy to what is visually perceived rather than what is said, written, or statistically measured. The second element 'culture'

draws attention to taken-for-grantedness and the unquestioned and unwritten codes of habitual practice. The third element 'schooling' is process orientated and provides the context in which visual culture is situated and enacted. The three elements combine to give a working definition of the visual culture of schools:

> the ready-made standardised visual scheme handed down by previous generations of teachers and authorities as an unquestioned and unquestionable guide to all observable events, rituals, situations, objects, materials, spaces and behaviours which normally occur within everyday schooling. It is the trace and markings of the past, present and probably the future hidden curriculum. (Adapted from Schutz 1964)

It's important to recognize that the visual culture of a school is a combination of generic and unique elements. Generic visual culture describes observable, inscribed and encrypted similarities of schools in terms of visual norms, values and practices, which constitute taken-for-granted visual schooling. However, because schools comprise individuals, agency and the capacity to (re)interpret generic visual culture, school people create their own unique visual culture. To paraphrase Marx, people make their own schools, but not just as they please. The visual culture of schools reflects teacher folklore i.e. 'all schools are the same but different'. The next section examines methods for studying the visual culture of schools.

VISUAL METHODS AND THE VISUAL CULTURE OF SCHOOLS

It is unclear the extent to which research questions shape research design and the adoption of specific visual methods. It is uncertain, for example, whether visual researchers identify visual-centric research questions and then select from the range of visual methods to answer those questions or vice versa. Contemporary visual studies examine the meanings and significance of the production, consumption and circulation of material culture; crosscut by thematic concerns e.g. race, gender or communication. To examine topic-method decisions relative to contemporary practice, this paper will explore the dynamic relationship between visual-centric topics and visual sub-cultures of schools and then reflect on how they shape and are shaped by methodological practices. The aim, via an illuminative range of topic-method rich exemplars, is to generate a range of insightful emergent method and methodological issues. I will focus on *school architecture, non-teaching space,* and *teaching and learning* without suggesting that they

exhaust the constitutive possibilities of the visual culture of schooling.

The most versatile and able visual researchers are sufficiently flexible to apply their skills across a wide range of research questions and situations, which entails combining 'researcher created', 'participant generated', 'researcher found', and 'representational practices'. This continuum of approaches includes postmodernism, critical theory, cultural studies, semiotic, socio-semiotics, and visual symbolism, used to interpret existing images, and visual ethnography and visual sociology to generate additional imagery. An underlying aim is to address problems stemming from overt privileging of verbal and written words, which are pandemic in quantitative and qualitative research. More importantly, in combination they offer a powerful tool to the study of the visual culture of schooling.

SCHOOL ARCHITECTURE

Architecture operates as a set of pathways and constraints, facilitating and frustrating parts of the educational mission. Dónal O Donoghue's study of spaces for masculinity '"James always hangs out here": Making space for place in studying masculinities at school' in this issue demonstrates the kind of knowledge about the meanings of physical spaces visual research can bring to the table. Architecture also operates on a symbolic level, for instance, Kai Mah's exploration of 'The Ontario Educational Exhibition of 1876' also in this issue unveils architecture as physical/visual representation of colonialism. Visual research can contribute to understanding both the symbolic and the physical meanings of the built environments of schools.

In the UK, the government is committed to refurbishing the entire stock of High Schools by 2020 through its 'Building Schools for the Future' programme (BSF 2006). At the opening of a new school in 2004 Prime Minister Tony Blair (2004) proclaimed:

> Of course, what goes on in a school is far more important than the buildings themselves. But the one contributes to the other, and today we are celebrating a stunning new generation in school design …. All built around the needs of students, teachers, and the wider community.

Curiously, visual research has played little role in the study or design of school architecture. I will examine briefly powerful forces that contribute to its non-involvement. While in the early 19th Century

educationalists like Joseph Lancaster prescribed specific architectural forms for schools, and included perspective drawings in their writing, later in the century architects no longer consulted educationalists, believing that school design was merely a matter of applying accepted architectural practice (British and Foreign School Society 1817). Robson[1] (1911) an architect who designed school buildings early in the twentieth century chastised his colleagues for failing to link architectural practice with educational aims. Maclure (1985) reflecting on the period 1945–73, later reiterated Robson's 'fitness for purpose' theme. However, merely linking building design to educational theory ignores architectural and educational concepts and practices that are influenced by changes at different rates in each area. Dudek (2000) noted that modernization in school building takes place in the UK at roughly 35-year intervals due to economic and political transformation. Educational practice changes more rapidly, suggesting that building to match educational theory and practice is implausible. In addition it has been argued that post 1945 cost cutting took priority over all other issues (Bennett et al. 1980; Slessor 2004).

In July 2006 the Commission for Architecture and the Built Environment (CABE), a statutory and advisory body to the government, audited a representative sample of 52 of the 124 schools completed between 2000 and 2005 as part of the BSF programme. Their central research question was 'How well designed are the new secondary schools being built in England today?' They found that 52% of the schools reviewed were categorized as mediocre or poor, 31% were partially good, and 19% were good or excellent (CABE 2006, 3). A consultative approach by architects has been mooted at in the past (Saint 1987; Bennett et al. 1980; Dudek 2000); nonetheless it is clear that the design of school space would benefit from visual research and user input.

The creation of teaching and learning environments is normally viewed as the domain of architects, builders and planners who focus on 'functionality', 'build quality' (CABE 2006, 3) and, 'resources', 'project management', 'timescales' and 'risk management' (BBC News 2006). The government procurement body is similarly concerned with efficiency, value for money, and fitness for purpose issues. Despite islands of good practice (Sorrel and Sorrel 2005) only lip service is paid to end-user consultation (Woolner et al. 2005). Rarely is thought given to the views of communities for whom schools are built. Contemporary school design is thus a wide-open field for visual researchers. Educationalists,
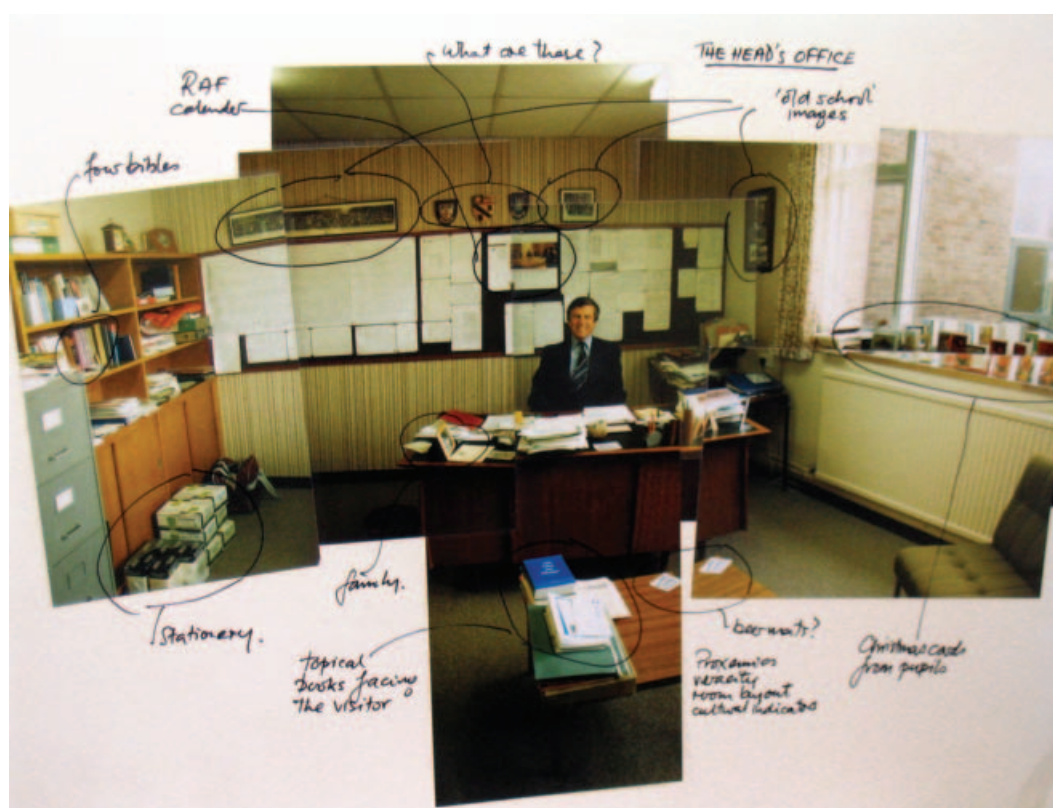
FIGURE 1. Photograph of a headteacher's office.

sociologists, geographers, psychologists and others could provide data to school architects, builders and planners. Emancipatory and participatory research such as photo voice and photo elicitation can gather valuable input from teachers, pupils, and others who actually inhabit the built environments. Good examples of these possibilities include the children's drawings of learning and open spaces in Tabriz, Iran (Gharahbeiglu, this issue), in the UK (Burke and Grosvenor 2003) and Shohel and Howes who employed photography as a research tool in Bangladesh schools (also in this issue). Current architects' practice is normally to design, build and then move on to the next project without looking back. However post-construction evaluations in the form of qualitative longitudinal studies have the potential to provide architects with insights into how their buildings are adapted as needs change.

NON-TEACHING SPACE

Non-teaching spaces are areas of schools where no formal teaching takes place although as O Donoghue makes clear, many a lesson is given. Here I will consider *Headteacher's space*, *teacher's space* and *pupil space* to demonstrate the use of visual methods to examine significance of those spaces. As with most visual methods 'close reading' by researchers of visual material

is compared to respondents' meanings in a process to produce interpretation and establish of emergent themes and substantive concepts. This section briefly examines methods that constitute visual studies of non-teaching space.

Teachers' and pupils' everyday behaviours shape and in turn are shaped by school culture which is manifested visually in the built environment as well as the patterned behaviours that constitute social structure. Non-teaching spaces make an important contribution to school culture because they are taken-for-granted and deeply embedded in the teaching and learning behaviours of generations of teachers and pupils. Like many I retain a strong normative visual recollection of days as a pupil. The memory of school dinners, and assemblies, the distinctive smell of changing rooms, soul-less corridors and adventures in remote corners of the playground are evoked even now by certain films, books, noises, smells, or tastes. Non-teaching spaces are important because they are less formal than classrooms, are rarely the centre of attention and 'behind the scenes' rather than 'front of stage' (Goffman 1956) and therefore where actors feel out of the spotlight. Moreover, they constitute elements of hidden curricula and how 'organisations work when no one is looking' (Morgan 1997, 145).
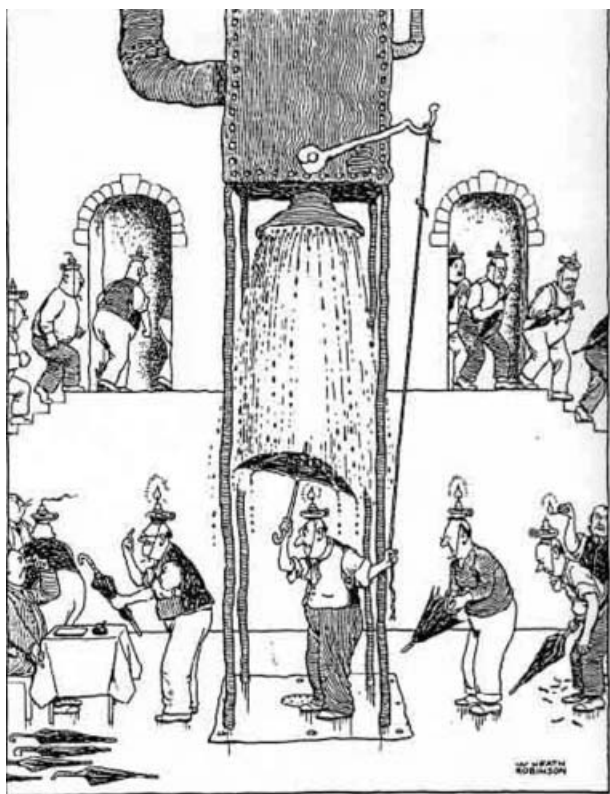
FIGURE 2.   'Testing Umbrellas' – a cartoon found on a staffroom notice board.

Cultural Inventory

School culture is closely linked to school effectiveness and improvement (Stoll 1998; Deal and Kennedy 1983). Head teachers are key shapers of school culture. As part of a broader data collection strategy a visual study of the content and layout of a headteacher's office yields insightful data. Proxemics[2] provides important data about individual or group space and relates directly to membership or status: the amount and kind of space accorded a member of a cultural system reflects status in the structure of that system. Teachers and pupils acquire, mark off, and protect their territory. The most common form of proxemic data gathering used by visual sociologists is referred to as 'cultural inventories':

> …a cultural inventory can go beyond material items to become a detailing of human functions, the quality of life, and the nature of psychological well being. The photographic inventory can record not only the ranges of artefacts in a home but also their relationship to each other, the style of their placement in space, all the aspects that define and express the way in which people use and order their space and possessions. Such information not only provides an insight into the present character of people's lives but can also describe

acculturation and track cultural continuity and change. (Collier and Collier 1986, 45)

The content and layout of a room reflects the user of the room and provides insights into how the occupant would like others to behave in 'their space'. This perspective is supported by Meighan (1981, 65) quoting Khol: 'The placement of objects in space is not arbitrary and rooms represent in physical form the spirit and souls of places and institutions. A teacher's room tells us something about who he is and a great deal about what he is doing'.

Figure 1 is a photograph of a headteacher's office and a socio-semiotic and critical reading can be usefully employed. Evans (1974), for example, suggests that the general layout of a Headteacher's room could represent at least five degrees of authoritarianism. The cultural inventory raises questions about the significance of particular artefacts. Why, for example, are there six different types of bible on the shelf; what is the significance of the Royal Air force memorabilia on the back wall; and who sent the cards near the window and why? Answers provide insights into the headteacher's values, beliefs and attitudes, which are central in shaping the school's culture. The room contains information on the level of technology, on the headteacher's aesthetics, and the function of the room. Artefacts and proxemics provide important data in that they express and reflect that person's values and cultural patterns. Initial close reading of the image provided a researcher's etic comprehension, but the image can also be used in photo elicitation to discover participant's emic meanings (Collier and Collier 1986; Harper 1987, 2002; Schwartz 1989).

Teacher Space

Teachers spend much non-teaching time in the staffroom. Visual research methods have been used in a study of staffrooms and cultural inventories have been used to examine individual working spaces and teacher geo-political affiliations during break times (Hammersley and Atkinson 1983; Ball 1987). Margolis (1999) who examined collections of archived photographs of classes of children in American state schools is a case in point. By adopting a socio-semiotic approach he established that the images misrepresented the past and conveyed significant bias. Given that the archives are primary sources for teacher and student studies in the USA this is a significant finding.

In this case, by considering a school notice board, I will illustrate the 'researcher found data' approach. This
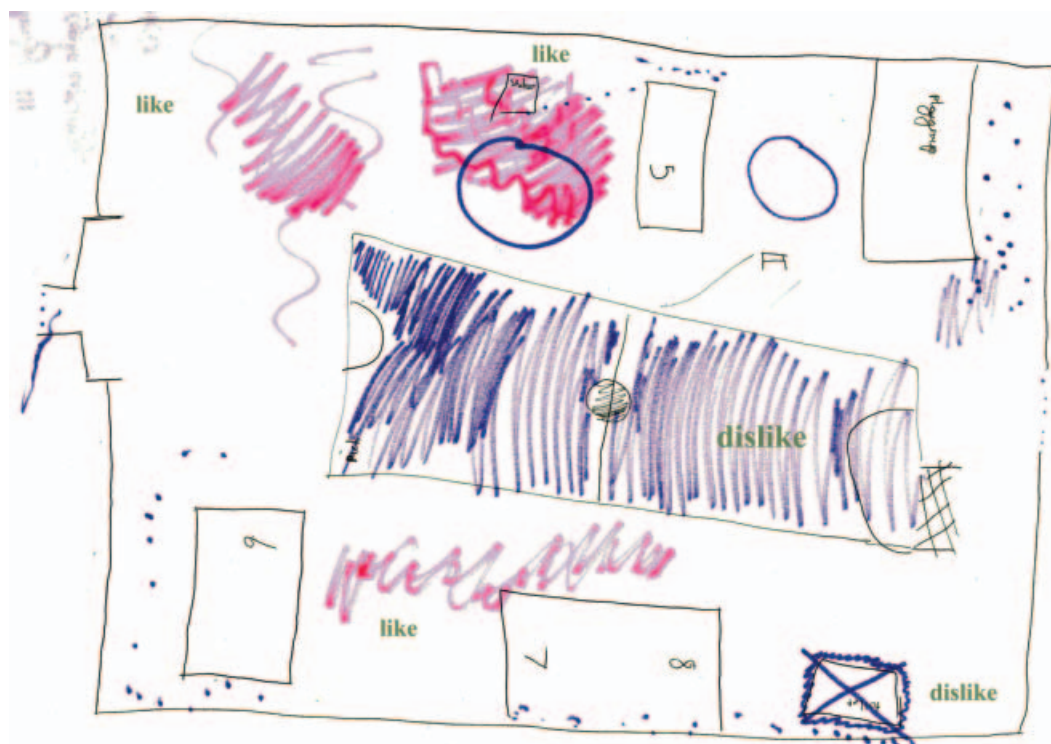
FIGURE 3.   Mapping playground space – pupil likes and dislikes.

aspect of visual research employs semiotic, socio-semiotic[3] or symbolic interactionist analytic skills. Close reading of found images within a given context is an important strategy capable of producing valuable insights into the hidden but visible curriculum of schooling. Notice boards in staffrooms in the UK are part of an internal and external communication system, situated in a semi-private and exclusive space where the sole audience is teachers. The contents, identified by headings commonly used in schools – 'Timetable', 'Daily Notices', 'Letters to Parents' – are mostly maintained by the senior management team. The cartoon depicted in Figure 2 was found on a staffroom notice board. It caught my eye because it was visually different from the main notice board under an unusual heading 'NO COMMENTS' and hung in a small corner of the staffroom where groups of teachers congregated for informal discussions over mugs of tea. I wondered what the message of the cartoon was and how staff understood it.

At the top right men with candles on their head enter a tunnel, emerging later with an umbrella. A man lights the candle, umbrellas are hoisted and a rain machine is activated. If the water does not dowse the candle the umbrella passes the test and is retained. I concluded that it suggests loss of individuality, elimination of the human spirit, boredom and an unhealthy relationship between humans and mass production techniques. In my reading I noted the story sequence begins in the top

left hand corner and progresses in an anticlockwise direction. The circular movement suggests working lives are akin to a treadmill existence. Loss of individuality is emphasized by the fact that the men are all bald, overweight, and dressed alike. The watering machine dwarfs the diminutive men indicating the central role machines play. The device is big, solid, and complex suggesting dominance. The task of testing is undertaken earnestly; all the workers are studious except one who is showing the inspector that his candle is still burning and smiling enthusiastically. However, this close reading affords little insight into the situated meaning.

The moment an image is 'read' as though it were text assumptions are made – what Barthes terms *deja-lu* or 'already read'. But images are polysemic; they have multiple meanings. Adding context on the making or usage of the image extends interpretation but the standpoint of the observer cannot be ignored. Enquiries established that the head of the science department had pinned the cartoon to the board and he was subsequently interviewed. He and the staff interpreted the cartoon in a quite specific way. A clue to their reading is the signature 'W HEATH ROBINSON,' at one level it denotes the artist's name, but on a different level it connotes ad hoc solutions to a problem. This particular artist produced a body of work postulating zany and ridiculous solutions to basic or nonsensical problems. In the UK, his name is synonymous with ad hoc or quick unrealistic solutions to problems. The

teacher's interpretation lies in the changes to the educational system they were experiencing.

The school was newly formed. All the schools in the area had undergone recent reorganization due to a change in education policy by the Local Education Authority. The UK 1944 Education Act sorted all eleven year olds into three types of schooling based on academic ability. The Local Education Authority decided to move from three types of schools to one comprehensive school. Teachers in the new school were not only new to each other but were required to learn new curriculum and adopt new teaching techniques for new pupil abilities. They were given three days of training which one teacher described as 'Totally inadequate – a course given by tired teachers to tired teachers'. Teachers equated the umbrella-testing factory with the course whose objective was assisting teachers negotiate the tricky process of 'becoming a new school'. After the cartoon was posted staff used the area as a meeting point. The cartoon and its locale acted as a focus point for their discontent. Much like the pictures Paulo Freire used to elicit 'generative themes' in *Pedagogy of the Oppressed* (1973) the cartoon empowered staff to give voice to their concerns, which led to further support mechanisms being provided by the local education authority. This helped them manage the ongoing and complex change process that is part and parcel of establishing a new school culture. Situated close reading of '*researcher found data*' coupled with a photo elicitation approach was an illuminating research method in this visible but hidden curriculum.

Pupil Space

Pupils create sub-cultures in schools. Playground space is one pupil territorial domain and therefore the place they were most likely to feel confident and empowered. It is also one of the spaces where bullying takes place. Hence space, how it's used and it's meaning for children, is a key sensitizing concept, not merely a three-dimensional backdrop to social action, but the context for complex and often competing interactions. A sophisticated analysis of space and place in children's view of schools can be found in O Donoghue's article in this issue. Playground study can employ a combination of visual methods and theoretical orientations to elicit and interpret data. Methods include researcher generated images; found images such as old school photographs and architectural drawings; video as record of complex interaction and/or used for photo elicitation; participant generated images such as children's drawings and photographs; researcher generated maps and photographs; and of course researchers' observations.

FIGURE 4.   Limit of Year 5 soccer pitch and the start of the Year 6 soccer pitch.

One theoretical approach is to document what children actually do (video, photographs, sketches) and use techniques of member checking and photo elicitation to check researcher interpretations with children's meanings. An alternative approach is to invite the pupils themselves to take photographs (Schratz and Steiner-Loffler 1998), make paintings (Gharahbeiglu, this issue) or draw maps with coloured pencils (see Figure 3). These participant constructed images tap into children's abilities and enthusiasms (Clark and Moss 2001).

The man in Figure 4 is Jon Prosser (acting as a researcher's assistant) standing in 'no-man's land' on an empty playground. The picture-taker is Steven, a nine-year-old boy, and I'm being instructed by him to move to an exact location which marks the outer limits of his Year 5 soccer pitch and the start of the Year 6 soccer pitch. This is important since if his ball incurs too often on the Year 6 pitch it will be 'booted' over the wall. Steven was revealing the visible but hidden territory of his playground. This 'walk and talk' method shifts data collection from research 'on' to research 'with' and 'by' children. Such participatory methods are becoming central to contemporary visual research.

If playgrounds are not to be viewed as 'neutral backdrops' then understanding of evolving meanings of contested space such as playgrounds requires a combined visual and historical perspective to be embraced (Depaepe and Henkens 2000). Playground spaces are transient. Their significance for children's play is dependent on a combination of interactive factors that change over time. The capacity to access differing sets of historical documents and readings of playground surface contribute to understanding why

FIGURE 5.   Victorian school built in 1872.

FIGURE 6.   Photograph of the boys' soccer pitch.

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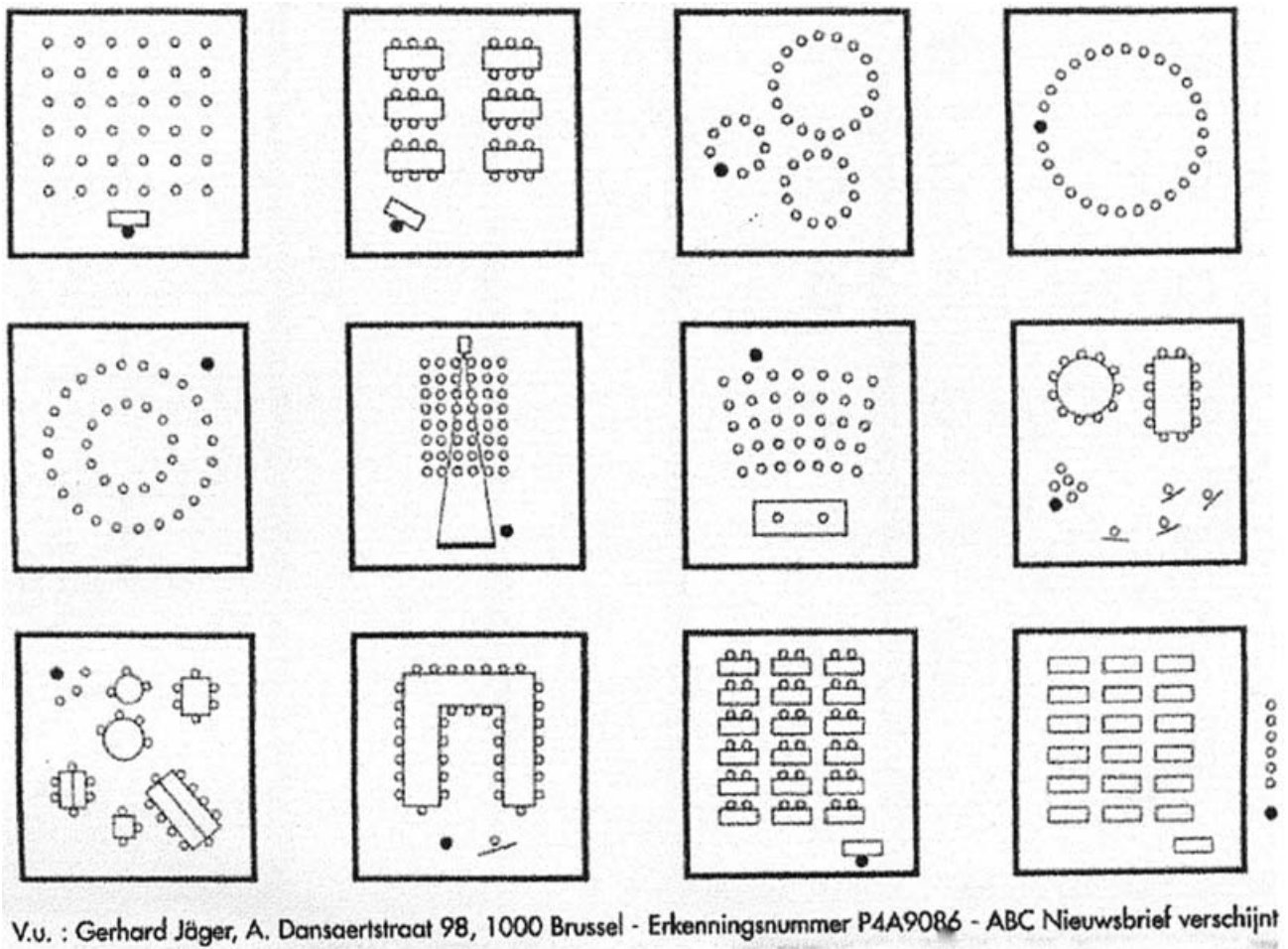
FIGURE 7. Seating arrangements in a primary school. Methods for exploring material choreography of classrooms, for example, the arrangement of bodies or objects in space also requires mapping or documenting techniques. Gerhard Jaeger, a Belgian educational researcher, for example, produced a catalogue of seating arrangements in Primary schools. The position of the furniture reflects different activities: rows for maths, clusters for art, circle for circle time and so on.

children choose to play they way they do in particular settings. The capacity to study, for example, original architectural plans, subsequent records kept by a school, and markings on playground surface are all insightful (Prosser and Loxley 2002).

Figure 5 is a Victorian school built in 1872 typical of the National School design of this period. Armitage (2005, 541) described the impact of this design on playground shape as producing a number of 'nooks and crannies' that provide '…in effect small "rooms", and this is exactly how children use them'. Visual researchers can use techniques such as 're-photography' to explore social change and the evolution of the buildings or site. The photograph of the playground (Figure 6) is a modern view of the school depicted in Figure 5. In reducing the 'nooks and crannies' and replaced them with uninspiring (to children) straight lines, the resultant play space (according to the children) was diminished.

Figure 3 is a girl's map of the playground marking the 'likes' (where she felt safe) and 'dislikes' (the boy's soccer pitch). By oscillating between researcher-found historical data, close reading of the playground surface, students' drawings of 'liked' and 'disliked' play space, and a student questionnaire, an 'equality' issue emerged. The majority of girls in the school (94%) were 'upset' or 'very upset' at being left with second rate play space. It is widely recognized and accepted but unquestioned in school tradition that girls work around playground space dominated by boy's soccer pitches. As a result of the evolutionary 'improvement' in school buildings the girls had lost their 'nooks and crannies' space to straight lines and irregular paving stones and the boys had gained yet another soccer pitch. Three years after the study was undertaken the school moved to a new location and building and the gender inequity, in terms of amount and quality of play space, were redressed. Mixed method approaches can be powerful initiators of educational change.
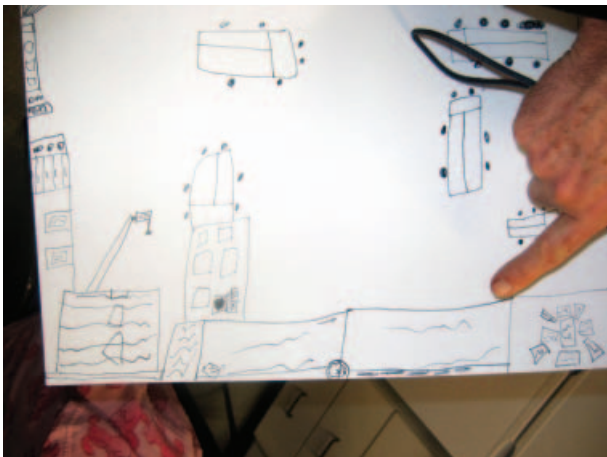
FIGURE 8.   Pupils drawing. A 'talk and draw' approach is useful for exploring pupils' perspectives. An 8-year-old child has focused in his drawing on the side of a room. The researcher's finger is questioning the significance of five dashes on the page. The boy explained they represented pupils' shoes on the top of the blackboard. It was routine, it turned out, that when a child needed to borrow a pen or pencil from the teacher they were required to exchange it for a left shoe (to be returned when the borrowed item was returned). 'Walk and talk' and 'draw and tell' techniques (Clark and Moss 2001) are useful not only for identifying pupils' own agenda and priorities but also their perspectives on power, control and the visible hidden curriculum.

TEACHING AND LEARNING

This section will concentrate on visual research methods that aid understanding of the complex, dynamically inter-related, and subtle elements, that underpin the visible but hidden curriculum of the classroom. The link between past and present classroom practice is important because potentially it provides an insight into aspects of visual culture that are outmoded but inexplicably remain in use. As historian P. Burke (1992, 19) pointed out, 'Without the combination of history and theory we are unlikely to understand either the past or the present'. Over the last decade, there has been an upsurge in interest in understanding the culture of classrooms. Grosvenor, Lawn, and Rousmaniere (1999), Margolis (1999), Grosvenor (1999), Lawn (1999) Lawn and Grosvenor (2005) and C. Burke (2005), conducted studies of the social history of schooling through visual methods demonstrating that historians can draw on a wider methodological palette. Their historical studies of visual material and technology of schooling employed literary criticism, social theory, socio-linguistics, and utilized the ideas of Barthes, Benjamin and Foucault. They demonstrated that visual historians are able to provide an important perspective enabling modern researchers of classroom practice to separate the commonplace from the out-of-place.

A good starting point to understanding the visual culture of present-day classrooms is to view them devoid

FIGURE 9.   'Knackered'.

of teachers or pupils. The cultural inventory method described earlier facilitates cataloguing the material culture of classrooms. One approach is to construct a systematic and comprehensive photo-inventory (Secondulfo 1997), of 'data rich' arrangements. Analysis of the images is guided by research questions, for example, 'what are the similarities and differences between classrooms in a school' or 'what is the temporal nature of displays in a classroom'. Two differing analytical frameworks can be employed at this point. If generalizations across classrooms or between schools are required, a visual content analysis that is quantitatively driven is useful (Bell 2001); if the unique visual culture of a classroom is important then ethnographic content analysis, whilst still being concerned with enumeration but which has a more reflexive twist to it, may be effective (Bryman 1995). A coding strategy offered by Jaeger's drawings (Figure 7) is useful for generic comparisons of seating arrangements whilst a 'talk and draw' approach (Figure 8) is useful to elicit unique classroom cultural practice.

Visual methods can aid the study of classroom interaction. I took the photograph (Figure 9) and accept it as equally revealing of the photographer's standpoint as it is about the observed. It was used in *photo-elicitation* where images are employed as part of an interview. The aim was to explore the significance or meaning of the image with the teacher (see Harper 2002). The teacher depicted explained when he saw the image 'End of a long term …. I was knackered' (vernacular for extremely tired) before moving on to describe the particular form of observable but hidden teacher-stress in his school. Photo-elicitation promotes respondents' and not the researcher's agenda, aids recall and triggers unanticipated reactions beyond what could normally be expected from interviews.

Ogborn et al. (1996) and Kress et al. (2000) used qualitative methods in applying semiotic and socio-semiotic analysis to interpreting multi-modal forms of communication in classroom settings. Educational kinaesthetics, proxemics, spatiality, and children's geographies (Holloway and Valentine 2000; Nespor 1997) are theoretical constructs developed though applying combinations of visual and non-visual research methods. Unfortunately these methods have rarely been applied to educational or classroom settings. There is, however, an increasing enthusiasm for sophisticated methods of visual acquisition, documentation and analysis.

Visual methods, importantly, slow down the act of looking but equally they make for efficient and effective analysis of complex data. Video has long been used to record classroom interaction (Dowrick and Biggs 1982; Anning et al. 1990). Recent improvements in technology and software[4] led to an upsurge of interest in video feedback (Tochon 1999, 2001). They facilitate transcription, coding and qualitative analysis of digital video. Keywords can be assigned to clips allowing sorting and rearrangement of data, creation of collections of interrelated clips, exploration of relationships between applied keywords, data-mining, hypothesis testing, and the sharing of data with colleagues. When powerful software is used in conjunction with other visual and non-visual methods and focused on a set of purposeful research questions, lessons for classroom practice can be significant (for example see Armstrong et al. 2005).

The Visual Display of Information in Science Education

This section will consider representation of ideas and theory in a science class where information that represents scientific data and concepts effectively is important. As Lynch (2006, 195) argued:

> A characteristic feature of scientific activity is the production of visual displays of objects, processes, relationships, and theoretical constructs. Scientific publications often include illustrative photographs, diagrams, graphs, and other data displays. Visual displays are not only valuable as illustrations in scientific texts; they are irreplaceable as documents that enable objects of study to be perceived and analyzed initially. Such displays systematically transform specimen materials into observable and mathematically analyzable data. Objects and relationships that initially were invisible
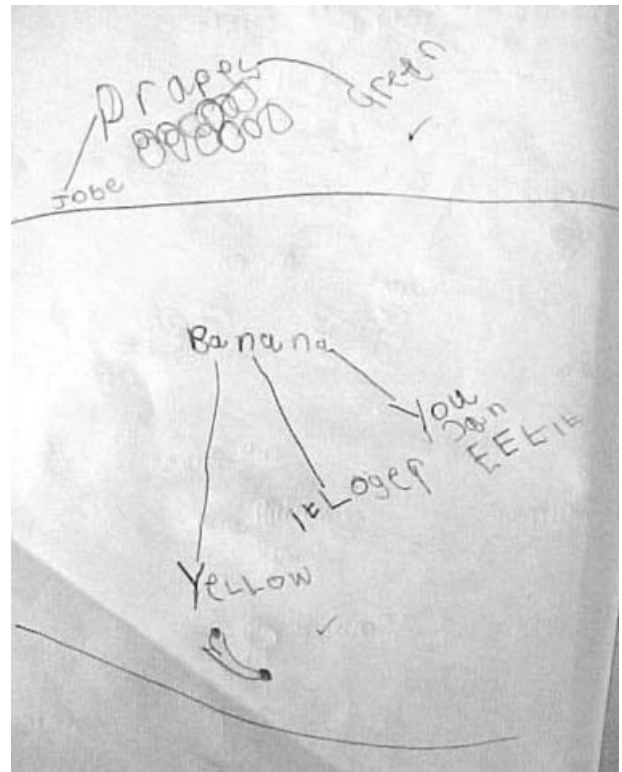

FIGURE 10. Emergent writing and drawing.

become visible and palpable as a result of highly technical skills and complex instruments.

It is important to examine how visual methods provide an insight into the everyday material culture of classrooms. Graphical representation reflects both official representation, like wall displays or diagrams in textbooks, and unofficial representation, for example desk and book graffiti. The size and **EMPHASIS** of font as well the use of **bold**, *italic* and underline and their arrangement on the page of a textbook are visually indicative of the writer's preferred readings. However, adult devised teaching material does not always lead to the anticipated reading by children. As Wetton and McWhirter (1998) demonstrated, age-developmental appropriate wording and pertinent visual information are essential if pupils are to understand and learn as teachers intend. Visual representations lend themselves to examination as *researcher found data*. Socio-semiotic interpretation and image-elicitation with pupils is a particularly powerful combination for analysing how visual representations in textbooks are viewed by recipients and promote or detract from learning.

Tufte (1983, 1990, 1997) and Kosslyn (1994) are influential figures in contemporary graphic design offering guidelines for high-quality representations (see
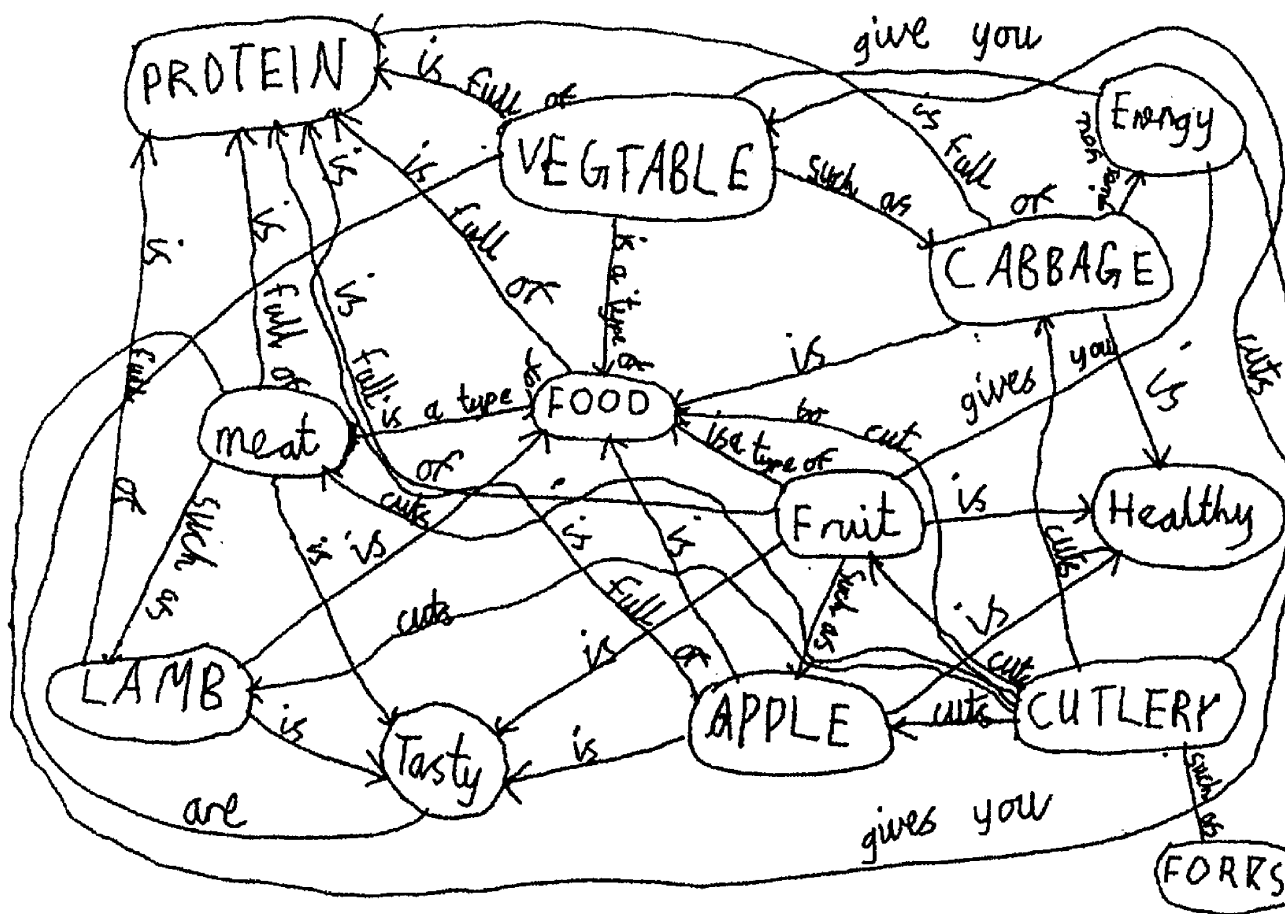
FIGURE 11.   Concept map of food.

Grady 2006). It is easy, they suggest, to misrepresent data and even humble pie and bar charts, omnipresent in science textbooks, can fall victim to poor data display or what Tufte terms 'chartjunk'. Close reading of science textbooks graphs should ask: are the representations 'quiet, and let the data speak for itself' (Wainer 1997, 11) or do they display data badly by showing very little data, portraying data inaccurately or obfuscating the data – all of which reflect poor design. If words in science textbooks need to be truthful and accurate then equally graphic design should be elevated to the level of Tufte's golden rule:

> What is to be sought in designs for the display of information is the clear portrayal of complexity. Not the complication of the simple; rather the task of the designer is to give visual access to the subtle and the difficult – that is, the revelation of the complexity. (Tufte 1983, quoted by Grady 2006, 222)

Figure 10 is a combination of writing and drawing by a five-year-old. The child developed a primitive concept map to organize her thoughts. Teachers require the

ability to evaluate such visualizations in order to improve a child's ability to both represent and interpret visual information. Future scientists (and citizens) will need to interpret colossal data sets and employ visual representation to communicate complex concepts.

Visual sociologists have used 'concept mapping' to track and record the way children build concepts and relationships. Figure 11 is an example of this approach used to understand a pupil's perspective of food. It is a road map showing emergent pathways children use to connect concepts. It is most commonly used for tracking the development of children's learning, as a diagnostic tool for evaluating progress, and to help them learn how to think about thinking i.e. aid in metacognition (Buzan and Buzan 1993; Georghiades 2000, 2004). Concept mapping is useful as an interview device with children because it allows them to set the agenda, to decide what is important, and to work at their pace rather than the rapid mode expected in semi-structured interviews where pregnant silences are considered out of place. A video recording of emergent drawings enables

FIGURE 12. Accessing pupils' understanding through speech bubbles.

the researcher to follow the evolution of a pupil's thinking.

Visual researchers note that all imagery is polysemic. Scott and Jewitt (2003) observed that children's observations differ from teacher observations. The discrepancy comes about, they suggest, because teachers expect children to link empirical observation with a scientific concept. Since the children did not have the same knowledge/concept/experience and used the term 'pattern' differently, they literally 'see' differently from the teacher. Scott and Jewitt went on to question the sequence in science teaching i.e. observation of natural phenomena followed by scientific concept or vice versa?

Different contexts lend themselves to different visual representations and visual methods. Data screens are fast becoming *the* means of knowledge transition and in the near future science lessons will be paperless. Understanding how pupils read screens through tracking eye movements is an under used visual method in educational research, even though there is a highly developed technology used by advertisers. Visual perception, human-computer interaction, reading of

class textbooks and computer graphics are domains that stand to benefit from eye tracking research (Duchowski 2003). Tai et al. (2006) demonstrate the potential by using eye tracking to identify differences in pupil's problem-solving behaviours in science assessment exercises.

Information and Communication Technology (ICT) is a major vehicle for representing information in a variety of ways including images, diagrams, graphs and tables; enabling change to be shown dynamically as in the visualization of complex processes. Figure 12 shows a visual method of accessing children's understandings of the use of ICT through interactive whiteboards developed by Wall and Higgins (2006). They used a carefully designed template, a 'semiotic tool' (Vygotsky 1978), as scaffolding for mediating talk in interviews. The approach adopted pupil's visual culture by taking the form of a cartoon and including simple line drawings and empty speech bubbles to be filled with children's opinions.

These examples are only the tip of the visual method iceberg. Other factors that make a significant contribution to shaping the visual culture of classrooms

Cinema, DVD, TV
Fashion
Cars
Interior Design
Family Albums
World Wide Web
Mobile Phones

Wider Visual Culture

Teacher
Visual Culture

Text books
Exercise books
Diagrams
Wall Charts
Display
Room Layout

Past
Classroom
Visual
Culture

Future
Classroom
Visual
Culture

Screens
Data Streaming
World Wide Web
Paperless Schools

The Visual Culture
of Class rooms

Pupil
Visual Culture

Blogs
Doodling
Graffiti
Visualising
Cinema, DVD, TV
Podcasts
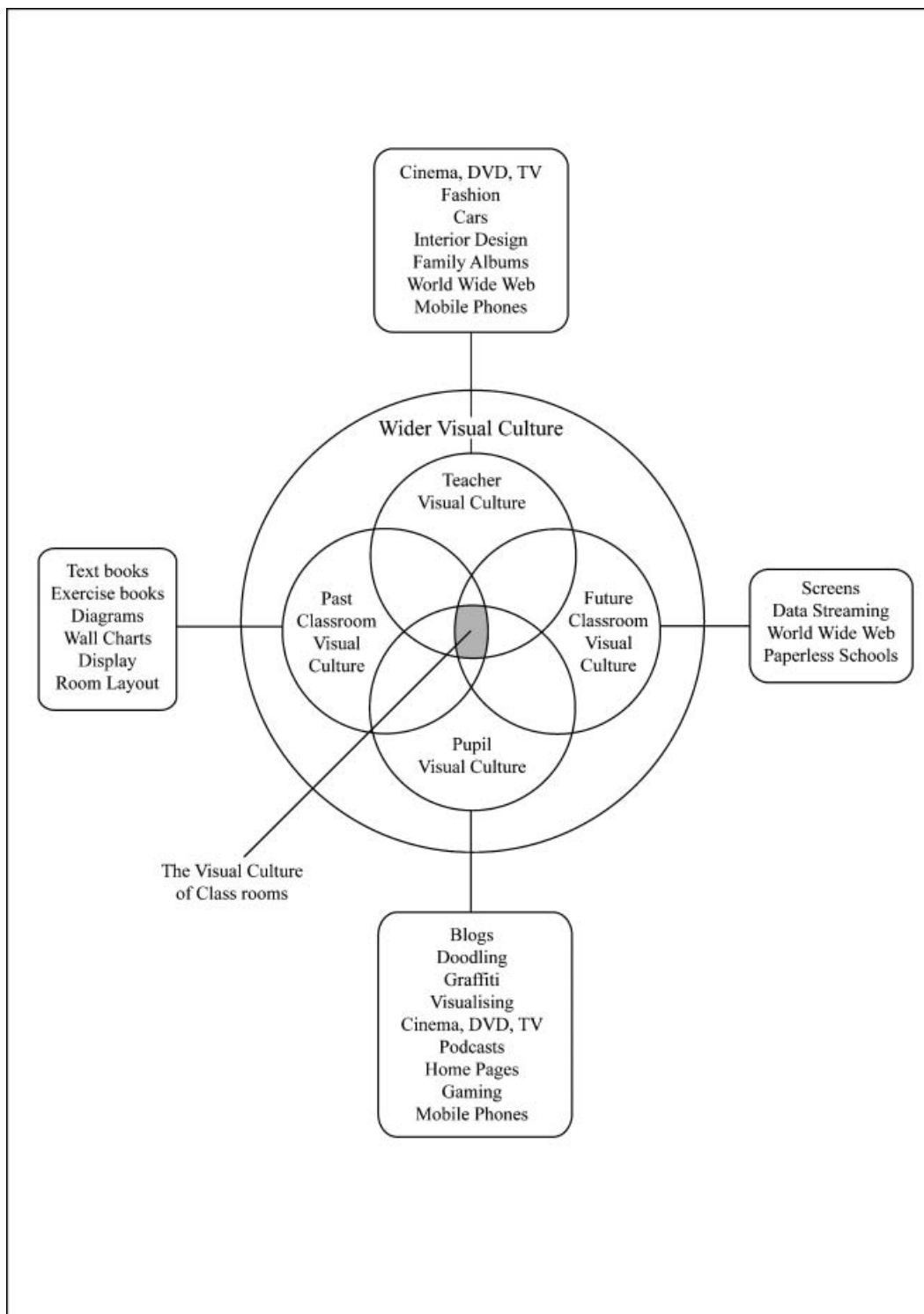Home Pages
Gaming
Mobile Phones

FIGURE 13.   The visual culture of classrooms.

such as pupil visual culture (Wagner 1999), teacher visual culture (Weber and Mitchell 1995, 1996), and the wider visual culture have been left out of my essay. However, Richard Chalfen's article in this issue 'If tiles could talk…. the visual life of a senior ceramic tiles project' explores the powerful effect of a teacher initiated and student accomplished visual culture. The art practice of making senior tiles continued for decades and became a central visual identity of the school. Overall, the diversity of visual methods to study school life is significant and growing in esteem among non-visual researchers.

VISUAL METHODOLOGIES OF THE FUTURE AND THE VISUAL CULTURE OF SCHOOLS

This paper examined school architecture, non-teaching space, and teaching and learning to illuminate the range of topic-method rich exemplars. The methods included 'researcher found data', 'researcher generated data', 'respondent created data' and 'visualization and representation of data'. At this point I will move from methods toward methodology to reflect on broad strategies for advancing understanding of how visual methodologies of the future will make the visible but hidden curriculum more comprehensible and less hidden.

Visual research is evolving rapidly and the last decade has witnessed an exponential growth in application. This has contributed to a robustness and complexity in visual studies and is to be welcomed. However, as one might expect this has also led to fragmentation. Viewed positively fragmentation reflects the increase of specialist research and refinement of methods. Viewed pejoratively, fragmentation limits further growth because it brings breadth rather than depth. This paper and the special issue on the Visible Curriculum examined the relationship between visual research sub-cultures. Most visual research has been small scale; conducted by lone or paired researchers tackling a single theme, which narrows methodological and theoretical possibilities. If visual studies are to make a greater contribution to knowledge, the combined strengths of inter-disciplinary research, which extracts best practice from plural modes of theorizing, is indispensable. A more comprehensive visual methodology will be needed to answer complex, over-arching research questions.

School culture has been viewed as either a system of loosely coupled sub-cultures *or* a totality of everyday values, beliefs and behaviour. It is plausible to view the visual culture of schools holistically and for visual studies to address the 'big', gestalt-type, research questions:

- What is the visual culture of schools now?
- What constitutes a 'good' visual culture?
- What impact does visual culture have on teaching and learning?
- How can a school manager shape the visual culture of his/her school?
- How can the visual culture of schools be changed?
- How can schools evaluate their own visual culture?
- How can international comparisons of the visual culture of schools be made?

The shift from a sub-culture focus to a holistic-culture focus requires a change in the present trajectory of visual methodology away from single method/single discipline/narrow focus towards multi-method/multi-disciplinary/broad conceptual focus. Serious consideration must be given to epistemological assumptions. Assuming that research questions shape methodology what constitutes an important and timely holistic topic? A meso-level study might be designed to answer the question 'What is the visual culture of a classroom?' One of many possible models to attack this question is shown in Figure 13.

The Venn diagram represents the overlapping features that make up the visual culture of classrooms. The outer circle corresponds to the influence of *wider visual culture* since school visual cultures do not exist in a vacuum and international, national, and local visual cultures impregnate the everyday fabric of classrooms. The four inner circles represent the *generic visual culture* of the classroom, which embodies norms, rituals, traditions, and actions. Because teachers and pupils possess agency and the capacity to create, interpret, and reinterpret visual culture, they create their own *unique visual classroom culture.* The four boxes indicate the sorts of visual materialities of each of the constituent elements: pupil visual culture, teacher visual culture, past visual cultures of classrooms, and future visual cultures of classrooms.

A methodologically framed, qualitatively driven, visually orientated, mixed method, interdisciplinary approach to examining overarching and substantive educational themes and research questions which are central to understanding the nature of everyday visual culture of classrooms is developing. An interdisciplinary mixed methods approach encourages the establishment of flexible and diverse research teams capable of a contrastive and reflexive rhetoric. The most common logic of mixed methods has spanned the quantitative and qualitative divide but is insufficient in a study of the visual culture of schools. Instead, a multiple method logic, which includes multiple visual methods working alongside combinations of orthodox word and number-based approaches, should be developed. Finally, a holistic account of the visual culture of classrooms will necessarily involve close collaboration between pupils, teachers and researchers.

NOTES

[1] In the history of English school architecture, Robson occupies a formative position. He was the first architect to be employed specifically to design schools for the London School Board and during a 30 year period was responsible for the erection of some 250 buildings.

[2] Proxemics is concerned with spatial relationships as an indicator of cultural behaviour. Kinesics is concerned with posture/gesture/body language as a signifier of culture.

[3] For a discussion of the socio-semiotics of visual communication see Jewitt and Oyama (2001).

[4] Video software analysis is part of global upsurge in interest in using software to analyse qualitative data. In the UK 'Computer Assisted Qualitative Data Analysis' (CAQDAS) is a networking project based at the Department of Sociology, University of Surrey, UK and funded by the ESRC.

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